

# 165 - 195 O'Herns Road, Epping: Edgars Creek Management Plan

Prepared for Alliance Business Park Pty Ltd

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## Summary

Biosis Pty Ltd was commissioned by MAB Corporation (MAB) to prepare a Management Plan for the reach of Edgars Creek within 165 - 195 O'Herns Road, Epping. The property is proposed to be developed into an industrial estate.

The priority for the management of this section of Edgars Creek will be to maintain habitat corridor suitable for the movement of Growling Grass Frog *Litoria raniformis*. Edgars Creek is recognised as an important dispersal corridor for Growling Grass Frog (GGF) in the Epping area and it is important that habitat connectivity is maintained along its length to link populations upstream and downstream of the study area.

This plan documents the actions that Alliance Business Park has committed to undertake to ensure that habitat connectivity is maintained along Edgars Creek and incorporates the following principles:

- Establishment of an average 50 m wide corridor along each side of Edgars Creek, which is will be protected by an appropriate on-title agreement.
- Protection of the creek during the construction phase of the development.
- Ongoing management of habitat within the creek corridor to maintain and improve its value as habitat for Growling Grass Frog.
- Manage the habitat of known populations of threatened plant species in the west of the creek corridor.

Alliance Business Park is responsible for implementing the actions outlined in this plan until management of the creek corridor is handed over to the relevant responsible authority (expected to involve Whittlesea Council and Melbourne Water). Implementation of the actions outlined in this plan will then become the responsibility of the new land owner. This plan will be implemented over a 10 year period but the requirement to manage this corridor to provide suitable habitat for Growling Grass Frog is permanent. The plan should be reviewed every 2 years.



## 1. Introduction

## 1.1 Project background

Biosis Pty Ltd was commissioned by MAB Corporation to prepare an Edgars Creek Management Plan (ECMP) for the reach of Edgars Creek within the Alliance Business Park at 165 - 195 O'Herns Road, Epping (Figure 1). The broader property covers 31.5 ha and is proposed for industrial development. However, a corridor averaging about 50 m either side of the creek (as determined by other site constraints) is proposed to be retained within the subdivision to maintain habitat continuity for populations of Growling Grass Frog *Litoria raniformis* known to occur to the north and south of this property (Figure 2).

The site supports several Matters of National Environmental Significance (MNES) protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) including a population of Golden Sun Moth *Synemon plana*, a small population of Matted Flax-lily *Dianella amoena* and small remnants of the Natural Temperate Grassland of the Victorian Volcanic Plain (Figure 2) as well as potential habitat for the Growling Grass Frog (GGF). The biodiversity values of the site are documented in Biosis (2017).

Due to the presence of MNES on the site, the proposed subdivision was referred to the Australian Minister for the Environment to determine if approval was required under the EPBC Act (Referral 2017/7930). The proposal was deemed by the Department of Environment and Energy (DoEE) to be a controlled action and one of the requirements for the project approval was the preparation of a Growling Grass Frog Conservation Management Plan (CMP) for the relevant section of Edgars Creek. The state Department of Environment, Land, Water and Planning (DELWP) also included a condition within the planning permit for the subdivision as follows:

An Edgars Creek Management Plan must be prepared to the satisfaction of the Department of Environment, Land, Water and Planning that includes the revegetation, translocation, and GGF habitat issues. When approved the Plan will be endorsed by the Responsible Authority and form part of this planning permit.

This plan encompasses the requirements of both DELWP and DoEE.

### 1.2 Scope

This plan deals with the management of the Edgars Creek corridor, primarily to maintain its value as dispersal habitat for GGF. It also deals with the management of these values in the context of construction activities associated with the development outside the creek corridor as these have the potential to impact on the values within the corridor itself. It also deals with proposals to control weeds within the creek corridor, revegetate native grassland and woodland habitats along the corridor and manage the occurrence of Matted Flax-lily (Figure 2).

The area directly covered by CMP is shown in Figure 2.







