

## PENINSULA LINK PROJECT

### FLORA & FAUNA MANAGEMENT PLAN



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## FLORA & FAUNA MANAGEMENT PLAN

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## 1 INTRODUCTION

This Flora and Fauna Management Plan (FFMP) is a component of the Design and Construction Environmental Management Strategy (EMS) for the Peninsula Link Project.

This Plan provides a system and set of procedures to ensure the Project establishes and maintains sound and effective controls to manage potential environmental impacts to flora and fauna during design and construction and wherever practicable, realise opportunities for enhanced environmental outcomes.

The Abigroup Team is committed to providing the services it offers in a manner that conforms to the contractual requirements and to all relevant regulatory and legislative requirements. The Project team will ensure that controls are properly implemented, regularly monitored and audited to assess their effectiveness. Changes to the controls will be instigated if they are not achieving their objectives

### 1.1 Purpose and Scope

This FFMP is one of a series of design and construction management sub-plans that support the Project Environment Management Strategy. The purpose and scope of this Plan is to identify measures and controls to mitigate against potential impacts of construction activities on flora, fauna and their associated habitat. Implementation of this Flora and Fauna Management Plan will occur in close alignment with the additional EMP Sub-Plans, the Site Specific EMPs, procedures and controls also aims to ensure the conservation and where possible enhancement, of the natural environment, while identifying opportunities for use of innovative ideas and sustainability principles to achieve positive environmental outcomes.

### 1.2 Objectives and Performance Criteria

In response to the Objectives, Performance Criteria and Minimum Procedural Requirements outlined in the PSR Table A6.1.1, prescribed objectives and performance criteria will be implemented as a minimum standard for design and future construction and referenced against the Environmental Obligations register, EES documentation and range of specialist reports prepared for the Project.

The management and mitigation measures described in this Plan meet the requirements of the Project's PSR Minimum Procedural Requirements.

### 1.3 Environmental Constraints Mapping (ECMs)

Environmental Constraints Mapping (ECMs) have been developed by the Environment Team, in consultation with the Design Team, as a key environmental tool to assist the Design and Construction team understand the location and range of major environmental constraints and sites of sensitivity located along the length of the alignment. They are shown in Appendix B of the EMS.

To facilitate the integration of major environmental constraints and opportunities for design innovation into bypass design, the route is split into six zones for the length of the alignment and referenced as Section A - F (based on Chainages) as follows:

Zone	Chainage	ECM Sheet Reference No.
A - Eastlink	10880 – Ch. 14500	Sheet 3 – Sheet 9
B - The Pines	14500 – Ch.17900	Sheet 9 – Sheet 14
C - Karingal	17900 – Ch.21800	Sheet 14 – Sheet 20
D - Baxter	21800 – Ch. 26000	Sheet 20 – Sheet 27
E - Moorooduc	26000 – Ch. 32500	Sheet 27 – Sheet 38
F – Devil Bend	32500 – Ch. 37500	Sheet 38 – Sheet 48

The ECM identifies the location of major environmental features for each zone including key sites of significance including:

- significant sites supporting threatened flora and fauna species (EPBC, FFG Listed)
- locations of 'No-go Zones' and restricted access
- construction footprint boundary
- waterway and creek crossings
- sensitive waterbodies, including wetlands
- scattered trees to be retained/ removed

This set of plans will be used as the key reference tool when the Environment Team prepare the Environmental Control Plans (discussed below) for Construction Documentation.

### 1.4 Construction Documentation

The relevant environmental sections of construction documentation will be developed in accordance with the requirement A16.6(b) of the PSR. The relevant environmental management components of each construction package will:

- i. define the activity to be managed and the potential impacts to be controlled;
- ii. Identify risks through the Risk Assessment process shown in 3.2 of the EMS, defining the hazards and identifying controls to be implemented which will reduce the risk
- iii. identify specific measures to be included in the relevant Construction Procedure to prevent impacts to items of cultural heritage significance;
- iv. include relevant drawings; and

- v. define responsibilities for developing and implementing the management measures, verifying compliance with the FFMP before construction commences, and monitoring the effectiveness of controls during construction;

### ***Site Specific Environmental Management Plans***

A Site Specific Environment Management Plan (SSEMP) will be prepared and incorporated into a package of construction documentation, issued prior to undertaking site specific activities e.g. clearing and grubbing, within a Zone. The SSEMPs will contain the following:

- Environmental Risk Assessment prepared to identify the hazards and risks associated with an activity and environmental controls to mitigate against risk
- Environmental Constraints Maps
- Procedures to ensure controls are implemented effectively and minimising impacts against identified risk
- Environmental Control Plans identifying the location of control measures required to manage works to protect areas of flora and fauna sensitivity;
- Roles and Responsibilities for ensuring risk assessments are completed and environmental controls are implemented
- Checklists to ensure environmental controls and monitoring are implemented
- Monitoring plans where site specific environmental aspects e.g. significant fauna species, require additional monitoring to ensure the Project meets the requirements of State and Federal Permit conditions

### ***Risk Assessment***

A Risk Assessment will be prepared and included in each package of construction documentation. The Risk assessment will be prepared, using the ERA Pro forma (refer Appendix E of the EMS). The ERA will identify flora and fauna sensitivities that may be impacted by a proposed activity in a zone, the hazards and associated risks requiring management and the level of risk following application of controls.

This will provide the Environment Management Team with a key tool in guiding the implementation of site specific procedures necessary to control and mitigate impacts to areas of flora and fauna sensitivity.

### ***Environmental Control Plans***

The Environmental Control Plans (ECPs) take the form of a drawing showing the location of environmental sensitivities including vegetation, scattered trees, waterways, and 'no-go' zones, the nature and specified requirements for any environmental controls required by the site specific risk assessment and the controls to be implemented on-site to protect areas of vegetation.

ECPs will be prepared by the Environment Team, prior to start of an activity in a Zone, in consultation with the Project engineer. The ECP's will be included as part of Construction Documentation and identify:

- a) the location and scope of works to be managed;
- b) the location and nature of physical controls required;
- c) the nature and frequency of monitoring to be undertaken for each of the identified potential impacts; and
- d) the procedure for notification of any incident or potential Hazard.

The Environmental Control Plans (ECPs), will support the Environmental Constraints Mapping (ECM), shown in Appendix B of the EMS.

### ***Environmental Management Controls***

Environmental control measures will be implemented on site to manage and mitigate risks. The controls form a component of the Construction Documentation and prepared to manage site specific activities in a Zone.

Following review and comment of the construction documentation, controls will be finalised and issued. The environmental controls will be communicated to field staff, through induction and toolbox training (discussed in Section 9) to provide them with appreciation of key areas of ecological sensitivity including the locations of 'no-go' zones and the procedures and controls to complete works in a safe and environmentally responsible manner.

### ***Checklists and Procedures***

Checklists have been developed by the Environment Team in consultation with the Project Engineers, Project Ecologists and Designers. They will be utilised to monitor the effectiveness of Site specific environmental controls to manage sites of cultural heritage sensitivity. The checklists are included as part of the Construction Package and will be updated where appropriate.

Checklists and procedures will be used as an auditable tool and completed by the relevant members of the construction team, decided by the Project Managers as the construction team grows and the site expands.

## **1.5 Supporting Documents and Consultation**

Abigroup has gained a broad appreciation of the range of specific environmental issues and sensitivities for the Project, through a review of the following documents and consultation with a range of targeted stakeholders. These include:

- EES Documentation - Biosis Flora and Fauna Reporting, prepared as part of the EES process
- Site inspection and analysis of the project alignment
- Consultation with key stakeholders:
  - Melbourne Water/ Southern Rural Water
  - The Department of Sustainability and Environment (DSE)
  - Parks Victoria
  - Frankston City Council
  - Mornington Peninsula Shire Council.
- seeking relevant professional advice from the following:
  - Flora, Fauna and Biodiversity Management – Biosis Research
  - Sustainability aspects – Professor Andrew Griffiths, University of Queensland
  - Development planning and environmental approval elements – Aurecon.
- drawing upon previous similar construction environmental management experience and understanding of the current requirements of the Victorian regulatory framework.

The following documents have been considered in the preparation of this management plan

- EES Technical Volume 1 – Flora and Fauna Assessment (*Biosis Research, 2008*)
- EES Technical Volume 1 – Draft Pines Master Plan (*LMA, 2008*)
- EPBC Referral 2007/3480 (*DEWHA, 2009*)
- Frankston Bypass Assessment (Environment Effects Act 1978) – Minister for Planning (*DPCD, 2009*)
- Flora and Fauna assessment of The Pines Flora & Fauna Reserve (*Biosis Research, 2008*).

- Threatened Species Management Plan: Peninsula Link – Carrum Downs to Mount Martha (*Practical Ecology, 2009*).
- Southern Brown Bandicoot Management Plan – Pines Flora and Fauna Reserve (*ARCUE, 2010*)
- Swamp Skink Translocation Plan The Pines Flora and Fauna Reserve, Frankston (*Biosis, 2010*)
- Growling Grass Frog Salvage and Translocation Plan Peninsula Link (*Biosis 2010*)
- Follow up targeted survey of Dwarf Galaxias *Galaxiella pusilla* in the Boggy, Watsons and Balcombe Creek catchments, Victoria' (*Version O2; Biosis Research, May 2010*)

## 1.6 Glossary

Abbreviations	Definition
AS/NZS	Australian and New Zealand Standard
ANPC	Australian Network for Plant Conservation
AVW	Atlas of Victorian Wildlife (AVW)
DEWHA	Department of Environment, Water, Heritage and the Arts
DSE	Department of Sustainability and Environment
DNRE	Department of Natural Resources and Environment (now DSE)
DPCD	Department of Planning and Community Development
DPI	Department of Primary Industries
ECM	Environmental Constraints Mapping
ECP	Environmental Control Plans
EES	Environment Effects Statement
EMP	Environmental Management Plan
EMR	Environmental Management Register (administered by the EPA)
EMS	Environmental Management Strategy
EPA	Environment Protection Authority (Victoria)
EPBC Act	Environment and Protection Biodiversity Conservation Act 1999
ESD	Ecological Sustainable Development
EVC	Ecological Vegetation Class
FFMP	Flora and Fauna Management Plan
FFG Act	Flora and Fauna Guarantee Act 1988
ISO	International Standard Organisation
IUCN	International Union for the Conservation of Nature
KPI	Key Performance Indicator
MW	Melbourne Water
N/A	Not applicable
O&M	Operation and Maintenance
PSR	Project Scope and Requirements
PD	Project Deed

Abbreviations	Definition
PGW	Plains Grassy Wetland
Project Site	As defined by the Project Deed
SBB	Southern Brown Bandicoot
TBA	To be advised
TSMP	Threatened Species Management Plan
VAF	Victorian Aquatic Fauna
MPWP	Mornington Peninsula and Westernport

## 2 LEGAL AND REGULATORY FRAMEWORK

### 2.1 Legislative Framework

The FFMP has been developed as a document that will undergo continual change in response to changes in environmental legislation and/or the environmental management procedures and policies developed for the Peninsula Link Project.

