# Swamp Skink – Offsets Assessment Guide Inputs for 62 Collins Road and 170 Boundary Road, Dromana

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## 1.1 Swamp Skink habitat quality scoring system

The Offsets Assessment Guide (DSEWPaC 2012a) requires Swamp Skink habitat to be given a quality score out of 10. This is scored on three components: site condition, site context and species stocking rate. For the project site at 62 Collins Road and 170 Boundary Road, Dromana, these variables have been scored out of 4, 4 and 2 respectively as a weighting out of 10.

The habitat quality scoring system developed for this project is based on available ecological knowledge of Swamp Skink populations around Melbourne with a particular focus on the Mornington Peninsula. The habitat scoring system places a higher weighting on site condition, specifically on density of the understory and overstory vegetation. This is based on research indicating that the species appears to favour habitat with dense ground cover and little to no overstory vegetation (Robertson 1998, Clemann and Beardsell 1999, Robertson and Clemann 2015). While some emphasis is placed on the proportion of native vegetation present and it's influence on overall habitat quality, Swamp Skink have been recorded in areas heavily infested with weeds. As such we consider site condition to be primarily reflective of vegetation density rather than species composition.

Site context also receives a higher weighting but is separated into site connectivity and threats present at the site. Site connectivity is scored out of 2 according to the size of the remaining habitat. Although demographic information on Swamp Skinks is limited, it is believed that the current distribution of the species is largely disjunct and that populations persist in small habitat fragments. We have therefore separated the score between sites less than and sites greater than 15 hectares in size. The threat score is based on the threats listed in the Conservation Advice for the species and the total number of threats expected to be present at each site.

The Swamp Skink is a cryptic species and has the potential to go undetected despite presence at a site, even with the application of suitable survey methods outlined by the survey guidelines. Given the paucity of information on Swamp Skink population demographics, stocking rates for the species are currently unknown. As such, stocking rate receives a lower weighting and is scored out of 2, with a score of 1 indicating that a single individual has been recorded on site and a score of 2 indicating that multiple individuals have been recorded on site.

**Table 1 Habitat quality scoring system**

| Parameter | Scoring system |
|---|---|
| **Site context (max 4 points)** | Connectivity score:<br>• 1/2= Site < 15 ha<br>• 2/2 = Site equal to or > 15 ha<br>Threat score:<br>• 0/2 = Site subject to 5 or more of the above threats.<br>• 1/2 = Site subject to between 1 and 4 of the above threats.<br>• 2/2 = Site subject to none of the above threats. |
| **Site condition (max 4 points)** | • 1/4 = Poor - Site (on average) supports a very sparse understory and very dense overstory, with little to no shelter sites present. Dominated by a predominantly introduced weedy vegetation with little to no structural complexity and overstory largely reduces the penetration of sunlight into the understory.<br>• 2/4 = Satisfactory - Site (on average) supports some understory vegetation with limited structural complexity and a relatively open overstory. Some shelter sites are present. Dominated on average by a mix of native and introduced ground layer wetland vegetation and overstory vegetation that allows sufficient sunlight to penetrate to the ground layer.<br>• 3/4 = Good - Site (on average) a moderately dense and structurally complex understory with a relatively open overstory and moderate shelter sites present. Dominated on average by native ground layer wetland vegetation and overstory vegetation that allows sufficient sunlight to penetrate to the ground layer.<br>• 4/4 = Excellent - Site (on average) supports a species-rich and structurally complex understory with an abundance of shelter sites. Little to no overstory vegetation is present allowing a substantial amount of sunlight to reach the ground layer. Dominated by an above average diversity of native wetland vegetation types. |
| **Species stocking rate (maximum 2 points)** | • 1/2 = A maximum of 1 individual, or slough encountered within an area using any of the proposed methods highlighted above.<br>• 2/2 = Two or more individuals or sloughs encountered an area using any of the proposed methods highlighted above. |

## 1.2 Confidence in result (%)

The Commonwealth Department of Environment's 'How to use the offsets assessment guide' (undated), Section G, outlines the aspects that go into determining the confidence in result percentage. Paragraph four of Section G discusses the past record of the proponent: The past record of the proponent should also be taken into account in determining this figure. That is, confidence in result must take into account not only the confidence in being able to achieve the conservation gain but also take into account the risk that the offset may not be delivered.