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Ballarat, Brisbane, Canberra, Hobart, Melbourne, Newcastle, Sydney, Wangaratta & Wollongong Figure 1 Location of the area affected by the Edgars Creek Management Plan, 165 - 195 O'Hearns Road, Epping, Victoria



Acknowledgements: Vicmap ©State of Victoria





### 1.3 Objectives

The objectives of this plan are to identify the necessary management actions which will:

- Protect the functioning Growling Grass Frog habitat corridor along Edgars Creek during construction.
- Allow for the long-term maintenance of Edgars Creek as habitat for Growling Grass Frog, by ensuring that animals can move unimpeded along the creek corridor.
- Improve habitat values along the creek corridor to benefit Growling Grass Frog.
- Protect and maintain other biodiversity values including habitat for threatened fauna (i.e. Golden Sun Moth *Synemon plana*), flora (i.e. Matted Flax-lily *Dianella amoena*) and vegetation communities (i.e. Natural Temperate Grassland of the Victorian Volcanic Plain which equates to Plains Grassland).

### 1.4 Timeframe and implementation

This plan will be implemented over a 10 year period although the requirement to manage this corridor to provide suitable habitat for Growling Grass Frog is permanent. The CMP should be reviewed every 2 years.

Implementation of the plan will be the responsibility of Alliance Business Park until such time as ownership of the creek corridor is transferred to the responsible authority (most likely either Melbourne Water or the City of Whittlesea). Implementation of the actions outlined in this plan will then become the responsibility of the new land owner.



## 2. Conservation Management Plan

The southern third of 165 – 195 O'Herns Road is traversed by Edgars Creek, an ephemeral waterway supporting native riparian vegetation. GGF is known to occur in constructed wetlands on Edgars Creek to the north of and south of O'Herns Road (Biosis Research 2012). It is likely that GGF use Edgars Creek to disperse throughout the landscape, including the section within this eastern extension of Alliance Business Park. Within the study area, Edgars Creek currently supports few inherent habitat values for GGF activity other than its value as a route for dispersal. There are no areas within the study area that are likely to be used as a breeding site and targeted survey within the study area failed to detect the species (Biosis 2017).

To protect existing native vegetation and maintain habitat connectivity along Edgars Creek for GGF, a corridor of about 50 m either side of Edgars Creek will be excluded from development. The width of the corridor is constrained at the southern end of the creek by the defined location of Edgars Road and the existing road network surrounding this extension to Alliance Business Park. Melbourne Water also require a stormwater treatment wetland to be constructed on the northern side of the creek, just east of centre within the creek corridor. However this wetland will be constructed to provide potential breeding habitat for GGF and therefore enhance the local habitat for this species.

### 2.1 Pre-construction management actions

#### 2.1.1 Establish and protect Edgars Creek corridor

The creek corridor needs to be protected by means of on-title agreement, zoning and/or planning overlay provisions. The Whittlesea Planning Scheme may need to be amended accordingly once the boundaries of the creek corridor are accurately defined by survey.

#### Actions

MAB in consultation with City of Whittlesea and DELWP will determine and implement a suitable protection mechanism (e.g. a Section 173 agreement, Conservation Covenant or zoning and/or overlay provisions) to protect the creek reserve once the boundaries are formally defined. This will ensure ongoing management to maintain GGF habitat values as required under the EPBC Act and the planning permit.

#### 2.1.2 Fencing

Temporary protection fencing will be required during construction to protect the creek corridor. Such temporary fencing will clearly identify the creek corridor as a No Go Zone for any works or associated activities (i.e. materials storage, dumping or vehicle parking). In the longer term, the creek corridor will need to be delineated and protected through the installation of appropriate fencing (e.g. post and steel cable) to prevent illegal vehicular access and to clearly define the reserve boundary for management purposes. Any fencing will allow adequate and secure access for management vehicles only.

#### Actions

Alliance Business Park will install secure temporary fencing clearly delineating the creek corridor prior to any construction works.