Legislation relevant to flora and fauna are detailed in the below table.

**Table 2 - Environmental Legislation**

Legislation	Application
<i>Environment Protection and Biodiversity Conservation Act 1999</i>	Approval from the Commonwealth Minister for the Environment, Heritage and the Arts under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) because of potential impacts on matters of national environmental significance. <ul style="list-style-type: none"> <li>• Sections 16 and 16B (Wetlands of international importance)</li> <li>• Sections 18 and 18A (Listed threatened species and communities)</li> <li>• Sections 20 and 20A (Listed migratory species).</li> </ul>
<i>Planning and Environment Act, 1987</i>	Planning Scheme Amendment - Approval required from the Minister for Planning (Victoria) to remove native vegetation under the Victorian Native Vegetation Management Framework
<i>Flora and Fauna Guarantee Act, 1988</i>	A Permit under the FFG Act is required to take protected flora on public land.
<i>Wildlife Act 1975</i>	Approval required to salvage or translocate fauna Management Authority to salvage or translocate fauna
Guidelines/ Standards	Application
Guidelines for Assessing Translocations of Live Aquatic Organisms in Victoria (DPI 2003)	Established nationally consistent approach to managing translocation, in accordance with provisions of the Fisheries Act 1995
Victoria's Native Vegetation Management – A Framework for Action (DNRE, 2002).	Establishes the State Government's strategy to protect and enhance native vegetation across the State, leading to a net gain.
Guidelines for the Translocation	Australia-wide protocol for plant translocation, consistent with IUCN

of Threatened Plants in Australia. (ANPC, 2nd edition 2004).	reintroduction guidelines and The Global Strategy for Plant Conservation
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## 2.2 Conditions of Environmental Approval

### ***Environment Protection and Biodiversity Protection Act 1999***

EPBC Approval (2007/3480) was received from DEWHA for the Project on 20 August 2009. Decision on the Controlled Action was approved subject to conditions attached to the approval. The conditions have been acted upon by LMA and Abigroup and shall be complied with.

### ***Planning and Environment Act 1987***

The Victorian Minister for Planning approved the insertion of an Incorporated Document into the Frankston and Mornington Peninsula Planning Schemes pursuant to section 6(2) (j) of the *Planning and Environment Act 1987*. The Planning Scheme Amendment (PSA) allows for the use and development of land for the purposes of the Peninsula Link Project.

### ***Flora and Fauna Guarantee Act 1988***

The Department of Sustainability and Environment (DSE) issued Abigroup with a Permit (10005378) to Take Protected Flora from public land/ waters for the purpose of pre-construction native vegetation clearance, collection of material for propagation, salvage and translocation and herbarium specimens or specimens for identification as they relate specifically to the Peninsula Link Project (PLP) within the Port Phillip Area of DSE.

## 2.3 Legislative Exemptions

The insertion of Incorporated Document in the Frankston and Mornington Peninsula Shire Planning Scheme by the Minister for Planning (DPCD) in August 2009 exempts the project from requiring planning permit approval for the removal of native vegetation, pursuant to the Clause 52.17 of the Victoria Planning Scheme.

The PSA exempts the project from obtaining any planning permits despite any provision to the contrary or any inconsistent provision in the Frankston or Mornington Peninsula Planning Schemes, and nothing in those Planning Schemes operates to prohibit or restrict, use or development of the Peninsula Link Project Area for a range of provisions, including:

- removing, destroying and lopping trees and removing vegetation.

## 3 EXISTING ENVIRONMENT

### 3.1 Biodiversity Values

The native habitats in the region around Peninsula Link have been heavily cleared and are now dominated by a few larger remnants (e.g. The Pines and Langwarrin Flora and Fauna Reserves and Westerfield) and consist of a patchwork of many medium-to-small remnants, within a context of pasture or urban areas.

Many of these habitat remnants are not connected directly to other remnants by habitat links. However, many fauna species are likely to use these areas for movement and some are resident. Ecological considerations for each zone are briefly described below.

The description below provides the reader with an appreciation of the key environmental issues per Zone. They will be referenced and used by the Environment Team, and passed on, during the preparation of Site Specific EMPs, ECPs and finally the construction packages.

Section 5 and Section 6 describe the environmental management measures proposed to protect and mitigate risks to the sites of sensitivity (described below) for each of the Zones.

#### Zone A – Eastlink

The grassy wetland areas in the vicinity of the EastLink Interchange provide ephemeral habitat for listed migratory and threatened species. Species using this area are likely to also use the adjacent Seaford Wetlands RAMSAR site and Eastern Treatment Plant wetlands/ponds. A patch of state significant Herb-rich Plains Grassy Wetland is located at the EastLink Interchange.

One FFG Act 1988 listed species not listed under the EPBC Act 1999, Purple Blown-grass (*Lachnagrostis punicea subsp. Filifolia*), has been recorded from the Plains Grassy Wetland Complex, at the Eastlink Interchange.

The bypass alignment abuts the eastern edge of the Edithvale-Seafood RAMSAR listed wetland and this wetland area supports a rich and diverse waterbird fauna. The Project footprint will not intercept these wetlands and with appropriate management during construction and ongoing management of stormwater, any impacts from the proposed bypass footprint would be unlikely to increase existing impacts on the Ramsar site.

#### Zone B – The Pines

##### **Flora**

The bypass will bisect the Pines Flora and Fauna Reserve, a biosite of state significance. The vegetation within the Pines Flora and Fauna Reserve constitutes a state significant biosite (EES, Technical Volume 1) due to the diversity of species and vegetation communities present.

The constructed wetland within The Pines Flora and Fauna Reserve is surrounded by Swamp Scrub associated with a low lying area adjacent to Tamarisk Creek.

One flora species of national significance (listed under the EPBC Act) River Swamp Wallaby-grass (*Amphibromus fluitans*) was recorded growing around the constructed wetland in the Pines Flora and Fauna Reserve has been recorded in the proposed alignment area.

##### **Fauna**

The wetland habitat in the Pines is suitable for a number of species, including Growling Grass Frog, Swamp Skink and potentially (dependant upon hydrological regime) Dwarf Galaxias.

The Pines Flora and Fauna Reserve supports a population of the EPBC Act listed Southern Brown Bandicoot (*Isoodon obesulus obesulus*).

The Southern Brown Bandicoot Management Plan (SBB MP, Practical Ecology 2009) details key measures to be implemented by the Project to prevent mortality of SBB during vegetation clearing and construction works.

The Project is committed to a 'Zero mortality' of the Southern Brown Bandicoot. The specific goals for the management of SBBs at The Pines during construction and operation of Peninsula Link include (Refer Section 2.3 of the SBB Management Plan):

- To ensure that the construction and operation of Peninsula Link does not prejudice the long term viability of the population of SBB within the Pines FFR;
- To ensure animal welfare and population viability by achieving zero mortality of SBB as a result of construction works and operation of Peninsula Link;
- To allow for the movement of SBBs and other native species across and along Peninsula Link during construction and operation;
- To facilitate movement required for dispersal (gene flow), and a low rate of daily movements (i.e. to allow for regular [daily or once per week] crossings of SBBs, as they undertake daily foraging/home range types of movements

### **Zone C – Karingal**

The wetland area at Willow Road Reserve and Pobblebonk Wetland is dominated by native vegetation and fringed by Swamp Scrub. The wetland area provides suitable habitat for Growling Grass Frog, Swamp Skink and potentially the Swamp Skink.

South of Cranbourne-Frankston Road the bypass will be located within the Mornington Peninsula and Westernport (MPWP) Biosphere Reserve.

### **Zone D – Baxter**

The Westerfield Environs supports a variety of native flora species and supports a patch of state significant Grassy Woodland EVC.

The Watsons Creek catchment drains to the Westernport Bay RAMSAR site and the Creek will be intercepted by the Project footprint.

South of Golf Links Road, the area has been modified by agricultural uses and most of the native vegetation is restricted to narrow, linear remnants along road and rail reserves. These fragmented patches are prone to weed invasion and other disturbances and are in poor to moderate condition. Remaining areas not mapped as native vegetation are dominated by introduced vegetation with scattered indigenous tree species.

### **Zone E – Moorooduc**

The nationally significant Dwarf Galaxias fish species is known from the Balcombe Creek catchment.

Kangaroos are known from the southern section of the alignment, and may be located through Section E.

### **Zone F - Devilbend**

The Devilbend Reservoir/Creek system is a biosite of state significance and Devilbend Creek is bisected twice by the proposed alignment area.

Dwarf Galaxias fish species has been recorded from Tuerong Creek and Devilbend Creek. The Dwarf Galaxias population at Tuerong Creek, in the vicinity of Tuerong and Old Moorooduc Roads, is an 'important population' (*EES Flora and Fauna Assessment, Technical Volume 1*) and a key source for breeding and dispersal within the Balcombe Creek catchment.

Within the proposed alignment area native vegetation is present where the bypass is to cross Derril Road. This vegetation consists of a patch of small remnant vegetation that is a component of a broader ecological system of state significance.

## 3.2 Flora

A total of 297 indigenous and 200 introduced vascular plant species were recorded in the proposed alignment area during the flora field surveys. From the northern end of the proposed alignment area to Golf Links Road, there are large patches of native vegetation remaining that are in moderate to good condition. Patches within the Pines Flora and Fauna Reserve, Westerfield and at Devilbend Creek are of state significance.

Three additional species of national conservation significance Clover *Glycine latrobeana*, Maroon Leek-orchid *Prasophyllum frenchii* and Swamp Fireweed *Senecio psilocarpus* may potentially occur within the proposed bypass footprint. One further FFG Act 1988 listed species, Purple Diuris *Diuris punctata* var. *punctata* may potentially occur within the proposed bypass footprint. An additional six species listed on the DSE Advisory List of Rare or Threatened Plants of Victoria may potentially occur within the proposed bypass footprint.

A total of 198 flora species of regional significance (Gippsland Plain Bioregion) were recorded in the proposed alignment area. Ecological Vegetation Classes located within the Project alignment for the length of the bypass are described in the table below.

