East of Aberline Precinct Structure Plan

Growling Grass Frog Conservation Strategy

FINAL REPORT

Prepared for the Victorian Planning Authority

6 August 2025

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Document information

Report to:	Victorian Planning Authority
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Biosis project no.:	42541
File name:	42541.East.of.Aberline.GGF.CMS.FIN01.20250806
Citation:	Biosis 2025. East of Aberline PSP: GGF Conservation Strategy prepared for Victorian Planning Authority. Author: Tepe, A. and McCutcheon, C. Biosis Pty Ltd, Port Melbourne, VIC. Project no. 42541

Document control

Version	Internal reviewer	Date issued
Draft version 01	Jess Hurse	13/6/2025
Draft version 02	Jess Hurse	16/06/2025
Final version	Clare McCutcheon	06/08/2025

Acknowledgements

Biosis acknowledges the contribution of the following people and organisations in undertaking this strategy:

- Victorian Planning Authority: Kelvin Li

Biosis staff involved in this project were:

- Phillip Gidley (mapping)

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Figures

1 Introduction

1.1 Project background

Biosis Pty Ltd (Biosis) was commissioned by the Victorian Planning Authority (VPA) to prepare a Growling Grass Frog *Litoria raniformis* (GGF) Conservation Strategy for the East of Aberline Precinct Structure Plan (PSP), located in the east of Warrnambool, bounded by Aberline Road, Wangoom Road and Dales Road. The location of the precinct is shown in Figure 1.

The VPA is currently drafting the PSP and Development Contributions Plan (DCP), which will guide future land use and development sequencing of essential infrastructure and services for the precinct. Notably, the PSP will provide guidance for the management of biodiversity values of state and commonwealth significance.

As part of the PSP process, the VPA has commissioned background reporting on the current ecological conditions of the precinct (EHP 2025). As a result, targeted surveys were recommended to be undertaken for GGF, along with Swamp Skink *Lissolepis coventryi*, Southern Toadlet *Pseudophryne semimarmorata* and Glossy Grass Skink *Pseudemoia rawlinsoni*. While none of these threatened species were identified during surveys, the precinct design can provide opportunities for habitat restoration and enhancement through biodiversity sensitive urban design.

1.2 Scope of the Conservation Strategy

The Conservation Strategy (the strategy) has been prepared in response to recommendations outlined in previous flora and fauna assessments and targeted survey reports undertaken within the study area, to assist the preparation of the East of Aberline Precinct Structure Plan (PSP).

The strategy aims to provide the strategic justification for including Growling Grass Frog conservation areas within the PSP. It provides the basis for a future Russell Creek Masterplan which should detail conservation area design and management recommendations.

The area recommended to be classified as conservation within the PSP is shown in Figure 2.

Figure 1 Overview of the East of Aberline Precinct

Figure 2 Boundary of the Conservation Area

1.3 Objectives

The objectives of this strategy are to:

- Discuss the potential boundaries of the conservation area.
- Consolidate information on the existing conditions, including GGF records and habitat.
- Identify conservation objectives for GGF based on the habitat and distribution of the population and guidance in the Significant impact guidelines for the vulnerable growling grass frog (DEWHA 2009).
- Provide advice on the appropriate interface treatments and stormwater treatment location in relation to conservation areas.
- Provide guidance on protecting and enhancing terrestrial habitat within the conservation area.
- Identify any co-benefits to other fauna species that will utilise the conservation areas and habitat connectivity.
- Provide advice on the planning requirements to be included in the PSP and planning controls to implement the conservation strategy.
- Provide strategic justification for buffers from identified habitat and conservation areas.
- Identify actions and infrastructure to improve instream and terrestrial habitat.
- Include a summary of stakeholder views.

2 Background

2.1 Relevant documents

The following documents have been consulted in the preparation of this strategy:

- Existing Ecological Conditions: East of Aberline Growth Corridor, Warrnambool, Victoria (EHP 2025)
- Targeted Fauna Surveys: East of Aberline (TactEcol Consulting 2025)
- Growling Grass Frog Study – Arborline to Horne Road – Future Growth Area (LandTech Consulting 2019)
- Growling Grass Frog Habitat Design Standards: Melbourne Strategic Assessment (DELWP 2017a)
- Growling Grass Frog Crossing Design Standards: Melbourne Strategic Assessment (DELWP 2017b)
- Conservation Advice for *Litoria raniformis* (southern bell frog) (DCCEEW 2024)
- Significant impact guidelines for the vulnerable growling grass frog (*Litoria raniformis*) (DEWHA 2009).