At present, La Manna Property Group do not have experience in offsets and achieving conservation gains. However, Biosis is assisting La Manna Property Group with their EPBC Referral and the identification and securing of suitable offsets. Biosis has extensive experience in assisting clients to deliver and achieve conservation gains for a number of flora and fauna species and threatened communities. In addition, a suitable offset site has been identified for this project and Biosis have undertaken targeted surveys and

successfully recorded Swamp Skink at this proposed offsite in suitable habitat. As such DCCEEW can have a high level of confidence in La Manna Property Group's ability to achieve the conservation gain and deliver the offsets.

The confidence in result score for each proposed offset site also accounts for the level of certainty about the successful achievement of the proposed change in quality. Further site-specific justification is included in Table 3.

## 1.3 Impact area

The site at 62 Collins Road and 170 Boundary Road, Dromana was assessed on 7 July 2023 and was found to support approximately 22.88 hectares of Swamp Skink habitat. However, the proposed development will incorporate a substantial reserve into the design which will retain a large portion of this habitat. Removing habitat to be retained in this reserve from the total impact area returns a value of approximately 17.09 hectares of occupied Swamp Skink habitat expected to be impacted by the proposed development.

With a start quality score of 4/10, the total quantum of this direct impact would be 6.84 adjusted hectares of Swamp Skink habitat (absolute area adjusted to account for its quality score)

The impact calculator inputs into the Offsets Assessment Guide for Swamp Skink are shown in Table 2.

**Table 2 Impact calculator inputs into the Offsets Assessment Guide**

| Parameter | Input | Justification for input |
|---|---|---|
| **Annual probability of extinction** | 1.2% | The annual probability of extinction of Swamp Skink, an endangered species, 1.2% based on IUCN category definitions. |
| **Area of habitat** | 17.09 ha | A total of 17.09 ha of occupied Swamp Skink habitat was mapped within the study area at 62 Collins Road and 170 Boundary Road, Dromana and would be directly affected by the subdivision and development. |
| **Quality** | 4/10 | Biosis assessed the extent and quality of the Swamp Skink habitat in July 2023. Prior to this Biosis undertook targeted surveys for Swamp Skink on site using baited remote cameras and recorded a single Swamp Skink on site. Based on the previous targeted surveys and the habitat assessment, the impact area was assigned a habitat quality score of 4/10. This score was made up of the following components:<br>• A **site context** score of 2/4 based on a connectivity score of 1/2 because although the total area of occupied Swamp Skink habitat is 17.09 ha (i.e. more than 15 ha) the habitat patches are fragmented, and a threat score of 1/2 because the site is subject to between 1-4 of the proposed threats identified in the conservation advice.<br>• A **site condition** score of 1/4. Large portions of the study area comprise Damp Sands Herb-rich Woodland/Grassy Woodland Complex as well as areas of Swamp Scrub, both of which may provide habitat for Swamp Skink. However, although the site comprises a reasonably dense understory, most of the area also has a relatively dense overstory and canopy which may preclude sufficient light from reaching the ground level. In addition, the areas of higher elevation are typically comprised of introduced vegetation. Therefore, although the site has some attributes that would make it suitable to support Swamp Skink populations, we have scored it on the lower end of the condition score. |

| Parameter | Input | Justification for input |
|---|---|---|
| | | • A species stocking rate score of 1/2 because 1 Swamp Skink was recorded within the study area in 2016. |
| **Total quantum of impact** | 6.84 adjusted ha | This value is set by the Offsets Assessment Guide and represents the value of the Swamp Skink habitat within the impact area, expressed in adjusted hectares. The absolute area (in hectares) has been adjusted to account for the quality of the habitat |

## 1.4 Loch Sport Offset Site (offsite)

A suitable third-party offset site has been identified located near Loch Sport. The property is located adjacent to Ninety Mile Beach in the Gippsland Plain bioregion. The landowner is an experienced offset provider under both the state and federal offset systems. The proposed site offers ideal habitat for Swamp Skink and comprises 388 hectares of native vegetation including extensive areas of Coastal Dune Scrub, Estuarine Flats Grassland, and Estuarine Scrub. Previously, the nearest record of Swamp Skink is 13 km northeast. However, Biosis undertook targeted surveys for Swamp Skink during 2023 and 2024 and recorded at least 3 individuals on the property.