**Table 3 - Ecological Vegetation Classes (EVCs) within the Project alignment area**

EVC	Number of patches	Hectares within proposed alignment area	Status in Gippsland Bioregion
Swampy Woodland	36	16.55	Endangered
Plains Grassy Wetland	36	12.09	Endangered
Grassy Woodland	10	5.31	Endangered
Swamp Scrub	12	2.82	Endangered
Aquatic Herbland	3	1.45	Endangered
Swampy Riparian Woodland	2	1.73	Endangered
Plains Grassy Woodland	2	0.08	Endangered
Damp Heathland	3	1.9	Rare
Sand Heathland	3	1.25	Rare
Damp Sands Herb-rich woodland	37	22.78	Vulnerable
Damp Heathy Woodland	1	0.21	Vulnerable
Heathy Woodland	7	9.58	Least Concern

## 3.3 Fauna

Six fauna habitat types occur within Peninsula Link: Heathland, Swamp Scrub, Woodland, Forest, Waterbodies and Pasture.

The EES assessment recorded 100 vertebrate species from within Peninsula Link: 65 birds (58 native), 17 mammals (11 native), five reptiles (all native), five frogs (all native) and eight fishes (five native).

The Atlas of Victorian Wildlife (AVW) and Victorian Aquatic Fauna (VAF) database contain an additional 42 records of vertebrate fauna species from within Peninsula Link: 34 birds (25 native), two mammals (one native), three reptiles (all native) and three frogs (all native). Of these previous records two are nationally significant species (one is FFG listed) and three are of state significance (one is FFG listed).

The present survey has recorded one species of national significance, Southern Brown Bandicoot *Isoodon obesulus obesulus* and one species of state significance, Swamp Skink *Egernia coventryi* (FFG listed) within the proposed alignment area. Both of these species were recorded within The Pines Flora and Fauna Reserve. Another species of national significance, Dwarf Galaxias *Galaxiella pusilla* (FFG listed), has been recorded within close proximity to Peninsula Link area at Balcombe, Devilbend and Tuerong Creek.

The Project's 'Fauna Management, Salvage and Relocation Protocol' details appropriate fauna handling measures and protocol to be implemented by the Wildlife Carer and Project Zoologist during vegetation clearing and construction.

### 3.4 Significant Species

A definitive species list has been prepared.

- All threatened, rare and poorly known flora species that have been recorded from or have potential to occur in the Project alignment
- All threatened and near-threatened fauna species that have been recorded from or have potential to occur in the Project alignment
- All threatened ecological communities that have been recorded from the Project alignment
- All EVCs occurring within the Project alignment that are listed as threatened in the Gippsland Plain bioregion

**Table 4 - EPBC Act Matters of NES**

Matter	Known & likely distribution	Zone
<b>EPBC Act Listed Flora</b>		
River Swamp Wallaby-grass Established population within the Pines (0.76 ha habitat present)	Potential in Plains Grassy Wetland/ Aquatic Herbland	B
Maroon Leek-orchid	Potential in grassy woodlands, heathy woodland and sand heathland	All
Clover Glycine	Potential in grassy woodlands	
Swamp Fireweed	Potential in Plains Grassy Wetland/Aquatic Herbland	A
Frankston Spider Orchid	Potential for occurrence in the Pines.	B
<b>EPBC Act Listed Fauna</b>		
Southern Brown Bandicoot	Recorded from the Pines. Potential habitat in other heathy/woodland areas.	B
Dwarf Galaxias	Recorded from Tamarisk Ck, Watsons Ck, Tuerong Ck and Boggy Ck catchments.	B/ D/ E/ F
Growling Grass Frog	Recently recorded from 'The Briars' (Mt Martha). Potential for habitat in Tuerong and Devilbend Ck.	F
Sections 16 and 16B (RAMSAR)	Edithvale/ Seaford RAMSAR Wetland and Western Port. Limited connection to RAMSAR	A

Wetlands)	sites from proposed alignment area. Refer to Surface Water specialist report.	
Sections 20 and 20A (Listed Migratory Species)	59 Listed Migratory species previously recorded from local area Habitat mostly within Edithvale/Seaford Wetland and Eastern Treatment Plant wetlands	A

**Table 5 - Flora and Fauna Guarantee Act Listed species**

Species/ Community	Known & likely distribution	Zone
<b>FFG Act Listed Flora</b>		
Purple Diuris	Potential in grassy woodlands	All
Purple Blown-grass	Recorded from the EastLink interchange.	A
<b>FFG Act Listed Fauna</b>		
Hooded Robin	Recorded from the Pines.	B
Swamp Skink	Recorded from the Pines.	B
Eight FFG Act Listed Waterbirds	Mostly within Edithvale/Seaford Wetland and Eastern Treatment Plant wetlands	A

**Table 6 - Significant Communities (Species)**

Species/ Community	Known & likely distribution	Zone
<b>FFG Act Listed Community</b>		
Herb-rich Plains Grassy Wetland	Present at the EastLink interchange, Carrum Downs.	A
<b>Other State Significant Communities</b>		
The Pines Flora and Fauna Reserve	Present between Ballarto Road and residential area on Dunsterville Crescent, Frankston North.	B
Grassy Woodland (Patch 46a)	Present south of Robinsons Road, Frankston South.	D
Devil Bend Creek Biosite	Part of the Devil Bend Reservoir Biosite (#5128)	F
<b>DSE Advisory Listed Flora and Fauna Species</b>		
Six advisory listed flora species	Low Likelihood for occurrence within the proposed bypass footprint. Veined Spear-grass <i>Austrostipa rudis subsp. australis</i> Lizard Orchid <i>Burnettia cuneata</i> Bronze Bird-orchid <i>Chiloglottis X pescottiana</i> Fringed Helmet-orchid <i>Coryas fimbriatus</i> Pale Swamp Everlasting <i>Helichrysum aff. rutidolepis</i> (Lowland Swamps) Feather-leaf Buttercup <i>Ranunculus amplus</i>	All
Two Advisory listed fauna species	Likely to occur within the proposed alignment.	All
<b>'Other' matters listed in Project Scoping Requirements</b>		
Impact to local Kangaroo population	Lower Mornington Peninsula.	D - F

## 4 ASPECTS, IMPACTS AND RISK

### 4.1 Risk Assessment

The risk assessment methodology, shown below, will be used for assessing risks for the Site Specific EMPs.

Each site activity e.g. clearing /grubbing, within a Section of the works alignment, will have a risk assessment prepared using the Pro forma (Refer Appendix E of the EMS) and attached to the SSEMP included within each construction package. The process for the completion and review of activity specific risk assessments includes:

- Risk assessment produced in the first instance by an engineer if not by one the environmental team
- Hazards and risks identified against activities
- Controls and Procedures inserted into the construction package, the details of which are included in this FFMP
- The risk assessments are reviewed as part of the construction package review process
- Changes will be made if the hazard controls are not meeting requirements

Appropriate controls and management procedures, included in this FFMP, will be used to reduce the levels of identified risk.

The following risk analysis matrix (Table 7 – 9) will be used when preparing Environmental Risk Assessments. The potential environmental consequences or impacts of an activity on flora and fauna species and the likelihood of an incident occurring when undertaking activities, will be rated as Extreme, High, Medium, Low or Negligible

A Risk Assessment of potential impacts and hazards to flora and fauna from construction activities is shown in Table 10 below. These will be further detailed in the Environmental Risk Assessments, to be submitted as a component of the construction documentation for site specific activities.

**Table 7 - Level of Risk**

Likelihood Level	Consequence Level				
	Negligible	Low	Medium	High	Extreme
Almost Certain	Medium	High	Extreme	Extreme	Extreme
Likely	Low	Medium	High	Extreme	Extreme
Possible	Negligible	Low	Medium	High	Extreme
Unlikely	Negligible	Negligible	Low	Medium	High
Rare	Negligible	Negligible	Negligible	Low	Medium

**Table 8 – Risk Description**

Likelihood	Description
Almost Certain	Expected to occur in most circumstances
Likely	Will probably occur in most circumstances
Possible	Could occur
Unlikely	Could occur but not expected
Rare	Occurs only in exceptional circumstances

**Table 9 – Risk Consequence**

Consequence	Description
Extreme	Irreparable/long-term damage/ widespread environmental effects may include disturbance/death to threatened species (flora & fauna) and ecological communities, unauthorised damage to significant sites.
High	Serious damage to the environment, medium-long term impact, rehabilitation at considerable expense.
Medium	Localised, short term damage/disturbance to the environment requiring relatively short-term remedial action.
Low	Noticeable impact on the natural environment/corporate reputation requiring little to no remedial action.
Negligible	Negligible impact on the environment which is difficult to notice and does not require remedial action.

## 4.2 Risk Management

**Table 10 - Risk Assessment and Management**

Zone	Activity	Aspect	Impact	Risk Rating prior to Controls			CONTROL/ PROCEDURE	
				LIKELIHOOD	CONSEQUENCE	RISK		
All	Clearing and Grubbing	Native vegetation	- Habitat fragmentation	Almost certain	Medium	Extreme	Checklists and Protocols (Register) Clearing and Grubbing Procedure: PLD-E-ID-0118	
			- Loss of fauna habitat	Almost certain	Medium	Extreme		Checklists and Protocols (Register) Clearing & Grubbing Procedure: PLD-E-ID-0118
			- loss of public amenity	Almost certain	Low	High		

Zone	Activity	Aspect	Impact	Risk Rating prior to Controls			CONTROL / PROCEDURE
				LIKELIHOOD	CONSEQUENCE	RISK	
			- Excess loss of native vegetation outside FFG permit	Possible	High	High	Checklists and Protocols (Register)
All		Reduction of Biodiversity values	- Loss of State significant species	Likely	High	Extreme	Checklists and Protocols (Register)
A	Removal of vegetation from Belvedere Reserve		- pollution in Boggy Creek	Likely	Medium	High	Section 6.1 SSEMP and ECP – Construction Package Section A
			- Loss of flora/ fauna habitat	Almost certain	Medium	Extreme	Section 6.1 SSEMP and ECP – Construction Package Section A Checklists and Protocols (Register)
			- loss of public amenity	Almost certain	Low	High	Section 6.1 SSEMP and ECP – Construction Package Section A
			- Excess loss of native vegetation outside FFG permit	Possible	High	High	Section 6.1 SSEMP and ECP – Construction Package Section A Checklists and Protocols (Register)
B	Removal of vegetation from Pines Flora and Fauna Reserve		- Habitat severance and fragmentation	Almost certain	High	Extreme	Section 5.2 and 6.3 SSEMP and ECP – Construction Package Section B
			- Bandicoot mortality	Unlikely	Extreme	High	Section 5.2 and 6.3 Checklists and Protocols (Register)
			- Impacts to Tamarisk	Unlikely	High	Medium	Section 5.2 and 6.3 SSEMP and ECP – Construction Package Section B
			- Loss of River Swamp Wallaby Grass habitat	Likely	Medium	High	Section 5.2 and 6.3 SSEMP and ECP – Construction Package Section B
			- Excess loss of native vegetation outside FFG permit	Possible	High	High	Section 5.2 and 6.3 SSEMP and ECP – Construction Package Section B Checklists and Protocols (Register)