2.2 Growling Grass Frog

The GGF is a species of national conservation significance. It is listed as vulnerable under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and Victoria's *Flora and Fauna Guarantee Act 1988* (FFG Act). Prior to European settlement, GGF were widely distributed across south-eastern Australia, including Tasmania. However, the species has since declined markedly across much of this former range. This is particularly evident in south and central Victoria where populations have experienced widespread declines and local extinctions (DEWHA 2009).

Factors that have contributed to the decline of GGF across its range include habitat loss, fragmentation and degradation of habitat, potentially predation by introduced species (e.g. Eastern Gambusia *Gambusia holbrooki*), infectious disease caused by the amphibian chytrid fungus *Batrachochytrium dendrobatidis*, salinisation, pollution of waterbodies and waterways (e.g. fertilisers, pesticides and toxicants), and impacts from climate change (including direct and indirect/cumulative impacts (Heard et al. 2010). Populations are threatened by increasing urban and industrial development, particularly throughout Melbourne's urban growth areas (DSE 2012).

Research on the species population structure and spatial occurrence emphasised the importance of landscape scale connectivity for the species (Heard & Scroggie 2009). Across most of Victoria, GGF occur in metapopulations made up of discrete populations connected by migration. Metapopulations exhibit changes over time and can go extinct and be recolonised from connected populations (DEWHA 2009, Heard & Scroggie 2009).

The species relies on permanent or semi-permanent still or slow-flowing waterbodies that typically support adequate emergent, submerged and floating vegetation. Open and partially rocky areas are often preferred for basking, and open grassland habitat surrounding waterbodies is required for foraging and dispersal. Individuals overwinter beneath thick vegetation, logs, rocks and other ground debris, and increase activity during warmer months, with breeding occurring in spring and summer (DSE 2012).

2.2.1 Occurrence within the PSP and surrounding landscape

Database searches indicate that GGF have historically been recorded (1972) within 5 kilometres of the study area, along the Hopkins River, noting however that this site is connected to the Merri River catchment not the Hopkins River catchment.

The species was recorded within Tozer Reserve in 2015 by LandTech Consulting as a result of targeted surveys however this record is not available in any public databases. Further targeted surveys by LandTech Consulting in November 2018 did not record any GGF.

Most recently, targeted GGF surveys were undertaken within the PSP study area by TactEcol Consulting (TactEcol) in December 2024 and March 2025. Surveys focussed on the Russell Creek corridor, ephemeral wetlands within Tozer Reserve, and existing farm dams within the PSP on Crown Land and private agricultural land. No GGF individuals were recorded across three nights of quiet listening, call playback and active searching utilising spotlights. TactEcol noted limitations to the surveys, particularly drought conditions, as having likely significantly affected the activity and detectability of amphibians in the study area. It is noted that under favourable conditions, detectability may increase and recolonisation may occur.

Given the previous detection of the species within the PSP and potential habitat, it is possible that Russell Creek and Tozer Reserve could provide dispersal habitat for GGF if habitat improvements were delivered in the broader catchment and water corridor.

2.3 Existing conditions and habitat

The existing conditions of potential habitat within the PSP are based on reviewing relevant background information (see section 2.1) and a habitat assessment undertaken by a Biosis Zoologist on June 6 2025. This assessment involved a walkover of sites previously identified as former or potential habitat, focusing mainly on Russell Creek and Tozer Reserve.

Russell Creek occurs from the east of the precinct running west through its centre, south of Tozer Reserve. It extends approximately 4 kilometres west before draining into the Merri River.

Tozer Reserve exists in the centre of the precinct, stretching north to south from Wangoom Road to Russell Creek. This reserve was donated to the Victorian School Plantation Endowment Scheme in 1926 and is under the ownership of the Education Minister, via the Department of Education. Revegetation programs are managed by students of local schools in the area to which it was donated. Its function as a conservation reserve is not formally reflected in the zoning of the land use, which is Farming Zone.

Photos from Biosis' site assessment are provided in Appendix 1.

2.3.1 Aquatic habitat

Russell Creek provides low-quality potential habitat for GGF in several sections along its length within the PSP area, although due to agricultural practices the creek is generally devoid of native vegetation and is dominated by exotic pasture grass right up to the creek channel. A fenced section of the creek directly east of Horne Road has allowed for dense vegetation growth, that is dominated by exotic grasses and graminoids (TactEcol Consulting 2025).

Within the PSP area, Russell Creek was generally dry during recent site visits, with only some small pools present. The most substantial areas of pooling occurred under the Horne Road Bridge. The site assessment undertaken by Biosis in June 2025 found pooling in some sections of the creek, particularly in the eastern

sections surrounding Horne Road, consistent with TactEcol's observations (Photo 2, Photo 3). The creek has the potential for retaining greater levels of water under more favourable conditions and management of the corridor.