The offset calculator inputs into the Offsets Assessment Guide for the Loch Sport Swamp Skink offset site are outlined in Table 3 and the completed Offsets Assessment Guide in Table 4.

**Table 3 Offset calculator inputs into the Offsets Assessment Guide**

| Parameter | Input | Justification for input |
|---|---|---|
| **Time over which loss is averted** | 20 years | The OMP will require active conservation management (and improvements) for the first 10 years, after which the offset areas are to be managed and maintained as a conservation area in perpetuity. However, 20 years is the maximum value that can be entered into the Offsets Assessment Guide |
| **Start area** | 28.6 ha | The initial fee proposal for Swamp Skink offset requirements included an estimated 20 hectares of habitat at the Loch Sport Offset site. However, using the developed scoring protocol, it was established that to achieve 100% of the direct impact offset requirement, an area of 28.6 ha would be required. For the purposes of offset calculations, it was assumed that 28.6 ha of the site at Loch Sport would be available as third-party offset sites. Further discussion with the landowner is needed to determine the appropriate boundaries of the offset sites and therefore determine the precise offset areas. |
| **Risk of loss without offset** | 0% | As advised by DCCEEW with reference to Guidance for deriving 'Risk of Loss' estimates when evaluating biodiversity offset proposals under the EPBC Act (Maseyk et al. 2017). |
| **Risk of loss with offset** | 0% | As advised by DCCEEW with reference to Guidance for deriving 'Risk of Loss' estimates when evaluating biodiversity offset proposals under the EPBC Act (Maseyk et al. 2017). |
| **Confidence in result – risk of loss** | 90% | A 90% confidence reflects that there is a high degree of confidence that there is no (0%) risk that the Swamp Skink habitat will be lost, with or without an offset in place. |

| Parameter | Input | Justification for input |
|---|---|---|
| **Time until ecological benefit** | 10 years | A measurable improvement in habitat quality will be achieved after 10 years of management in accordance with the future OMP. |
| **Start quality** | 8/10 | On the basis of a site overview and targeted surveys for Swamp Skink undertaken by Biosis, the Swamp Skink habitat at the Loch Sport offset site would be assigned a score of 8/10 using the same habitat scoring system that was employed at the impact site. This start quality score is made up of the following components:<br>• A **site context** score of 3/4 based on a connectivity score of 2/2 because the total area of contiguous occupied Swamp Skink habitat is more than 15 ha and a threat score of 1/2 because the site is subject to between 1-4 of the proposed threats identified in the conservation advice.<br>• A **site condition** score of 3/4. Large portions of the study area comprise a moderately dense and structurally complex understory with a relatively open overstory, and moderate shelter sites present. The site is also dominated on average by native ground layer wetland vegetation and overstory vegetation that allows sufficient sunlight to penetrate to the ground level.<br>• A **species stocking rate** score of 2/2 because more than 1 Swamp Skink was recorded within the study area during targeted surveys conducted by Biosis in 2023 and 2024. |
| **Future quality without offset** | 6/10 | The Loch Sport offset site is located on private land owned by a landowner with experience in providing offsets under both state and federal offset systems. While the site is in good condition overall, current issues exist around introduced species such as deer. If not established as offset sites, unrestricted impacts from these and other pest species would continue, and the future quality of the sites would decline to 6/10 over the next 10 years. This future habitat quality score is made up of the following components:<br>• A **site context** score of 3/4 because no change to the connectivity and threat scores would be expected.<br>• A **site condition** score of 2/4 as trampling and foraging by deer has the potential to significantly alter the vegetation structure within the understory.<br>• A **species stocking rate** score of 1/2 because disturbance cause by introduced species may result in the amount of habitat available to Swamp Skink within the study area. |
| **Future quality with offset** | 9/10 | Implementation of OMPs will maintain and improve existing Swamp Skink habitat with the Loch Sport offset sites. Active control measures will be put in to place to manage and reduce the number of pest species on site. The result will be an overall improvement in the Swamp Skink habitat quality on site to 9/10, comprising the following components:<br>• A **site context** score of 3/4 based on a connectivity score of 2/2 because the total area of contiguous occupied Swamp Skink habitat is more than 15 ha and a threat score of 1/2 because the site is subject to between 1-4 of the proposed threats identified in the conservation advice.<br>• A **site condition** score of 4/4. A reduction in the number of pest species such as deer will reduce impacts to important understory vegetation which will improve the overall condition of the habitat to support Swamp Skink.<br>• A **species stocking rate** score of 2/2 because the site at Loch Sport will continue to support a population of Swamp Skink. |