Zone	Activity	Aspect	Impact	Risk Rating prior to Controls			CONTROL / PROCEDURE
				LIKELIHOOD	CONSEQUENCE	RISK	
			- Clearing in excess of the 11Ha allowed	Possible	Extreme	Extreme	Section 5.2 and 6.3 SSEMP and ECP – Construction Package Section B Checklists and Protocols (Register)
C		Removal of vegetation from Willow Road Reserve & Wetland	- Loss of aquatic habitat	Likely	Medium	High	SSEMP and ECP – Construction Package Section C Willow Rd Survey Report Section 5.2 and 6.3
			- Loss of terrestrial fauna	Possible	High	High	
D		Removal of vegetation from Westerfield Environs	- Excess loss of native vegetation outside FFG permit	Possible	High	High	SSEMP and ECP – Construction Package D Section 6.4 Westerfield Checklist
			- Loss of habitat	Likely	High	Extreme	
All		Weeds and Pests	Spread of flora and fauna disease due to construction activities	Possible	Medium	Medium	WMP PLG-E-ID-0083
C	Bulk Earthworks	Sediment laden water	- Loss of aquatic habitat through sedimentation	Possible	High	High	Creek Crossing Procedure SSEMP and ECP – Construction Package C
			- Visual pollution	Possible	Medium	Medium	
			- Loss of riparian vegetation	Unlikely	High	Medium	
			- Aquatic fauna mortality	Unlikely	High	Medium	
C		Willow Road Reserve & Wetland	- Disruption of natural hydrology	Likely	Medium	High	SSEMP and ECP – Construction Package C
		Carriage of sediment laden water to Edithvale-Seaford Wetlands	- Possible disruption to migratory species	Possible	High	High	ECP – Erosion and Sediment Controls EPBC -Shared Use Path Seaford Wetlands Area (2009/5099) Section 6.1
			- Loss of aquatic habitat	Likely	Medium	High	
B		Works around creek line at	- Loss of habitat for Swamp Skink	Possible	Medium	Medium	Section 6.2 Swamp Skink

Zone	Activity	Aspect	Impact	Risk Rating prior to Controls			CONTROL / PROCEDURE
				LIKELIHOOD	CONSEQUENCE	RISK	
		Tamarisk Creek					Translocation Plan
C		Pobblebonk Wetland	- Disruption of natural hydrology	Likely	Medium	High	Section 6.3 SSEMP – Construction Package C
F		Carriage of sediment to Tuerong Creek	- Loss of aquatic fauna habitat	Possible	Extreme	Extreme	SSEMP – Construction Package F DG Monitoring Program and Procedure
			- Dwarf Galaxias fatality	Possible	Extreme	Extreme	
D, E, F		Carriage of sediment to Watsons and Balcombe Creek	- Impact downstream to RAMSAR wetland	Unlikely	High	Medium	SSEMP – Construction Package D, E, F D
			- Loss of aquatic fauna habitat	Possible	Extreme	Extreme	SSEMP – Construction Package D, E, F D DG Monitoring Program and Procedure
			- Dwarf Galaxias fatality	Possible	Extreme	Extreme	
All		Concentrated water flows	- Scouring of riparian areas	Possible	High	High	Creek Crossing Procedure
All	Drainage Works	Direct impacts on streambeds through excavation works	- Loss of fish passage	Unlikely	Extreme	High	Creek Crossing Procedure
			- Scouring of waterway creating turbid water	Unlikely	High	Medium	
			- Loss of fauna connectivity	Unlikely	High	Medium	
All		Pollution of downstream environment	Aquatic fauna mortality	Unlikely	Extreme	High	
A		Disruption of flow to Edithvale-Seafood Wetlands	- Possible disruption to migratory species	Unlikely	Extreme	High	EPBC -Shared Use Path Seafood Wetlands Area (2009/5099) Section 6.1
			- Loss of aquatic habitat	Unlikely	High	Medium	Section 6.1
			- Change in aquatic ecology leading to loss of biodiversity	Unlikely	Extreme	High	EPBC -Shared Use Path Seafood Wetlands Area (2009/5099)

Zone	Activity	Aspect	Impact	Risk Rating prior to Controls			CONTROL / PROCEDURE
				LIKELIHOOD	CONSEQUENCE	RISK	
							Section 6.1
B		Disruption to creek line at Tamarisk Creek	- Increased water flow leading downstream scouring	Unlikely	High	Medium	SSEMP – Construction Package Section B
C		Loss of water at Pobblebonk Wetland	- Disruption of natural hydrology	Possible	Extreme	Extreme	SSEMP – Construction Package Section C Section 6.3
ALL	Bridge construction over Creeks and waterway crossings	Loss of riparian vegetation and general habitat degradation	- Aquatic fauna mortality	Unlikely	Extreme	High	SSEMP and ECP– Construction Package(s)
			- Loss of habitat	Possible	High	High	
		Discharge of pollutants	- Degradation of water quality	Possible	Extreme	Extreme	SSEMP and ECP– Construction Package(s) ECM Project checklists and procedures
		Impediment to fish passage from temporary works	Isolation of aquatic fauna	Possible	Extreme	Extreme	
		Bridge piers could result in the alteration of creek morphology	- Loss of aquatic habitat	Possible	Extreme	Extreme	
			- loss of breeding habitat for Dwarf Galaxias	Possible	Extreme	Extreme	
	General Works	Encroachment on No Go Zones	Loss of River Swamp wallaby Grass	Unlikely	Extreme	High	SSEMP and ECP– Construction Package(s) ECM Project checklists and procedures
			Damage and loss of scattered trees	Possible	Extreme	Extreme	
			Loss of Herb Rich Plains Grassy Wetland	Possible	Extreme	Extreme	

## 5 MANAGEMENT AND MITIGATION MEASURES

Mitigation measures to be implemented during the design, construction and, where relevant, operation phases of the Project are detailed below.

The following section details the specific measures to be implemented to ensure that impacts on vegetation and fauna are contained within acceptable and agreed limits. These strategies are designed to ensure all commitments with regard to fauna management are met.

### 5.1 Management through Design and Construction

The alignment and placement of Project structures and facilities have been designed to ensure, where possible, the retention of significant vegetation. Retaining walls have been included in the design to reduce the amount of clearing in critical areas. Details of mitigation measures to be implemented for each zone during the Project's design and construction phases, and those responsible for implementation of these measures, are provided in Table 18. Further mitigation measures may be included following development approval and any associated development conditions.

Management of potential hazards and risks, associated with construction of the Project will be managed and mitigated through the use of appropriate environmental controls and procedures.

### 5.2 Flora

#### 5.2.1 Threatened Species Management Plan

A Threatened Species Management Plan (TSMP) was prepared to meet conditional approval of the EPBC approval (2007/3480) issued by DEWHA for the Project. The TSMP aims at seeking to protect and recover selected threatened flora and fauna taxa and the report outlines threatened species management requirements including the determination of targeted species, the location of suitable habitat for said species, and the location of known and likely populations.

#### 5.2.2 Flora Surveys

Prior to the clearing of native vegetation, Abigroup will conduct targeted pre-clearing flora surveys to identify any additional populations of species listed by the DSE advisory list of rare or threatened species. This list of target species is based on a current (2010) search of the DSE Flora Information System. Biosis Research completed a search of the current FIS for Willow Road and Westerfield. The species from the DSE advisory list resulting from those 5 km searches were the target of preconstruction surveys. This is consistent with the Threatened Species Management Plan prepared by Practical Ecology for LMA.

It is acknowledged that populations, both large and small, of other flora protected by the *Flora and Fauna Guarantee Act 1988* are present within the project's construction footprint. This includes members of the *orchidaceae* and *asteraceae* and populations of *Correa reflexa*, *Acacia mearnsii*, *Xanthorrhoea* minor and *Melaleuca squarrosa*. However, any salvage operation will only target species on the DSE threatened flora advisory list.

A Scope of works for general flora survey and salvage was prepared by the Project Ecologist, on behalf of Abigroup, 'General survey and salvage protocol for flora'. Targeted flora surveys completed by the Project Ecologist are discussed below.

#### 5.2.3 Targeted Flora Surveys – General

In May and June 2010, the Project Ecologist (on behalf of Abigroup) undertook pre-clearing targeted flora surveys in the Willow Road Wetland Area and the Westerfield Property. To satisfy requirements specified in the TSMP; these works were completed in consultation with DSE.

#### 5.2.4 Pre-Clearing Flora Survey and Salvage: Westerfield Environs

Targeted Flora surveys have been completed at the Westerfield property to identify the location of any flora material requiring salvage. Biosis Research completed a search of the current FIS for Westerfield. The species from the DSE advisory list resulting from those 5 km searches were the target of pre-construction surveys.

Rare or threatened species included within the pre-construction flora survey at Westerfield:

- *Amphibromus fluitans* River Swamp Wallaby-grass
- *Eucalyptus yarraensis* Yarra Gum
- *Glycine latrobeana* Clover Glycine
- *Prasophyllum frenchii* Maroon Leek-orchid
- *Senecio psilocarpus* Swamp Fireweed
- *Austrostipa rudis subsp. australis* Veined Spear-grass
- *Burnettia cuneata* Lizard Orchid
- *Caladenia robinsonii* Frankston Spider-orchid
- *Eucalyptus fulgens* Green Scentbark
- *Senecio psilocarpus* Swamp Fireweed
- *Thryptomene calycina* Grampians Thryptomene
- *Alternanthera sp. 1 (Plains)* Plains Joyweed
- *Austrofestuca littoralis* Coast Fescue
- *Caladenia tentaculata* Mantis Orchid
- *Chiloglottis X pescottiana* Bronze Bird-orchid
- *Chorizandra australis* Southern Bristle-sedge
- *Corybas fimbriatus* Fringed Helmet-orchid
- *Diuris punctata var. punctata* Purple Diuris
- *Entolasia stricta* Upright Panic
- *Prasophyllum lindleyanum* Green Leek-orchid
- *Pterostylis pedoglossa* Prawn Greenhood
- *Pterostylis X toveyana* Mentone Greenhood
- *Utricularia gibba* Floating Bladderwort

The results of the survey are discussed in '[Flora Survey and Salvage: Westerfield Report](#)'.

The result of the survey determined no individuals or any material which could potentially be individuals of the rare or threatened species listed above were located during the survey. A population of Austral Ladies' Tresses was identified and will be salvaged prior to vegetation clearing in this area. On advice received from the Project botanist, no further survey for any individual species are recommended at this wetland.

### 5.2.5 Pre-Clearing Flora Survey and Salvage: Willow Road Wetland.

Pre-clearing targeted Flora surveys were completed by the Project Botanist (Biosis Research) within the confines of Willow Road Wetland to provide additional certainty in the findings of additional surveys and to identify the location of any flora material requiring salvage.