'No go Zone' signs will be attached to all temporary fencing will be along the creek corridor to ensure contractors do not drive in or dump waste or store materials within the creek corridor. These signs will remain in place for the duration of the construction period.



After the construction period has finished, suitable sturdy fencing (e.g. post and steel cable or similar) will be installed along the boundary of the creek reserve to prevent unauthorised vehicle access. This fencing will be maintained in good repair in perpetuity.

### 2.2 Construction management actions

#### 2.2.2 General construction management

The creek corridor will be protected through the construction phase by implementing the following actions.

#### Actions

*Induction of all construction and site personnel will include information about GGF and its habitat within the development area, along with protection measures that will be in place and enforced during the construction period.* 

*If construction works are required within the proposed reserve (e.g. for drainage purposes), pre-construction survey for the GGF will be undertaken in areas of potential habitat.* 

Any GGF found will be salvaged if appropriate under a protocol approved by DELWP.

*Construction trenches near the creek reserve will be monitored daily (in the event that any trench is left open overnight).* 

Contractors will be inducted on the protocol to follow if GGF are found within a trench or work area.

*Rehabilitation and revegetation works along Edgars Creek will take account of the habitat requirements of the species, in accord with advice from a zoologist experienced with the species' habitat.* 

Dust will be controlled during construction to prevent deposition on native vegetation in the creekline. Measures will include:

- ~ minimise extent of exposed soil and/or soil stockpiles
- ~ water as required to suppress dust emission
- ~ revegetation / stabilisation of bare soil.

Sediment control fences (e.g. geotextile or similar) will be placed at the limit of construction fence to prevent contaminated water and silt from entering the reserve. This fencing will have the dual effect of reducing the capacity for GGF to move away from the creek and into works areas. While not specifically a frog-proof design, observations suggest such fencing (provided it is maintained) can act as a deterrent to frog movement.

Earth and debris will not be pushed through fences into the reserve.

Protective fencing and sediment control measures will be regularly inspected and maintained in good repair at all times.

#### 2.2.3 Proposed Stormwater Ponds

It is imperative that habitat connectivity for GGF is maintained along Edgars Creek. The construction of a series of off-line stormwater management ponds are required by Melbourne Water on the northern bank Edgars Creek. The following actions will be adhered to so that this infrastructure provides habitat for GGF and works during its construction do not degrade the habitat within Edgars Creek. Such ponds will therefore be constructed in a manner consistent with the requirements outlined by Heard *et al.* (2010)

These wetlands will provide a focal point of frog activity, thereby increasing the likelihood that frogs will reside within these wetlands and potentially breed. Wetlands will be designed to include the following features:

These waterbodies will be designed in consultation with an appropriately qualified person/s.

A variety of slope and water depth.



A variety of edge types.

Different microhabitats such as rocks and vegetation to create a diversity of habitats.

Minimum surface dimensions of 15-20m x 12-15m (180 – 300m2 surface area).

Plantings of locally indigenous wetland plants with floristics, composition and structural characteristics and plant orientation resembling habitat used by GGF elsewhere. Vegetation is to be planted in three distinct zones: 1) shallow verge zone, located along the banks of wetlands; 2) emergent macrophyte zone dominated by emergent aquatic or semi-aquatic, and located within the waterbody; 3) submerged and floating vegetation zone (i.e. inundated up to 1.2 metres). A list of plants that can be used for wetland establishment is provided in Appendix 1.

Bottom depths grading to a minimum of 1.5 metres containing shallower areas that will dry out periodically, and deeper sections, which will hold water permanently.

A design, including the aquatic plants, to minimise suspension of particulates as this is important for tadpole development.

No plantings of trees or large shrubs that will densely shade wetlands as this renders them unsuitable for GGF.

*Refuge sites such as rock piles and large woody debris around the edges of wetlands and the creek banks. The spaces between refugia and their orientation vary to optimise habitat variability.* 

Rocks or boulders can be sourced from construction areas within the development and can be relocated along the creek as additional habitat.

The capacity to drain them if unwanted fish or pollution enter the waterbody.