| Parameter | Input | Justification for input |
|---|---|---|
| **Confidence in result – future quality** | 90% | There is a high level of confidence that without the establishment of the offset site, continued use of the Loch Sport site would lead to a 2-point decline in the quality of Swamp Skink habitat on site in the next 10 years. Unrestricted foraging and trampling by species such as deer will significantly alter the understory habitat which is a critical component of habitat quality for Swamp Skink. There is also a high level of confidence that, with the establishment of an offset site, the landowners will have the support, guidance and resources to intensively manage, maintain and improve Swamp Skink habitat at the Loch Sport site in the next 10 years. |

## 1.5 References

Clemann N & Beardsell C (1999) A new inland record of the Swamp skink *Egernia coventryi* Storr, 1978. Victorian Naturalist 116:127–128.

Robertson P (1998) Nomination for Listing on Schedule 2 of the Flora and Fauna Guarantee Act 1988 *Egernia coventryi* Swamp skink. Wildlife Profiles Pty. Ltd.

Robertson P & Clemann N (2015) Guidelines for management activities in swamp skink habitat on the Mornington peninsula.

# Appendix 1 Offset calculations for the 29ha Loch Sport Swamp Skink offset site

**Impact calculator**

| Protected matter attributes | Attribute relevant to case? | Description | Quantum of impact | | Units | Information source |
|---|---|---|---|---|---|---|
| ***Ecological communities*** | | | | | | |
| Area of community<br>Clear row | No | | Area | | | |
| | | | Quality | | | |
| | | | Total quantum of impact | 0.00 | | |
| ***Threatened species habitat*** | | | | | | |
| Area of habitat<br>Clear row | Yes | Impact on 17.1 ha of Swamp Skink habitat in Dromana | Area | 17.09 | Hectares | Site assessment |
| | | | Quality | 4 | Scale 0-10 | |
| | | | Total quantum of impact | 6.84 | Adjusted hectares | |
| **Protected matter attributes** | **Attribute relevant to case?** | **Description** | **Quantum of impact** | | **Units** | **Information source** |
| Number of features<br>e.g. Nest hollows, habitat trees<br>Clear row | No | | | | | |
| Condition of habitat<br>Change in habitat condition, but no change in extent<br>Clear row | No | | | | | |
| ***Threatened species*** | | | | | | |
| Birth rate<br>e.g. Change in nest success<br>Clear row | No | | | | | |
| Mortality rate<br>e.g Change in number of road kills per year<br>Clear row | No | | | | | |
| Number of individuals<br>e.g. Individual plants/animals<br>Clear row | No | | | | | |

**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 | 6.84 | Adjusted hectares | Proposed offset at Loch Sport. | Time over which loss is averted (max. 20 years) | 20 | Start area (hectares) | 28.6 | Risk of loss (%) without offset | 0% | Risk of loss (%) with offset | 0% | 0.00 | 90% | 0.00 | 0.00 | 6.85 | 100.26% | Yes | |
| | | | | | | | | | Future area without offset (adjusted hectares) | 28.6 | Future area with offset (adjusted hectares) | 28.6 | | | | | | | | |
| | | | | | Time until ecological benefit | 10 | Start quality (scale of 0-10) | 8 | Future quality without offset (scale of 0-10) | 6 | Future quality with offset (scale of 0-10) | 9 | 3.00 | 90% | 2.70 | 2.40 | | | | |
| **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<br>e.g. Nest hollows, habitat trees | No | | | | | | | | | | | | | | | | | | | |
| Condition of habitat<br>Change in habitat condition, but no change in extent | No | | | | | | | | | | | | | | | | | | | |
| ***Threatened species*** | | | | | | | | | | | | | | | | | | | | |
| Birth rate<br>e.g. Change in nest success | No | | | | | | | | | | | | | | | | | | | |
| Mortality rate<br>e.g Change in number of road kills per year | No | | | | | | | | | | | | | | | | | | | |
| Number of individuals<br>e.g. Individual plants/animals | No | | | | | | | | | | | | | | | | | | | |