Rare or threatened species included in the targeted pre-construction flora survey of Willow Road Wetland include:

- *Amphibromus fluitans* River Swamp Wallaby-grass
- *Eucalyptus yarraensis* Yarra Gum
- *Glycine latrobeana* Clover Glycine
- *Prasophyllum frenchii* Maroon Leek-orchid
- *Senecio psilocarpus* Swamp Fireweed
- *Austrostipa rudis subsp. australis* Veined Spear-grass
- *Burnettia cuneata* Lizard Orchid
- *Caladenia robinsonii* Frankston Spider-orchid
- *Eucalyptus fulgens* Green Scentbark
- *Senecio psilocarpus* Swamp Fireweed
- *Thryptomene calycina* Grampians Thryptomene
- *Alternanthera sp. 1 (Plains)* Plains Joyweed

- *Austrofestuca littoralis* Coast Fescue
- *Caladenia tentaculata* Mantis Orchid
- *Chiloglottis X pescottiana* Bronze Bird-orchid
- *Chorizandra australis* Southern Bristle-sedge
- *Corybas fimbriatus* Fringed Helmet-orchid
- *Diuris punctata var. punctata* Purple Diuris
- *Entolasia stricta* Upright Panic
- *Prasophyllum lindleyanum* Green Leek-orchid
- *Pterostylis pedoglossa* Prawn Greenhood
- *Pterostylis X toveyana* Mentone Greenhood
- *Utricularia gibba* Floating Bladderwort
- *Spiranthes australis* Austral Ladies' Tresses

The results of the survey are discussed in '[Flora Survey and Salvage at Willow Road Wetland Report](#)'.

No individuals or any material which could potentially be individuals of the rare or threatened species listed above were located during the survey. Given the surveys that have now been conducted within this area by botanists during the EES process, which included a number of seasons, and the survey undertaken by the Project botanist, it is considered highly unlikely that any of these rare or threatened species occur at this site. On advice received from the Project botanist, no further survey or salvage works for any individual species are recommended.

#### 5.2.6 Seed Collection

Providing a net gain outcome remains the main mitigation measure for the loss of flora species and native vegetation communities along Peninsula Link.

LMA undertook seed collection, within the patches designated by Venosta et al. (2008) for targeted searches, in the 2009/2010 flowering season to establish a stockpile of local provenance, indigenous seed for revegetation programs (within the orchard area adjacent to the Pines and for revegetation/landscaping programs within the construction area), as per the requirements of the TSMP (Appendix 3). Seed collection of River Swamp wallaby grass was undertaken, February – March 2010, by Australian Ecosystems as per the requirements of Section 1.6 of the TSMP.

Seed from many indigenous species has been collected from the construction footprint to provide material for landscape planting, enhancement plantings in local remnants to be protected and managed for conservation and other local revegetation projects.

The seed collected is to be stored at a qualified location and made available to Abigroup for revegetation within the construction area landscape sites. The collected seedbank will be made available to the contractors appointed by LMA for revegetation works within the orchard area.

As seed collection has been conducted from the alignment for the 2009/ 2010 season, the Project proposes to complete (approved) whole plant salvage in specific areas including Willow Road Wetland and Westerfield, prior to vegetation clearing.

Small species shall be utilised for enhancement plantings in other retained remnants of native vegetation adjacent to and within Peninsula Link.

#### 5.2.7 Notification of DSE

If any other flora species or community, listed as threatened under the FFG Act and not already identified in previous reporting and surveys are identified during pre-clearing walks and clearing works, the exact location will be noted and Karen Lester, Department of Sustainability and Environment (DSE), Senior Biodiversity Officer (9296 4637) or the DSE Manager Biodiversity Port Phillip Area (9296 4633) will be informed within 24 hours of the find. It is the responsibility of the Project Environment Manager to notify DSE.

Where a species is identified during clearing works, works in that area will stop immediately, the Environmental Manager and Project Ecologist contacted. Works will resume when the FFMP is amended, in consultation with DSE and approved by Linking Melbourne Authority.

### **5.2.8 No-Go Zones – Vegetation to be Retained**

Prior to vegetation clearing and construction, areas of native vegetation to be retained on-site will be fenced and signed as 'No Go Zones' to prevent accidental damage to vegetation.

No-go zone fencing will ensure that works will be confined to the agreed Project construction footprint and no additional vegetation removal is required. Vegetation clearing will be in keeping with agreed conditions of the EPBC Permit (2007/3480) and the FFG Permit.

Locations and significance of 'no-go' zones are shown on the Environmental Constraints Mapping (ECM) and will be included as part of the induction and toolbox training process.

The 'Installation of 'no-go' fencing' Procedure will be included within the environment section of the construction package(s) for all pre-clearing works, applicable to each Section of the alignment. They are discussed below.

#### ***Procedure for Installation of No-go Fencing***

Locations of retained vegetation areas will be documented specifically for each site on Environmental Control Plans (ECPs) which will be attached to the Site Specific Environment Management Plans (SSEMPs) and the Construction Packages for each works activity.

Vegetation clearing limits will be marked in the field with the use of pegs and flagging tape. The boundaries of no-go zones will be documented by the Survey Team.

Fencing works procedures detailing how the fencing will be installed is included in the Construction Package prepared by the Project Engineer, relevant to the site activity for each Zone.

#### ***Fencing Type***

Fencing will consist of star pickets with 3-wire fencing, marked with bunting and signed as 'No Go Zone' to prevent accidental damage during works.

Scattered trees to be retained will be fenced with star pickets and three strands of wire. No stockpiles or laydown areas will be contained within these fenced off areas. These fenced areas not to be disturbed and will be left in-situ during clearing.

#### ***No-Go Zone Signage***

"No Go" Signs will be of a 1.4mm flexible Polycarbonate material, 450mm x 300mm in size. The text will be in bold red font and include the following wording 'No Go Zone – Protected Vegetation. Contact Site Supervisor'.

'No-go' Signage will be attached on fencing identifying areas of retained vegetation following installation of fencing.

### **5.2.9 Vegetation Clearing**

Prior to commencement of construction, the project boundary will be fenced and clearing plans will show areas of vegetation to be cleared.

#### ***Clearing and Grubbing***

The strategy and procedures to be implemented on site for all clearing and grubbing activities will be managed in accordance with 'Procedure 13 – Clearing and Grubbing' (PLD-E-ID-0118).

This Procedure will be attached to each of the Construction Package for clearing and grubbing works proposed for a Zone. The procedures and strategy will assist the Foreman and Project engineer with preparation of the Environmental Risk Assessment (ERA) for this site specific activity.

### **Clearing Limits**

Clearing limits will be clearly marked in the field and communicated to site personnel and sub-contractors through work method statements prior to works commencing. Access by people, plant and equipment will not be permitted outside the cleared footprint.

Clearing protocols will be put in place to ensure that clearing is kept within these limits, these will include but not limited to

- A surveyor on site to mark limits of clearing
- Clearing to commence away from the extent of clearing until a clear GPS signal is received
- Once signal received clearing can move to limits
- Extent of clearing to be logged as soon as clearing is complete

The storage of goods and materials will not occur such that it compromises individual threatened or significant flora including:

- stockpiles of materials will be located outside of 'no go' zones;
- storage containers and stockpiles shall only be placed in already cleared areas and no specific clearing is to take place for the placement of these containers; and
- access to these areas must not impinge on areas of conservation significance.

### **Hollow Bearing Trees**

Hollow bearing trees will be marked (with an 'H'), need careful and controlled felling and this can be achieved by retaining trees roots as much as possible, as they can act as "brakes", reducing impact. The aim is to fell the tree with minimal damage to the nest, hollows and any animals that may be present and are inspected prior to clearing by the qualified wildlife carer. They will be salvaged and set aside for landscaping and used as fauna furniture.

Where possible, native trees removed during clearing activities within the construction area and residual land will be used in sediment control measures (e.g. placed strategically on boundaries, contours and below cuts).

### **5.2.10 Riparian Vegetation**

Riparian zones are areas of land that adjoin, influence or are influenced by a body of water. Where clearing works and construction activities are to cross a creek, waterway or wetland area, environmental controls shown in Procedure 6: Creek Crossings (PLG-E-ID-0093), will be implemented to manage impacts to waterway.

The procedure will be attached to all Construction Packages to manage activities where works are to cross the following Creeks and waterways:

- Balcombe Creek
- Boggy Creek
- Watsons Creek
- Tamarisk Creek
- Devilbend Creek
- Tuerong Creek

## **5.3 Fauna**

### **Pre-Clearing Targeted Fauna Surveys**

#### **Growling Grass Frog**

Pre-clearing survey (active searches) and salvage of GGF (if found) will be undertaken within suitable habitat (i.e. dams, wetlands, creeks, drainage lines) or in the vicinity of sites where the species has been recorded during previous surveys or in areas of suitable habitat in Section A, E and Section F prior to vegetation clearing.

Suitable habitat within the Project alignment will be surveyed a week prior to start of works commencing in the area. The Project Ecologist will undertake the survey in accordance with 'DSE's Biodiversity Precinct Structure Planning Kit' guidelines for GGF survey and the DEWHA significant impact guidelines for the species (DEWHA 2009).

Where clearing works are planned during the inactive period (between April and August) then salvage will occur up to one week in advance of site stripping.

If construction coincides with the active period (between September and March) then salvaging will occur in the week running up to actual day of vegetation clearing. If the removal of dams or other possible GGF breeding habitat is to occur following the commencement of the next Growling Grass Frog breeding season (September to December), a Growling Grass Frog pre-construction survey will be completed a week prior to the start of works in those remaining areas to be cleared.

The scope of works and procedures to be implemented by Biosis Research during pre-clearing GGF surveys is discussed in 'Growling Grass Frog Salvage and Translocation Plan', prepared in consultation with DSE and Melbourne Water.

If Growling Grass Frog is identified on-site, the species will be salvaged, in accordance with the appropriate frog handling protocol. Abigroup will notify DSE and release the frogs to an agreed translocation site, in consultation with DSE. Potential future monitoring of translocation sites will be reviewed in consultation with DSE, if the species is found, on a case by case basis.

### **Southern Toadlet – Survey and Salvage**

Pre-clearing surveys Southern Toadlet surveys were completed by Biosis Research (May 2010 – June 2010) for Southern Toadlet at a number of locations and within suitable habitat (i.e. woodland) within the Project alignment. The ideal survey period for this species is from early April until mid June. The survey methods used include spotlighting, call playback and active searching.

Pre-clearing surveys included night-time walks of Willow Road wetland and other suitable areas, checking depths prior to salvage of aquatic fauna. No individuals of the species were recorded during the surveys.