Most of the dams scattered around the study area were found to be dry during the TactEcol surveys. The Crown Land dam contained some water, although it contained no vegetative cover. This dam is unfenced and shows evidence of stock grazing right up to the water's edge.

Ephemeral wetlands have been recorded within Tozer Reserve and have been described as providing the greatest potential for relic populations of GGF to exist (LandTech Consulting 2019). Five sites have been documented with varying water levels, aquatic vegetation diversity and quality. These include:

- Three ephemeral wetlands
- One quarry area
- One wetland soakage
- One open grassland area
- One artificial drainage line, to the south of the site.

These sites were described by LandTech in 2019 as requiring ongoing maintenance to sustain key GGF habitat requirements. They are dominated by exotic pasture grasses which require long-term restoration.

Both Biosis and TactEcol (2025) were unable to identify these as wetlands as they had undergone significant degradation and drying since the previous surveys. On site inspection in June no wetland vegetation was identifiable. There was evidence of a drainage line in the eastern side of the reserve and a constructed drain in the southern part of the site. The Black Wattle *Acacia mearnsii* plantation was very dense and lacked understorey vegetation. Weed coverage and pasture grasses were extensive throughout large areas of the reserve.

2.3.2 Terrestrial habitat

Vegetation across the study area is generally grazed exotic pasture grass, with some sporadic native grasses and sedges/rushes remaining in lower areas or drainage lines.

The western and eastern extents of the creek within the PSP have retained a material cover of native graminoids. As discussed, the remainder of the creek is generally devoid of native species and significantly disturbed by livestock grazing and thus unlikely to currently provide suitable GGF habitat. Where there is a lack of native vegetation, it appears that cattle grazing has been occurring up to the creek, resulting in erosion, pugging and soil compaction.

TactEcol noted that not all areas of the PSP were able to be accessed, and areas were identified, such as within the property directly adjoining the north-east of Tozer Reserve along Wangoom Road and containing areas of dense graminoids, and thus potential habitat. Biosis did not access this property during the site inspection.

2.4 Legislative context and conservation guidelines

2.4.1 Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)

The EPBC Act is administered by the Department of Climate Change, Energy, Environment and Water (DCCEEW), and establishes a Commonwealth process for the assessment of proposed actions that are likely to have a significant impact on matters of National Environmental Significance (MNES). GGF is listed as vulnerable under the EPBC Act, and therefore any action proposed that is likely to have a significant impact on an important population of GGF requires approval from the federal environment minister, via DCCEEW.

The following measures are recommended by the *Significant impact guidelines for the vulnerable growling grass frog (Litoria raniformis)* (DEWHA 2009) if there is known to be an important population supported by the affected land:

- *Retain habitat known or likely to contain the growling grass frog, and manage the species.*
- *Retain terrestrial habitat and dispersal corridors:*
  - *Incorporate buffer zones of at least 200 metres, and 350 metres around water bodies in temperate and semi-arid zones respectively.*
  - *Maintain dedicated terrestrial habitat corridors, of a minimum 100 metres in width.*
  - *Maintain existing hydrological regimes.*

As there in no known population of GGF supported within, upstream or downstream of the study area, development is unlikely to have a significant impact on the species. The guidelines also provide guidance on managing habitat and principles can be applied to the strategy development, which are applicable to the strategic approach for the PSP:

- *Enhance habitat quality:*
  - *Carefully remove weeds and replace with Indigenous submergent, floating and emergent vegetation in and around water bodies. In weedy areas that support growling grass frogs, weeds need to be gradually removed and replaced by natives. Any drastic and sudden removal of weeds in areas supporting growling grass frogs may have a negative effect on the species.*
  - *Maintain open (unvegetated) areas within water bodies, potentially by increasing water depth in some sections.*
  - *Remove or manage exotic fish (for example mosquitofish, carp and redfin). If required, drainage of water bodies to eliminate fish should occur during times of the year when there are few or no tadpoles present.*
  - *Improve terrestrial habitat through provision of logs, rocks and riparian vegetation etc., to provide a diversity of overwintering habitat.*
  - *Manage terrestrial weeds (manually, and without chemicals).*

2.4.2 Conservation Advice for *Litoria raniformis* (southern bell frog) (DCCEEW 2024)

The conservation advice guides conservation and action planning for GGF. Most relevant to this strategy are the conservation and management priorities for human disturbance. These include:

- Providing buffers around key waterbodies that allow for the natural creation of additional breeding habitat during flooding and provide sufficient area for foraging and dispersal between sites. This is recommended to be between 50 and 100 metres.
- Maintaining and/or creating dedicated terrestrial habitat corridors, of greater than 100 metres width.
- Ensuring water quality is maintained or improved.