Artificial lighting (e.g. street lights) near the stormwater ponds will be designed to avoid light spill from the road.

No obstructions such as rocks or other debris will be placed within the creek during construction.

Protection of Edgars Creek during the construction of these stormwater wetlands and the surrounding infrastructure will be conducted in a manner consistent with best practice sediment control (i.e. referring to EPA 1996 as amended, EPA 1991 and EPA 2004). No works or construction activities will occur within the creek corridor outside the defined footprint for the stormwater wetlands (Figure 2).

### 2.3 Habitat management

#### 2.3.2 Biomass control in terrestrial areas

It is likely that Council will require a regular biomass control program to be implemented within the creek corridor to prevent any potential fire hazard. There is also evidence to suggest that GGF may avoid using areas of thick biomass as it impedes their ability to move and forage effectively (Heard *et al.* 2008).

Much of the creek corridor is typified by infestations of grassy weeds such as Chilean Needle-grass *Nassella neesiana* and Toowoomba Canary-grass *Phalaris aquatica*. This is currently grazed by stock and Kangaroos and these animals are effective in reducing biomass in years of average rainfall. However, once stock are removed a dense grassy sword is likely to quickly develop in the creek reserve. This will compromise the conservation values of the creek corridor through competitive exclusion.

Biomass reduction will also benefit any Golden Sun Moth populations retained within the creek corridor, as this species requires the maintenance of relatively open grassland for successful reproduction and will also assist with the control of weeds.

The reserve has an abundance of embedded rock, which makes slashing problematic. However, there are some areas that could conceivably be slashed. Other areas could be subjected to periodic controlled burning (subject to Council approval) or slashing with a "whipper-snipper" (or equivalent).



There is some potential for biomass control to negatively affect individual GGF through direct mortality (killed during slashing or burning) or indirectly (increased predation from being exposed following removal of vegetation). However, this is likely to be a relatively low risk and is more than offset by the increased improvements in habitat quality. To reduce this risk, no more than 50% of the creek reserve should be burnt or slashed in any one year. This will provide a protected area where biomass control has not been undertaken and hence be a fire a refuge for fauna such as GGF.

#### Actions

A regime of annual slashing will be undertaken in those parts of the creek reserve where slashing can be achieved. These areas will be delineated and mapped for slashing contractors.

All slashing equipment used for biomass control will be free of weed seeds.

Where possible, burning will be undertaken annually within the creek reserve, but burning will only be applied to 50% of the reserve in any given year.

In particular burning will provide biomass control for vegetation associated with populations of threatened plant species in the east of the creek reserve (Figure 1).

#### 2.3.3 Weed control

Weed levels in the reserve area are very high. Weeds include the highly invasive Chilean Needle-grass and other introduced perennial grasses including Toowoomba Canary-grass Brown-top Bent *Agrostis capillaris* and potentially the State prohibited noxious weed Lobed Needle-grass *Nassella charruana*. Thistles (Spanish Artichoke *Cynara cardunculus* and Spear Thistle *Cirsium vulgare*) are also prominent in several areas. Eradicating and even controlling perennial grassy weeds within the reserve would prove extremely difficult and may be prohibitively costly although any occurrence of Lobed Needle-grass will be the target of State funded control measures. For this reason, and because Chilean Needle-grass is a food plant for Golden Sun Moth, a reduction in the extent of these grassy weeds (except for Lobed Needle-grass) in the reserve is not required as part of this plan.

However, more intensive weed control works around the remnant patch of Plains Grassland and associated threatened flora populations will occur in the west of the reserve (Figure 1). Vegetation management objectives for the northern bank of the reserve on its western margin will include the targeted reduction of all grassy and herbaceous weeds to less than 10% of the vegetation cover over the ten year timeframe of this plan.

Woody weeds such as Sweet Briar *Rosa rubiginosa*, Hawthorn *Crataegus monogyna*, and African Boxthorn *Lycium ferocissimum* within the reserve will be managed to eliminate their occurrence within five years of the initiation of this plan.