Salvage protocol for the Southern Toadlet has been included within 'General Fauna salvage protocol' and will be implemented in the instance the species is found.

### **Dwarf Galaxias Surveys**

Additional survey for Dwarf Galaxias has been completed (Biosis Research, 2010) on behalf of Abigroup in the Tuerong, Devilbend and Balcombe Creek catchments.

The survey and methodology for monitoring requirements for this species are outlined within a monitoring program (Biosis Research 2010). The critical area surveys referred to in the TSMP have been completed and this is considered to constitute the first of a three annual surveys to occur during construction. The annual surveys are proposed to occur at key sites and in highly ephemeral areas (post significant rainfall events) to assess distributional changes and habitat usage for spawning/movement. Results of the Dwarf Galaxias monitoring program have been developed in consultation with DSE.

Pre-Clearing and pre-construction Dwarf Galaxias Surveys will be conducted using a range of survey techniques selected in accordance with the characteristics of each site. Bait trapping and dip netting would be the main techniques employed.

Section 7.2 of this FFMP provides discussion regarding the proposed monitoring program of the Dwarf Galaxias, against the requirements of the Threatened Species Management Plan. The results of the Targeted Dwarf Galaxias Survey, the plan for timing to undertake monitoring and specifically the proposed monitoring survey methodology is discussed in 'Follow-up targeted survey of Dwarf Galaxias Galaxiella pusilla in the Boggy, Watsons and Balcombe Creek catchments, Victoria' (Biosis, 2010).

The construction environment management measures, refer 'Dwarf Galaxias Construction Management' (PLG-E-ID-0114), will be incorporated into the SSEMPs and construction packages for construction works over waterway crossings including; Tuerong, Devilbend, Balcombe and Watsons Creek.

### Swamp Skink Survey and Salvage

Ecological investigations as part of the EES process for the Project identified habitat for Swamp Skink *Lissolepis coventryi* within The Pines Flora and Fauna Reserve. Survey for the species trapped one individual in swamp scrub habitat on Tamarisk Creek within the proposed Peninsula Link easement. A recommendation was made for salvage and translocation of Swamp Skink to be undertaken as a last resort measure in the event that habitat loss was unavoidable (*Biosis Research 2008, pg. 135*).

A salvage and translocation plan for the Swamp Skink has been developed by Biosis Research, in consultation with DSE. The procedures and salvage protocol will be implemented by the Project Ecologist should the species be found.

Seventy type B Elliot traps baited with rolled oats, honey and sardines were deployed during April 2010. Trapping was conducted under Management Authorisation number 10004702 issued by DSE under the Wildlife Act 1975.

Traps were closed overnight and opened again by 0830 every morning. Trapping was undertaken in accordance with the Biosis Research standard operating procedures (*Biosis Research, 2009*). Traps were located at approximately every 10m adjacent to or along Tamarisk Creek within suitable Swamp Scrub and Swampy Riparian Woodland habitat. Weather conditions were generally warm during the day, with some colder nights. Daytime maximum temperatures were between 19-23 Degrees Celsius, with some overcast conditions and patchy showers.

Discussion with Parks Victoria identified that the most suitable translocation site would be along a section of Boggy Creek within The Pines Flora and Fauna Reserve. Protocols for any Swamp Skink translocation are outlined in the attached report (*Biosis Research, 2010*). Trap checking was undertaken by two qualified zoologists from Biosis Research. No Swamp Skinks were recovered during trapping. A number of native Swamp Rats *Rattus leutroolus* were trapped and released at point of capture.

If swamp skink is identified on-site, the species will be salvaged (in accordance with the fauna handling protocol) and released to the agreed translocation site at Boggy Creek. Abigroup will notify DSE and undertake consultation regarding potential future monitoring of translocated Swamp Skink on a case by case basis, in consultation with the Project Ecologist (Biosis Research).

### General Fauna Salvage and Handling Protocol

General 'Fauna Management, Salvage and Relocation Protocol' (PLG-E-ID-0107), relevant to the management of fauna species on site will be implemented by the appointed and suitably qualified wildlife carers for all fauna handling for the duration of the Project and implemented during vegetation clearing works.

The Fauna Salvage Protocol details the Species, the Habitat common to the species and the specific salvage approach to handle the species. The Fauna species included in the protocol include:

- Small Ground-dwelling mammals (Echidna, Swamp Rat, Southern Brown Bandicoot).
- Southern Brown Bandicoot (measures consistent with the SBB Management Plan)
- Reptiles (including turtles)
- Frogs (with separate sections dedicated to Growling Grass Frog and Southern Toadlet)
- Swamp skink
- Arboreal mammals (Koala, BTP, RTP, Sugar Glider)
- Macropods (wallabies)
- Wombats
- Microbats
- Fish

### Notification

For any threatened species that are encountered, the following notification process will be followed (during this time, works will need to cease) and included as a specific requirement for all Site Specific EMPs and Construction Packages:

- Contact site environment manager and inform them of location of threatened species.

- Site environment officer/manager to inform DSE of threatened species; the primary contact is Karen Lester 0417 369 705, secondary contact is Bram Mason 0437 100 852.
- Environment Manager to inform Zoologist/Wildlife Specialist of any particular requirements/requests from DSE.
- Zoologist/Wildlife Specialist to relocate threatened fauna as instructed and or according to existing protocols.

### **Frog Management Protocol**

Frogs salvaged and relocated from site will be managed in accordance with the Frog Salvage Protocol (PLG-E-ID-0107). This protocol will be implemented by The Project Zoologist and appointed wildlife carers and has been prepared in consultation with DSE.

Specific Hygiene protocol is also included in this protocol and is applicable to the handling of all frogs and will be implemented by all certified fauna handlers to prevent the spread of disease, specifically Chytrid fungus.

### **Aquatic Fauna Salvage Protocol and Permit**

Salvage and translocation of fish relates to other native and exotic fish present in dams/wetlands scheduled for removal. Salvage protocol will be implemented by the Project Zoologist (PLG-E-ID-0107).

A copy of the Permit issued by Department of Primary Industries to Biosis Research, under the provisions of the Fisheries Act 1995 (Permit No: RP1011) permits the Project Zoologists to undertake the collection and translocation of aquatic fauna species from waters affected by the Project to nearby approved waters.

### **Southern Brown Bandicoot Management Protocol**

The Southern Brown Bandicoot Management and Salvage Protocol (PLB-E-MP-0120) for the Pines has been prepared by Biosis Research, in consultation with DSE and with advice received from ARCUE, to manage the installation of fauna exclusion fencing and trapping, prior to vegetation clearing through the Pines.

This protocol will be included in the SSEMP for Construction package for Section B. This information will be supplemented by fencing protocol, the design of which was developed by an Abigroup Project Engineer in consultation with the Project Zoologist (Biosis Research) and with advice received from DSE and ARCUE.

## **6 PROTECTING AREAS OF SIGNIFICANCE**

The following section describes the key design measures that have been developed to mitigate adverse impacts to key environmental areas for each Zone. The process for design of the bypass has achieved the minimum procedural requirements stipulated in the PSR, the Ministerial requirements shown in the EES and the conditions of the EPBC Referral 2007/3480.

### **6.1 Zone A: EastLink – Environmental Management during Construction**

Site specific management measures to be employed during pre-clearing and vegetation clearing works at Eastlink, including erection of temporary fencing and marking out of 'no-go' zones will be discussed in detail in the SSEMP for the Construction Package for Section A ' Eastlink. The locations of controls will be identified on the Environmental Control Plans.

#### **Plains Grassy Wetland**

The design of the EastLink interchange has ensured the hydrology regime for the areas of Herb-rich Plains Grassy Wetland EVC shall be retained during construction and through to operation.

The design of the bypass has significantly reduced the proposed median width to reduce the construction bypass footprint and retaining walls have been designed to prevent incursion into areas of ecological sensitivity.

A Translocation Plan for the Herb-rich Plains Grassy Wetland EVC, prepared by Australian Ecosystems (June 2010) was prepared on behalf of Abigroup and has been developed in consultation with DSE. The Plan details the on-site measures to be implemented to salvage and translocate the EVC from the site, to fulfil condition A6.1.1 of the PSR.

During construction areas of Herb Rich Plains Grassy wetland to be retained will be fenced off as 'no-go zones' and signed accordingly. Details regarding the environmental control measures, the locations of no-go zones and control measures to be implemented on-site will be included in the SSEMP, described on the Environmental Control Plans and referenced directly within the Construction Package for Zone A.

### Edithvale-Seaford Wetlands

The Edithvale-Seaford Wetlands are RAMSAR listed wetlands and works will be staged, to ensure no impacts to breeding species. The following measures apply to the construction of the Shared User Path and will be implemented to avoid significance impacts on Wetlands of international importance (sections 16 and 17B) and listed migratory species (sections 20 and 20A)

The work must be carried out to management the nearby RAMSAR site and associated values:

1. Native woody vegetation must be identified, temporarily fenced during construction and must not be damaged or removed during construction;
2. Construction must not occur between September and April and must cease, or must not commence, if migratory or important wetland bird species are present within the wetlands and within 200 metres of the construction site as determined by a relevant bird expert;
3. Contamination, sedimentation and erosion control measures must be implemented including but not limited to sediment barriers, bunded containment areas for storage of potential contaminants and revegetation of cleared areas with suitable native plant species;
4. Additional plant screening (of a suitable native species for the area) must be established between the path and the wetland in areas where the path is within 200 meters of wetland habitat area as determined by a relevant wetland expert;
5. Structures must be erected at each entry to the path in order to restrict access of motorbikes onto the shared path;
6. Signage must be erected along to path advising path users of the following:
  - a. The site is a Ramsar wetland of international significance;
  - b. Penalties occur for littering and trespassing;
  - c. Dogs must be kept on a leash at all times;
  - d. No Motorbikes on the path

The design mitigation measures implemented in Section A are given in Table 11 below.

**Table 11 - EastLink Interchange – Environmental Management**

Environmental Performance Requirements	Design Mitigation
Minimise disturbance and include the use of retaining walls in critical areas – EastLink Interchange areas	Approach barriers have been reduced, with the proposed median width for the high level bridge reduced from 9m to 1m, resulting in substantial decrease in the construction footprint through this sensitive area
	Retaining walls designed to reduce construction footprint, reducing the need to

	encroach on protected sites and retain PGW EVC in-situ
Manage islands of retained PGW at EastLink to ensure ongoing viability of remnant patches	<p>The key ecosystem process (regular flooding) will be maintained by the reconfiguration of drainage channels in this area. The design maintains the existing hydrological regime for all retained areas as all retained patches would be influenced by any localised flooding associated with this stream system.</p> <p>There is also scope to revegetate disturbed areas surrounding these remnants and to manipulate the flooding regime to enhance these systems. The design of the interchange has been careful to provide for management access to this important area to allow for ongoing works required to protect and maintain this threatened community.</p> <p>Islands of PGW will be retained at the EastLink Interchange and protected as 'No-go' zones.</p> <p>Salvage and translocation of species from the PGW will take place prior to construction taking place. This will be done using the project ecologist or their representative.</p>
	Translocation will take place to areas where terrestrial conditions are the same as the vegetations present location, in keeping with the Salvage and Translocation Plan prepared by Australian Ecosystems and approved by DSE.
	PGW is located in an area characterised by a very flat profile and currently benefits from standing water following high rainfall events. The areas of retained PGW will continue to benefit from existing hydrological regime following rain events as the design of the interchange and location of structures will not prevent precipitation from flooding existing areas of PGW.