- Improving aquatic habitat quality through revegetation with appropriate native aquatic plants.
- Improve habitat availability and connectivity through targeted wetland cluster construction and restoration activities.

2.4.3 Melbourne Strategic Assessment: Growling Grass Frog Habitat Design Standards (DELWP 2017)

The Habitat Design Standards (the standards) were created as a result of the *Biodiversity Conservation Strategy for Melbourne's Growth Corridors and Sub-regional Species Strategy for the Growling Grass* Frog (DEPI 2013) and provide detailed guidance on the construction and maintenance requirements for Growling Grass Frog habitat. Though the East of Aberline PSP is not part of the Melbourne Strategic Assessment (MSA), the guidelines are applicable to this strategy.

The standards will be useful in guiding the placement of off-stream GGF wetlands, and thus the amount of land designated to drainage/conservation, informing additional terrestrial habitat buffers as necessary at the Russell Creek Masterplan phase.

2.5 Previous recommendations

Recommendations regarding GGF protection in the East of Aberline PSP have previously been made by both EHP and TactEcol, resulting from their respective technical work. This section will provide a summary of those recommendations.

2.5.1 Growling Grass Frog Study – Arborline to Horne Road – Future Urban Growth Area (LandTech 2019)

- Provides wetland-level and landscape-level design objectives for habitat management, in addition to ongoing surveys determining the study area occupancy by the frog.
- Emphasises importance of immigration to the study area from neighbouring populations due to a lack of deep wetlands that remain inundated year-round.
- Recommends two key actions for GGF:
  - Habitat protection – by preserving and maintaining existing wetlands and waterways in which they are likely to occur.
  - Habitat enhancement – improving existing wetlands close to the focal population so that they can be colonised by GGF and support neighbouring populations.

Habitat protection measures

- All remaining and suggested additional habitat sites should be permanently fenced.
- Buffer and protect Tozer Reserve:
  - Suggested that an additional 10-25 metre buffer around Tozer Reserve be created to protect habitat for GGF, as well as other bird, small mammal and reptile species.
- Feral and domestic animal control.
- Community education and participation:
  - Supporting revegetation of conservation areas with the help of volunteer programs and school programs.
- Sediment traps prior to Russell Creek to control and reduce sediment movement into the catchment.

Habitat enhancement measures

- Revegetation of Russell Creek corridor:
  - Multi-layered restoration of Swamp Scrub vegetation within at least the 5 metre creek Crown reserve. Habitat features would naturally develop if the whole corridor was revegetated, over time.
- Hydrological reinstatement:
  - Revegetating the corridor, thus allowing for the vegetation, back ponding and debris to slow the flow of water through the catchment.
- Create reserves around existing dams.

2.5.2 Existing Ecological Conditions: East of Aberline Growth Corridor, Warrnambool, Victoria (EHP 2025)

- Creation of a *biolink* through the study area using Russell Creek.
  - This is to provide suitable habitat for mobile fauna to move through the landscape, and to/from Tozer Reserve.
  - The biolink should be as wide as possible, with a minimum buffer from the creek of 20 metres, plus any area reserved for open space. This would be a non-disturbance habitat buffer, excluding roads, shared paths or other recreational uses.

2.5.3 Targeted Fauna Surveys: East of Aberline (TactEcol 2025)

- Establish and maintain a riparian buffer along the entire length of the Russell Creek corridor:
  - Suggests a minimum 15 metre buffer either side of the creek, exclusively for the revegetation of indigenous ecological vegetation classes (EVCs), avoiding the planting of trees and woody shrubs growing to over 2 metres, which are known to be negatively correlated with the presence or relative abundance of most of the target species (GGF, Swamp Skink, Southern Toadlet and Glossy Grass Skink).
  - Similar to the above *biolink,* recreational uses should be restricted within the minimum riparian vegetation buffer. This could be done via fencing.
- Establish wetland habitat:
  - Creation of in-stream wetlands as part of the Russell Creek corridor to provide suitable breeding habitat for GGF, and habitat for other native fauna species.
  - Retain dams and other wetlands where consistent with planning objectives for the precinct. These dams should be protected and enhanced, in line with the principles outlined in the *Guidelines for managing the endangered Growling Grass Frog in urbanising landscapes* (Heard et al. 2010), and the Habitat Design Standards (DELWP 2017).
- Maintain and enhance the ecological values of Tozer Reserve.
  - Weed control, revegetation and reinstating wetlands and hydrological regimes.
- Development of an Environment Management Plan, outlining the objectives, management measures and performance criteria, and monitoring approach for retained conservation areas, to ensure that ecological values are protected and enhanced following the rezoning, and subsequent development, of the precinct.