#### Actions

Weed levels within the reserve will be monitoring every 2 years from the commencement date of this plan.

All woody weeds will be promptly eradiated from the reserve.

Spanish Artichoke and Spear Thistle will be eradicated within the reserve within 2 years of the approval of this plan.

If regular monitoring shows the establishment of Lobed Needle-grass or other novel perennial grassy weeds then these will be promptly eradicated.

Areas or individuals of threatened flora species will be pegged to ensure that weed control contractors avoid accidental damage to them during management works.



#### 2.3.4 Management of created wetlands

It is envisaged that once established, any created wetlands built in association with the potential bridge over Edgars Creek will be largely self-sustaining. However, the following actions will be undertaken to maintain the suitability of these wetlands for GGF:

#### Actions

In the event that construction material or rubbish enters wetlands it will be removed promptly.

The entry of sediment, surfactants and other pollutants into the main waterbody will be minimised as a result of the water sensitive urban design strategy implemented for stormwater quality treatment including but not necessarily limited to streetscape bioswales, nodal streetscape raingardens, and stormwater treatment wetlands.

Use of herbicides and pesticides within, or surrounding, wetlands and the creek will be avoided. If absolutely necessary, a 'frog-friendly' glyphosate product such as Roundup Bio-active will be used.

Damage to aquatic vegetation by waterfowl, particularly immediately after planting will be prevented by using protective netting until vegetation is established.

Mowing around constructed waterbodies should incorporate a mix of mown and unmown areas to allow provision of both foraging opportunities and cover for frogs.

During the first 5 years after construction a suitably qualified consultant will be engaged to monitor the wetlands every 12 months. Vegetation condition and refuge/shelter sites around the perimeter of the wetlands will be checked to ensure habitat establishment and maintenance is suitable. The suitability of vegetation for the Growling Grass Frog will be determined and, if deemed necessary, supplementary plantings will be undertaken and/or additional refuge sites will be provided.

Water quality in the wetlands will be monitored every six months for the first two years after wetland construction. The water quality monitoring program will be reviewed after two years. It is not possible to set water quality targets specific to the Growling Grass Frog as there is little information available. Recent studies have indicated that bell frogs have relatively wide tolerances in relation to the water quality parameters above.

#### 2.3.5 Revegetation

The creek and associated reserve is currently treeless. This is not considered to be the natural structure for Edgars Creek. Revegetation works are therefore appropriate for the creek corridor and may in future provide refuge areas for GGF within the movement corridor (i.e. by generating coarse woody debris). However, a dense contiguous cover of trees is inappropriate for the objectives of this corridor.

The broader creek environs supports scattered River Red-gums *Eucalyptus camaldulensis*, Swamp Gum *E. ovata* and Yellow Box *E. melliodora*. Trees to be established along the creek corridor will therefore be planted in the following proportions: 10% Yellow Box (dry areas only), 45% Swamp Gum and 45% River Red-gum. The total tree cover will not exceed 10% of this environment. Initially it is proposed that no more than 50 trees will be planted with a view to the corridor supporting no more than 20 mature trees.



Potential species for wetland revegetation works are listed in Appendix 1. Planting or otherwise reintroducing other ground cover species in drier grasslands on the rocky ground which otherwise dominates the creek corridor will help displace weeds. Potential species for revegetation works include a variety of indigenous grasses, sedges and herbs such as:

Sheep's Burr	Acaena echinata
Supple Spear-grass	Austrostipa mollis
Rough Spear-grass	Austrostipa scabra
Blue Grass-lily	Caesia calliantha
Plains Sedge	Carex bichenoviana
Knob Sedge	Carex inversa
Kidney-weed	Dichondra repens
Blue Devil	Eryngium ovinum
Weeping Grass	Microlaena stipoides var. stipoides
Common Tussock-grass	Poa labillardierei
Wallaby-grass	Rytidosperma spp. (see Biosis 2017)
Kangaroo Grass	Themeda triandra
Tufted Bluebell	Wahlenbergia communis
Bronze Bluebell	Wahlenbergia luteola

This list is not comprehensive and other locally indigenous species can also be included in any revegetation works.