### Boggy Creek

Boggy Creek is connected to protected RAMSAR wetland sites. Works located in close proximity to this waterway crossing will be completed using the procedures shown in Procedure 6: Creek Crossings, and the controls to be included in the SSEMP for Boggy Creek. Site specific controls will be shown on the Environmental Control Plans and attached to the Construction Package prepared for Section A.

Management Measures will be implemented to direct and manage all works in the vicinity of Boggy Creek to ensure impacts to riparian vegetation, habitat connectivity and downstream water quality are effectively managed and mitigated.

## 6.2 Zone B: The Pines – Environmental Management during Construction

The vegetation within the Pines Flora and Fauna Reserve is of state significance and the area supports nationally listed flora species and fauna species, including the Southern Brown Bandicoot. The area will be bisected by the bypass alignment and the area is considered a site of ecological sensitivity. Design has incorporated a range of measures to reduce impacts to vegetation and fauna habitats and all works associated with the Project will not disturb more than 11 ha of native vegetation within the Reserve (EPBC 2007/3480).

### River Swamp Wallaby Grass

The Pines supports River Swamp Wallaby Grass and the salvage and translocation of this flora species will be completed in compliance with the measures, timings and responsibilities discussed in Section 2.2 and Section 8 of the TSMP.

### Tamarisk Creek and Wetland Area

Implement measures described in Procedure 6: Creek Crossing and Procedure 11 'Dwarf Galaxias Construction Management Procedure' (PLG-E-ID-0114) for site specific procedures to be implemented where works are to impact on Tamarisk Creek to mitigate impacts to riparian vegetation and maintain habitat and connectivity for Dwarf Galaxias.

### Southern Brown Bandicoot

No SBB mortality can occur during any clearing of vegetation, including clearing of vegetation for the installation of construction fencing. No mortality of SBB is to occur during any other stage of construction of Peninsula Link, including surveying, earthworks, fencing, and travel around the site

### Fauna Exclusion Fencing (Southern Brown Bandicoot)

The installation of Fauna Fencing is required to ensure no fauna species and specifically, no Bandicoots, are impacted by vegetation clearing works within the agreed alignment. This fencing will be installed prior to start of clearing works as per the protocols which is to be included in the SSEMP for Construction Package for Section B.

Site specific management controls to be employed during pre-clearing and clearing works in the Pines, including the marking out of 'no-go' zones, protection of riparian vegetation through the wetland area and Tamarisk Creek will be shown in the SSEMP, included as part of the Construction Package for Section B. These are discussed in the Southern Brown Bandicoot Salvage Protocol (PLB-E-MP-0120) and relevant to the Pines Flora and Fauna Reserve.

The methods to be implemented to survey, set up fencing and trap SBB and manage minor vegetation removal and the protocols required to install the fauna exclusion fencing have been developed by the Project Engineer, in consultation with the Project Zoologist (Biosis), DSE and ARCUE.

Table 12 below identifies appropriate management measures for pre-construction vegetation clearing and construction works.

**Table 12 - Pre-Construction Management - Southern Brown Bandicoot**

Activity/ Phase	Mitigation Measures	Responsibility
<b>Pre -Construction Activities: Southern Brown Bandicoot</b>		
Vegetation clearing for fencing	Implement Southern Brown Bandicoot Fencing and management procedures. (Refer: PLB-E-MP-0120).  Pre-clearing walk-through will be conducted on the day that pre-clearing temporary bandicoot fencing is to be erected. The zoologist will look for individual bandicoot and signs of bandicoots including conical shaped diggings, footprints and mound burrows	Project zoologist
	A walkthrough will be conducted immediately after clearing to aid any bandicoots injured by machinery or remaining on site after clearing.  Injured animals will be taken to a local vet clinic or wildlife shelter and dealt with in accordance with the requirements of the Wildlife Act (Vic) 1975 and in keeping with SBB Fauna salvage Protocol.	Project zoologist
Habitat Connectivity	Construct 'no go' fencing with breaks at appropriate intervals to allow passage for SBB, where possible and that does not impede construction access through the agreed Right of Way.  Temporary habitat connectivity for the Southern Brown Bandicoot will be maintained through the provision of a temporary pipe crossing in the Pines. Details for the location and type of pipe crossing to be detailed in the SSEMP - Construction Package for Section B.	Zoologist/ Wildlife Carer/ Foreman

The Pines mitigation measures are given below in Table 13 and will be expanded upon in the SSEMP for the Construction Package – Section B.

**Table 13 - Pines Flora and Fauna Reserve -Environmental Management**

Environmental Performance Requirements	Design Mitigation
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Environmental Performance Requirements	Design Mitigation
Minimise impact on the Pines Flora and Fauna Reserve	Construction footprint reduced through use of retaining walls and decreased median width. Innovative design will meet the DEWHA conditions (EPBC Referral) to reduce impacts to native vegetation
Tamarisk Creek within the Pines FF Reserve restored to a natural floodplain waterway	<p>The proposed Tamarisk Creek realignment aims to achieve a more natural surface flow through an area where the creek has been channelised in the past.</p> <p>The vegetation communities currently supported in this area are 'drier' due to a lack of surface flows, where a swampier environment would once have dominated. Achieving this surface flow will assist in re-establishing a more swampy environment, which will encourage use of the area by indigenous flora and fauna.</p> <p>The waterway crossing has been designed to allow for unimpeded fish passage during a range of flows</p> <p>No more than 0.04 ha River Swamp Wallaby Grass will be disturbed in wetland area.</p>
Minimise impact on local wildlife corridors and state and nationally significant fauna species known or likely to be present, including the SBB	<p>As a requirement of both state and federal approvals, a two span fauna underpass is proposed to retain general fauna connectivity. This underpass will also allow for Tamarisk Creek to flow across Peninsula Link. A series of culverts (2mx2m) on either side of the underpass will be provided specifically to cater for Southern Brown Bandicoot movement. The exact location of these structures will be determined from population studies currently being undertaken by LMA.</p> <p>The fauna underpass will incorporate 2 (two) spans measuring 30m x 5m, in keeping with the concept design shown in the (Draft) Pines Master Plan. The design of the underpass has been designed in consultation with Biosis Research. The design of open spans and light-wells in the bypass median will ensure light filters through to the fauna underpass and support habitat connectivity for a variety of fauna species, including birds.</p> <p>Salvage and translocation of significant flora species from the "Pines" will take place prior to construction taking place. This will be done using the project ecologist or their representative. Translocation will take place to areas where terrestrial conditions are the same as the vegetations present location.</p> <p>Construction through the Pines will be managed through the implementation of the Pines Site Specific EMP with the Environmental Control Plans, identifying: the locations of control measures, areas of vegetation to be retained and appropriate measures to be implemented by all personnel to mitigate impacts to fauna and flora species.</p>
All works associated with the Action must not disturb more than 11ha of native vegetation within the Reserve	Areas of vegetation to be retained within the Pines will be fenced and signed as 'no-go' zones and retained in-situ for the duration of works. This will ensure that no more than 11ha of native vegetation is removed.
Weeds and Pests	<p>As <i>Phytophthora Cinnamomi</i> (Cinnamon Fungus), noxious weeds and environmental weeds are known from the Pines, all plant and associated equipment, including vehicles and hand tools, must be made free of all soil, seed and plant material before entering the works site, and again on exit (as per approved Weed Management Plan PLG-E-MP-0006 and any updates thereof).</p> <p>Vehicles, equipment and people must not cause unnecessary soil disturbance or carry soil, invertebrates, or plant propagules within sites or from site to site.</p> <p>Implement procedures shown in PLG-E-ID-0083 (Weed and disease Management)</p>

## 6.3 Zone C: Karingal – Environmental Management during Construction

### Willow Road and Pobblebonk Wetlands

The Willow Road Wetland will be directly impacted by Project works, proposed to cut through the centre of this wetland area. These wetlands provide potential habitat for Swamp Skink, Growling Grass Frog and other frog species. The Wetlands are located on the east side of the project alignment, south of Cranbourne Road, Frankston.

Environmental control measures to manage works in this sensitive site, taken from the SSEMP to be attached to the Construction Package Section C 'Clearing and Grubbing' (for works in this zone). No further flora and fauna surveys will be conducted in the Willow Road wetland area.

**Table 14 - Willow Road/Pobblebonk Wetlands - Environmental Management**

Environmental Performance Requirements	Environmental Management
Minimise impact to the Willow Road Wetlands	Retaining walls have been designed to reduce the area of impacted habitat and fenced 'no-go zones' avoid impact to adjacent areas.
	The design will incorporate measures to prevent drying out of the wetlands and construction activities shall not result in any detrimental impact on the wetlands, outside of the required construction footprint. Monitoring of wetlands will take place throughout the construction process to that there are no adverse affects on the wetlands
Pre-Clearing Flora Surveys	'Flora Survey Report: Willow Road'
Vegetation Clearing	Implement measures as shown on the Environmental Controls Plans (ECPs) Utilise Clearing and Grubbing Procedure Utilise Procedure for Installation of No-Go Fencing

## 6.4 Zone D: Baxter– Environmental Management during Construction

### Westerfield Environs

The historically significant Westerfield property is located is located at Robinsons Road, between Robinsons Road and Golf Links Road, and referred to as 'Westerfield'.

The property is home to native vegetation, fauna species and items of historical significance. The proposed bypass alignment will bisect the property and the design team has sought to reduce the construction footprint and mitigate impacts during works.

Pre-clearing flora surveys were completed by the Project Ecologist(s) for the species described in Section 5.2 of this Plan. Salvage of flora will be completed prior to vegetation clearance, in keeping with agreed measures.

Site specific management measures to be employed during pre-clearing works, including erection of temporary fencing and marking out of 'no-go' zones in the Westerfield Property is detailed in the SSEMP for Section D, prepared and submitted to the IR and LMA prior to clearing works commencing in Section D.