3 Recommended conservation area

3.1 Conservation area purpose

Based on the most recent targeted surveys undertaken by TactEcol in 2025, GGF is likely to be locally extinct within the precinct. However, due to limitations in the study, this cannot be confirmed with certainty. The purpose of the conservation area is to enhance GGF dispersal habitat within the precinct and complement any future strategic improvements to the connected waterways that could facilitate recolonisation of the precinct via Russell Creek.

The conservation benefits of the precinct should focus on enhancing the existing natural values and broader biodiversity values, beyond just the potential for recolonisation of GGF, to support local fauna populations.

There are two key aspects of the conservation strategy:

- Restoration and enhancement of Russell Creek
- Management and enhancement of Tozer Reserve.

The area has been determined based on the findings of this study and previous ecological studies and targeted surveys undertaken within the precinct, as well as state and commonwealth guidance relevant to the protection and management of the species and its habitat.

3.2 Boundary of the conservation area

This section will discuss the potential conservation area boundary based on previous studies of the area conducted to date, and the Place-based Plan provided to Biosis by the VPA in July 2025 (Appendix 2).

The conservation area is recommended as a 20 metre buffer either side of Russell Creek, and is complemented by the drainage land shown in the VPA's current Place-based Plan. These buffers are discussed further below.

Opportunities exist for additional habitat creation and improvement within the conservation area. The creation of additional habitat is likely to increase the suitability of the site for GGF and assist in mitigating negative impacts associated with adjacent urbanising landscapes. It is expected that the dedicated GGF wetlands may be recolonised by the species over time, if constructed and managed suitably and landscape wide habitat improvements occur.

Russell Creek corridor

The Russell Creek corridor may provide an important dispersal corridor for GGF in the broader landscape, and is an important biodiversity linkage for the movement of fauna species through the PSP, connecting surrounding areas to Tozer Reserve.

According to the *Conservation Advice for Litoria raniformis (southern bell frog)* (DCCEEW 2024), it is important to the long-term occupancy of GGF wetlands in the precinct that they are adequately clustered and connected by appropriately (not overly) vegetated tracts of land. Thus, the Russell Creek corridor drainage buffer may play an important role in supporting any local and regional populations of GGF.

We recommend the creation of a 'habitat zone' of at least 20 metres either side of Russell Creek for a riparian corridor that is vegetated to support habitat features for GGF such as floating, submergent and emergent

vegetation, rocks for basking, a variety of slopes to be incorporated into the design of banks and elements in the creek design to slow and retain pools of water in-stream. This area should exclude roads, shared paths or recreational uses as per the Habitat Design Standards.

The draft Place-based Plan, shows 70 metres of drainage land along the creek, equalling a 35-metre buffer from the creek centreline on either side. That provides sufficient opportunity to create a landscaped reserve that achieves the complementary objectives of biodiversity enhancements, drainage and public amenity.

This land should be treated as both drainage and conservation. Examples of land serving these purposes are shown in the Officer South Employment PSP as 'Drainage within conservation area'. The conservation area could be subject to requirements such as clear signage and minimal crossings of the creek, as appropriate to the Place-based Plan. Any road crossings should be in accordance with the Growling Grass Frog Crossing Design Standards (DELWP 2017b).

The habitat zone and adjacent creek reserve should be revegetated with layered planting of species from the Swamp Scrub EVC (EVC 53) and Plains Grassy Woodland EVC (EVC 55_61), though avoid dense plantings of trees and shrubs that may cause shading of aquatic habitat.

A masterplan is recommended to achieve the appropriate biodiversity, public access and amenity outcomes.

Tozer Reserve

Tozer Reserve is an important asset within the East of Aberline PSP for retaining and improving biodiversity values, as well as providing future residents with a large area of open space.

While previously found to contain ephemeral wetlands and a potential record of GGF in 2014, the habitat values have since degraded significantly to a point where it is very unlikely to support a population of the species. Photos from June 2025 (Photo 9, Photo 11) show the area as supporting few areas suitable for GGF habitat. Despite this, the reserve has depressions and channels (Photo 8, Photo 10) which, if suitably managed, could support ephemeral wetlands, hydrological connection to Russell Creek, and appropriate habitat for GGF and other local fauna.

Retained as a conservation area within the PSP, Tozer Reserve should be included in a future Russell Creek Masterplan to explore opportunities to improve the hydrological function of previously functioning ephemeral wetlands and drainage channels, as well as enhance habitat values for GGF and other local flora and fauna.