A more intensive revegetation effort to establish indigenous grasses and herbs will be conducted at the north-eastern end of the creek reserve, around existing remnants of Plains Grassland (Figure 1).



## References

Biosis Research (2012). *275 O'Herns Road, Epping, Victoria: Flora, fauna and habitat hectare assessment*. Report to MAB. Authors: Mueck, S., Byrne, A. and Gilmore, D., Biosis Research, Melbourne. Project no. 13806.

Biosis 2017. *165-195 O'Herns Road Epping: Biodiversity Assessment*. Report for MAB Corporation. Authors: Mueck S, & Gilmore D Biosis Pty Ltd, Melbourne. Project no. 23682.

Heard, G., Robertson, P. and Scroggie, M.P. (2008). Microhabitat preferences of the endangered Growling Grass Frog Litoria raniformis in southern Victoria. *Australian Zoologist* **34(3):** 414-425.

Heard, G.W., Scroggie, M.P., and Clemann, N. (2010). *Guidelines for managing the endangered Growling Grass Frog in urbanising landscapes.* Arthur Rylah Institute for Environmental Research Technical Report Series No. 208, Department of Sustainability and Environment, Heidelberg, Victoria.



## Appendices



## Appendix 1: Plants suitable for created Growling Grass Frog wetlands

The following is a guide to indigenous species useful for the recreation of wetland habitat within a landscaped environment. It is not a detailed specification and other locally indigenous plants should also be used.

Scientific name	Common name	
Zone 1 – shallow verge vegetation along banks of waterbody		
Agrostis avenacea	Common Blown-grass	
Agrostis punicia	Gilgai Blown-grass	
Calystegis sepium	Large Bindweed	
Carex appressa	Tall Sedge	
Carex fasicularis	Tassel Sedge	
Epilobium billardierianum	Smooth Willow-herb	
Eryngium vesiculosum	Prickfoot	
Glyceria australis	Australian Sweet-grass	
Juncus amabilis	Hollow Rush	
Juncus flavidus	Yellow Rush	
Juncus holoschoenus	Joint-leaf Rush	
Juncus procerus	Tall Rush	
Lobelia pratiodes	Poison Lobelia	
Lomandra longifolia	Spiny-headed Mat-rush	
Microlaena stipoides var. stipoides	Weeping Grass	
Neopaxia australasica	White Purslane	
Poa labillardierei	Common Tussock-grass	
Zone 2 – emergent vegetation within the waterbody		
Amphibromus nervosus	Common Swamp Wallaby-grass	
Carex tereticaulis	Poong'ort	
Craspedia paludicola	Swamp Billy-buttons	
Crassula helmsii	Swamp Crassula	
Eleocharis acuta	Common Spike-sedge	



Scientific name	Common name	
Eleocharis pusilla	Small Spike-sedge	
Eleocharis sphacelata	Tall Spike-sedge	
Glyceria australis	Australian Sweet-grass	
Lycopus australis	Gypsywort	
Neopaxia australasica	White Purslane	
Myriophyllum crispatum	Upright Water-milfoil	
Myriophyllum simulans	Amphibious Water-milfoil	
Persicaria praetermissa	Spotted Knotweed	
Persicaria decipiens	Slender Knotweed	
Ranunculus inundatus	River Buttercup	
Stellaria angustifolia	Swamp Starwort	
Zone 3 – submerged and floating vegetation with the waterbody		
Marsilea drummondii	Common Nardoo	
Myriophyllum caput-medusea	Coarse Water-milfoil	
Potamogeton tricarinatus	Floating Pondweed	
Potamogeton ochreatus	Blunt Pondweed	
Schoenoplectus tabernaemontani	River Club-sedge	
Triglochin procerum	Common Water-ribbons	
Villisneria americana	Ribbon-weed	