Masterplan principles for Russell Creek and Tozer Reserve

The revegetation and management of Russell Creek and Tozer Reserve should aim to support a potential future population of GGF and provide habitat linkages for other local flora and fauna. The masterplan should include, but not be limited to, the following principles:

- Wetland-level and landscape-level design objectives for habitat management, by:
  - Preserving and maintaining existing wetland features and waterways in which they are likely to occur or repopulate
  - Improving potential wetlands so that they can be colonised by GGF and support neighbouring populations.
- Creation of a 20 metre riparian habitat buffer/biolink either side of Russell Creek for its length across the PSP, to provide suitable terrestrial habitat for Growling Grass Frog, and provide a non-disturbance area for the use of other local fauna. This buffer is to exclude roads, shared paths or other recreational uses.

- Suitable management of drainage land adjected to the habitat zone in line with the standards, such as avoiding shading of the habitat area and planting of appropriate local EVCs.
- Delineate clearly the habitat zone from other open space. This can be done via appropriate planting of native vegetation, signage, and placement of footpaths and shared paths.
- Hydrological reinstatement of Russell Creek and Tozer Reserve.
- Establishment of in-stream and offline wetlands as part of the Russell Creek corridor to provide suitable breeding habitat for GGF and habitat for other native fauna species. Any wetland restoration within Tozer Reserve should be in accordance with the standards. An example of appropriate wetland features is shown in Figure 3.
- Outline the objectives, management measures, performance criteria and monitoring approach for retained conservation areas, to ensure that ecological values are protected and enhanced.

3.3 Areas not recommended for inclusion in conservation areas for GGF

Crown Land dam (properties 22 and 23)

The Crown-owned farm dam on properties 22 and 23 is not a priority for conservation/wetland habitat creation through the PSP planning process. This is based on the current Place-based Plan, connectivity to other potential habitat, and the lack of any suitable vegetation/habitat for Growling Grass Frog.

While it does have the potential to support GGF through appropriate revegetation, it is not in a location that is well connected to Russell Creek and Tozer Reserve. The approximately 270 metres between the dam and the creek would need to be managed as conservation reserve, with suitable vegetation and habitat features in alignment with the habitat design standards. The area of this reserve would equate to approximately 2.3 hectares, plus any area used as terrestrial habitat buffered around the dam. Further, GGF were not recorded in this location as part of the targeted surveys undertaken.

The property could be managed as a wetland ongoing and have local biodiversity benefits however its retention in the future urban development should not rely entirely on the restoration and management for GGF habitat.

Privately-owned farm dam (property 3)

Similarly to the Crown Land dam, this dam is not a priority for conservation/wetland habitat creation through the PSP planning process. The dam is approximately 0.02 hectares in size and located 200 metres west of Tozer Reserve. The dam will be isolated from Tozer Reserve by a north-south arterial road, and from Russell Creek by urban development.

3.4 PSP recommendations

PSP requirements

The Precinct Structure Plan should clearly provide for the conservation and restoration of Russell Creek and Tozer Reserve. This could be feasibly achieved through the delivery of a Russell Creek Masterplan. This could include Tozer Reserve, or a separate Land Management Plan could be created, considering the above recommendations. Given the fragmented ownership of land within the PSP, and size of each section adjoining Russell Creek and/or Tozer Reserve, this requirement could feasibly be applied to each developer's relevant

section, rather than coordinating the entirety of the masterplan. Guidance on preparing and delivering the masterplan should thus be included within the PSP requirements and guidelines where appropriate.

The masterplan for Russell Creek should include:

- Signage and public art that acknowledge the biodiversity values of the creek corridor.
- Vegetation plan in line with the Swamp Scrub EVC and Plains Grassy Woodland EVC
- In-stream pools of low-flowing water, natural barriers to water flow and varying bank grades.

The creation of a masterplan would allow for a consistent approach for the restoration of the conservation area and clear direction for adjacent development. An example of such a requirement could be:

In addition to any other requirements of the planning scheme, an application that includes areas designated as conservation must be in accordance with the Russell Creek Masterplan.

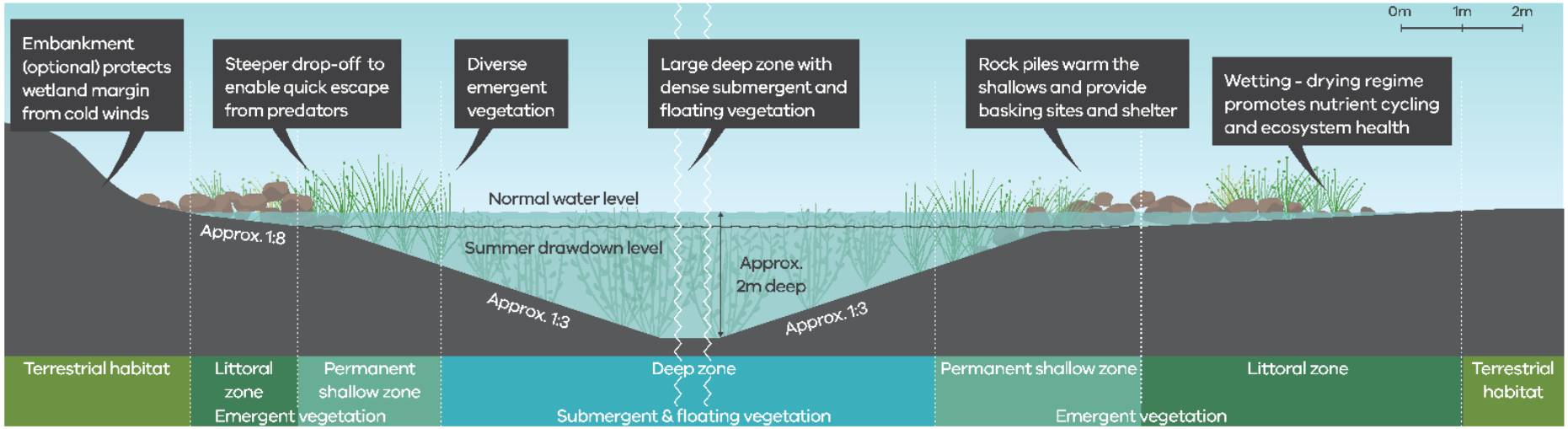
Other requirements and guidelines detailed in the PSP could include the following:

- Public pedestrian, potential equestrian paths (where feasible), local roads and infrastructure must be located outside drainage and waterways and the conservation area/habitat zone.
- Any proposed development or works within a conservation area must obtain the approval of DEECA, and must generally be in accordance with the corresponding Russell Creek Masterplan/Land Management Plan.
- Development adjacent to the conservation area must:
  - Ensure suitable hydrological patterns necessary for the ecological requirements of Matters of National Environmental Significance are maintained in the conservation areas.
  - Maintain passage for fauna species.
- The design and construction of any bridge crossing of Russell Creek must:
  - Be designed to minimise impacts on Matters of National Environmental Significance.
  - Be consistent with any relevant approved Masterplan/Land Management Plan.
- Planning permit applications adjacent to conservation areas must be accompanied by a Construction Environmental Management Pan which includes conservation area protection measures, and set out in any relevant approved Russell Creek Masterplan/Land Management Plan.

Other recommendations

- The creation of a conservation/land management plan for Tozer Reserve, detailing:
  - Weed control, revegetation and reinstating wetlands and hydrological regimes.
- Shared funding across the precinct for the construction of the wetland habitat within Tozer Reserve and adjacent to Russell Creek, and if appropriate the restoration and improvement works within Tozer Reserve.
- Acknowledge the need for GGF habitat improvements in the broader landscape to encourage recolonisation of the constructed habitat areas.
- Undertake future monitoring at the completion of the habitat construction to determine if recolonisation of the habitat has occurred.

Figure 3 Example of suitable GGF wetlands design, taken from the *Growling Grass Frog Habitat Design Standards Melbourne Strategic Assessment* (DELWP 2017a)



4 Conclusion

The strategy includes an outcome to ensure that Tozer Reserve and Russell Creek are able to provide suitable habitat for GGF, with the aim of allowing future repopulation by the species. It aims to provide guidance on the inclusion of conservation land within the precinct to which future, detailed, management plans can be prepared and implemented. A primary objective is to set aside appropriate conservation area which is to protect and regenerate biodiversity values along the creek corridor and conservation area within Tozer Reserve.

The objective of the conservation area is to support possible recolonisation of GGF within the region and provide dispersal opportunity for any surrounding populations. It aims to achieve this by:

- Improving the condition of lower quality instream habitat
- Protecting and enhancing terrestrial habitat in areas adjacent to the creek and wetlands
- Regenerating areas of terrestrial habitat that are degraded from historical land uses
- Providing for the creation of off-stream habitat.

In addition to supporting possible recolonisation by GGF within Russell Creek and Tozer Reserve, the strategy identifies that the conservation area will contribute to the protection and ongoing management of potential habitat for other native fauna, as well as provide a movement corridor.

5 References

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APPENDICES

Appendix 1 Photos of the conservation area

Photo 1 **Looking west along Russell Creek east of Horne Road, toward Tozer Reserve**

Photo 2 **Fence across Russell Creek. Cattle damage on banks, looking west**

Photo 3 **Small pool on a bend, just east of Horne Road, looking west.**

Photo 4 **Fenced section of Russell Creek, dominated by non-indigenous planting, looking east**

Photo 5 **Eastern side of Horne Road culvert**

Photo 6 **Russell Creek erosion/cattle damage, looking east from south of Tozer Reserve**

Photo 7 Vegetated section of Russell Creek, looking east from Aberline Road

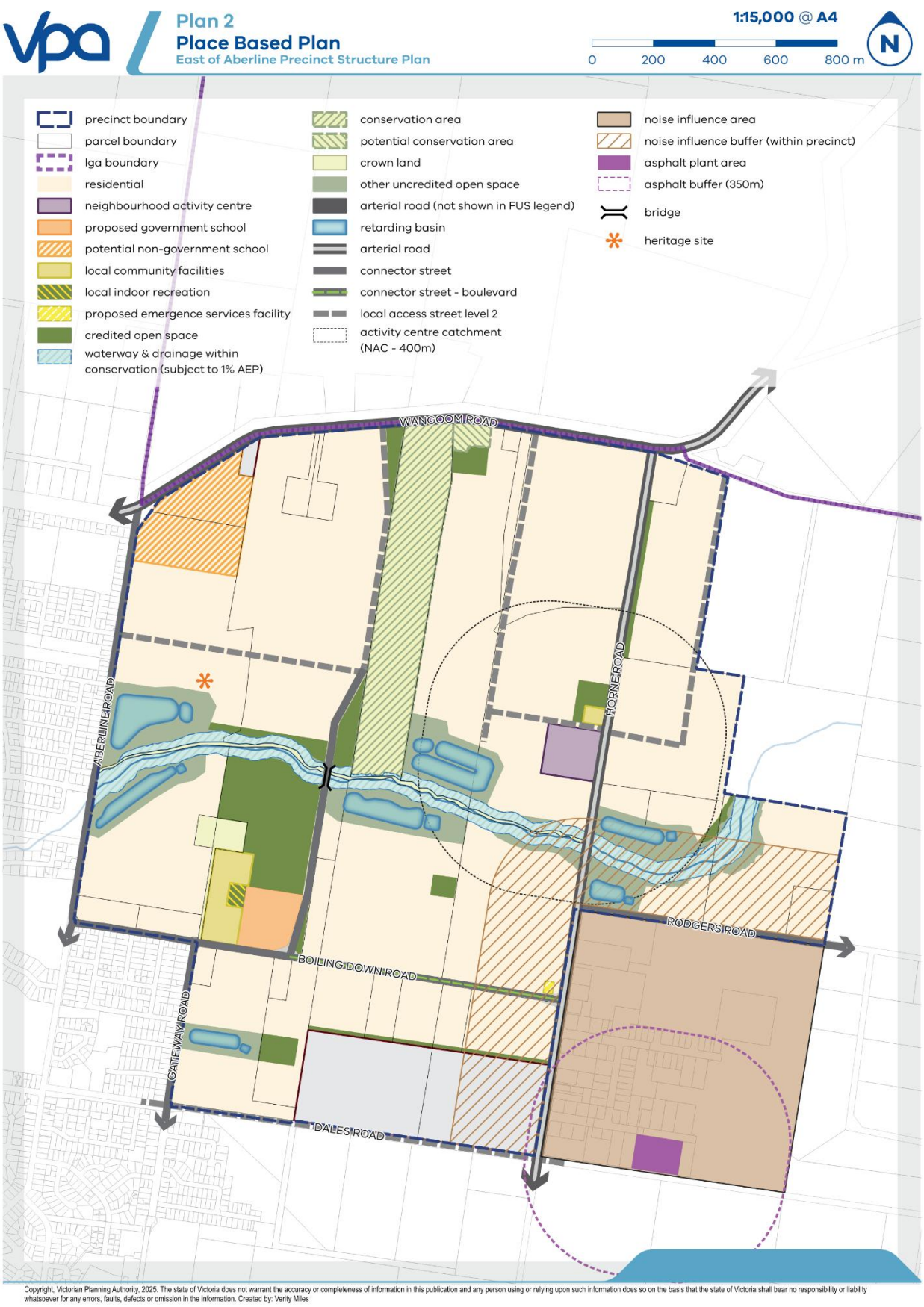
Photo 8 Dry drainage line in southern section of Tozer Reserve

Photo 9 **Low lying/drainage line in eastern section of Tozer Reserve, looking north**

Photo 10 **Potential old quarry, in northern section of Tozer Reserve**

Photo 11 Western boundary of Tozer Reserve, looking south across area previously identified as GGF habitat.

Appendix 2 East of Aberline Place-based Plan (July 2025)

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