**Table 15 - Westerfield Environs - Environmental Management**

Environmental Performance Requirements	Environmental Management
Minimise removal of native vegetation and established	Retaining wall designed to reduce the extent of the construction footprint and reduce removal of areas of native vegetation.

large trees	<p>Reducing the footprint through this state significant woodland is an important feature of the design.</p> <p>Incorporate 'No-go' zones (to be fenced) to prevent access to sites of ecological sensitivity during construction.</p> <p>The no-go zones will also avoid any removal of native vegetation outside of the construction footprint.</p>
Pre-Clearing Survey	<p>Undertake pre-clearing survey of the site to determine location (if any) of any threatened species not previously identified during the EES.</p> <p>To be undertaken by the Project Ecologist, utilising measures shown in 'Flora Survey Report – Westerfield'.</p>
Vegetation Clearing	<p>Implement measures as shown on the Environmental Controls Plans (ECPs)</p> <p>Utilise Clearing and Grubbing Procedure</p> <p>Erect pre-clearing fencing in accordance with fencing protocol - Installation of No-Go Fencing</p>
	<p>Where new species identified, notify DSE on the day of species being located on the site. Initial contact Karen Lester 0417 369 705, second contact Bram Mason 0437 100 852, by close of business on the same day species identified.</p>
	<p>Prepare SSEMP for inclusion in Construction Package for Section D Clearing and Grubbing.</p>

## 6.5 Zone E: Moorooduc – Environmental Management during Construction

### Balcombe Creek

The alignment passes over Balcombe Creek which is known to support habitat for the Dwarf Galaxias and is considered to be of significance given the decline in other populations throughout the Balcombe Creek catchment. Connectivity with Balcombe Creek will be maintained during construction.

An SSEMP for works in/ around Balcombe and Watsons Creek will be included in the Construction Package(s) for all works located in Section E over these waterways to ensure the appropriate environmental controls are implemented.

### Watsons Creek

Watsons Creek is connected to protected RAMSAR wetland sites. Works in these creeks will be completed using a Construction Package and Environmental control plans (ECP). Prior to construction over Watsons creek, areas of riparian vegetation to be retained will be fenced and signed as 'No Go Zones' to prevent accidental damage to vegetation during works.

Construction environment management measures, to manage potential impacts from works on waterways supporting habitat for the Dwarf Galaxias will be managed using as discussed in Section 6.4 of the TSMP, shall be included in the construction packages for works located over Dwarf Galaxias Construction Management Procedure.

**Table 16 - Balcombe Creek/ Watsons Creek - Environmental Management**

Environmental Performance Requirements	Environmental Mitigation
Minimise design and construction impacts on the Ramsar listed Seaford wetlands, Western Port wetlands and listed migratory species	Detailed design for waterway and creek crossings for Watsons Creek to avoid impacts from works.

Environmental Performance Requirements	Environmental Mitigation
<p>Minimise disturbance to any waterway which may have a connection to RAMSAR sites (Boggy Creek and Watsons Creek).</p>	<p>Site specific environmental controls included in the Construction Package for all works crossing these waterways</p> <p>Detailed Drainage design in the vicinity of Boggy Creek and Watsons Creek has been developed in consultation with Melbourne Water.</p> <p>Water quality monitoring and reporting protocols, including water quality criteria, to determine compliance with A6.1 of the PSR</p>
	<p>Water quality locations installed upstream and downstream of Project alignment in relation to Balcombe and Watsons Creek. Locations shown on ECP, to be included in the SSEMP for Construction Package for this Section.</p> <p>To meet the requirements of the Soil and Water Management Plan ( PLG-E-MP-003)</p>

## 6.6 Zone F: Devilbend – Environmental Management during Construction

The Construction Package for Section F and accompanying environmental control plans will be prepared identifying the location and type of management measures to be implemented during future activities and construction over Devilbend and Tuerong Creeks (Section F).

Site specific management measures to be employed prior to works occurring over both of these waterways including; erection of temporary fencing, marking out of 'no-go' zones and vegetation clearing construction will be discussed in detail in the SSEMP for the Construction Package for Section F.

### Devilbend and Tuerong Creek

Devilbend and Tuerong creek are located in the southern section of the Project area and will be spanned by the bypass. Both creeks are known to support population(s) of Dwarf Galaxias. Despite the current lack of riparian vegetation present over winter and spring, the area is considered likely to support breeding habitat for the species. Protection of habitat will be ensured through implementation of bridge design that will promote the dispersal of this species in the local area.

Collaboration between the design team and ecological consultants (Biosis Research), in consultation with Melbourne Water, has determined the option least likely to impact on the Dwarf Galaxias population is the location of a full span bridge to meet the state and federal requirements to protect habitat of this vulnerable aquatic fauna species.

Construction Management measures to manage potential impacts from works on waterways supporting habitat for the Dwarf Galaxias, as discussed in Section 6.4 of the TSMP, shall be included in the construction packages for works located over Tuerong and Devilbend Creeks. Construction management measures to be implemented on site are shown in the 'Dwarf Galaxias Construction Management Procedure'.

**Table 17 –Devilbend/Tuerong Creek - Environmental Management**

Environmental Performance Requirements	Environmental Management
Protect habitat of vulnerable aquatic fauna and minimise impacts on State and nationally significant fauna species including Dwarf Galaxias and the GGF.	<p>Design of waterway crossings will allow for unimpeded fish passage through the design of a clear span bridge, will provide for dispersal of Dwarf Galaxias under flood conditions.</p> <p>Restrictions to working in waterways to protect riparian vegetation supporting habitat for the Dwarf Galaxias</p> <p>Primarily mitigation measures at these locations are required to protect aquatic habitat values for Dwarf Galaxias, but there is also potential habitat connectivity along these creeks for Growling Grass Frog and other frog species.</p> <p>Monitoring of Dwarf Galaxias at Tuerong Creek will be undertaken during construction and post construction.</p> <p>Routine monitoring will occur on a monthly basis for two years post construction, and at an interval to be determined, based on the results of the previous two years and in consultation with DSE and a qualified aquatic ecologist, for a further three years.</p> <p>Monitoring following high flow events and following an incident will also be included at an interval to be determined in consultation with DSE and a qualified aquatic ecologist</p>
Design stormwater treatment/retention ponds to create an aquatic habitat that favours Dwarf Galaxias.	Detailed Drainage design in the vicinity of Balcombe, Devilbend and Tuerong creeks has been developed in consultation with Melbourne Water and Project Ecologist (Biosis Research) to ensure downstream connectivity during works.

### **Dwarf Galaxias – Habitat connectivity during works**

Works required to cross waterways and creeks, specifically those known to support habitat for the species including Devilbend and Tuerong Creek, will be completed in accordance with the Procedure 6: Creek Crossing and the environmental controls detailed in the 'Devilbend and Tuerong Creek SSEMP' (PLF-E-MP-0020).

The proposed environment management measures to manage construction works over Devilbend Creek and reduce impacts to the Dwarf Galaxias will be referenced against Procedure 11: Dwarf Galaxias Construction Management Procedure. These management measures shall be included in the Construction Package for waterway crossing works.

Dwarf Galaxias survey and future monitoring during and post- works, are discussed in Section 7.2 of this Plan and referenced against the requirements listed in Section 6.4 of the TSMP. The Dwarf Galaxias monitoring program will be implemented following receipt of approval from DSE. It is the responsibility of Abigroup to ensure all mitigation measures and monitoring requirements are met, compliant with the Project requirements.

#### **Construction Management**

A construction management procedure has been prepared to ensure potential impacts from works are managed appropriately, for creek crossings, to minimise impacts on this species. The recommendations incorporate the requirements provided by Biosis Research, in consultation with DSE.

#### **Kangaroo Fencing**

Fauna exclusion fencing, more specifically fencing to prevent kangaroos, located along the Moorooduc Plains, from entering the project alignment during works and prevent mortality of the species.

Fauna exclusion fencing will be during site preparation for vegetation clearing, the site specific measures are discussed in detail in Section F Construction Package (Document No: PLF/PW/FE/007) for Preparatory

Works. The location and type of fencing used was developed in consultation with the Project Ecologist and the Project Engineer.

## 6.7 Design Environmental Management -Flora and Fauna

**Table 18 - Design – Environmental Management and Mitigation Measures**

Phase	Mitigation Measures	Responsibility	Zone
<b>Design Activities</b>			
Detailed Design	Where avoidance of native vegetation is not possible, configure the alignment to utilise areas of poorer quality native vegetation in preference to areas of native vegetation with higher biodiversity values	Abigroup /Design Team	All
Construction footprint	The width of construction footprint minimised through the design of retaining walls rather than a batter within areas of significant native vegetation through: EastLink Interchange, The Pines and Westerfield. The width of the construction area is such that it does not exceed the width of the Proposed Bypass Footprint (includes a 5 metre buffer).	Abigroup /Design Team	A/ B/ D
Waterway Crossings	Design water crossings to allow for unimpeded fish passage in accordance with guidelines for fish friendly waterway crossings (NSW Fisheries, 2003) Melbourne Water and DSE requirements. Design of structures shall be based on the specific characteristics of the waterway concerned in agreement with Melbourne Water.	Abigroup /Design Team/ Melbourne Water	All
Waterways supporting habitat for Dwarf Galaxias	Constructed wetlands and in-stream waterway habitats will be designed by Abigroup in consultation with a qualified aquatic ecologist and Melbourne Water.  Where appropriate, structures will incorporate design elements that facilitate upstream migration as well as downstream dispersal during flood conditions. Emphasis will be placed on the establishment of wetland (billabong) chain systems adjacent to the main waterway and within the floodplain that facilitate upstream migration (where appropriate and applicable).  Riffle systems, with steep grades and turbulent, fast flowing water, are to be avoided as these do not facilitate upstream migration of this 'non-salmonoid' species.	Abigroup / Design Team /Aquatic ecologist/ Melbourne Water	
Tuerong Creek	Detailed design will be drawn up to enable fish friendly passage, this will be done in consultation with MW and the Project's Aquatic Ecologist. These areas will include retention ponds to create habitat for Dwarf Galaxias.	Abigroup / Design Team/Aquatic ecologist/ Melbourne Water	E
Impacts on Seaford Wetlands, Western Port Wetland and migratory species	Management of volume, velocity and quality of water at design stage. Mitigation of light during operation	Abigroup /Design Team	A
Noise and Light	Design of the bypass has included provision of noise walls within The Pines Flora and Fauna Reserve. Barriers shall be designed to prevent the lights from passing cars disturbing animals and that any road lighting be below the level of the sound walls and be directed such that it doesn't illuminate areas outside the road pavement. Works will be completed during daylight working hours and no night-time works, to reduce impacts from light spill.	Abigroup / Design Team/	B
	All bright lights, especially floodlights, are to be positioned		B

Phase	Mitigation Measures	Responsibility	Zone
	as close to the ground as is practical and are shielded so that light is directed toward the ground only. This is to avoid light shining upward causing problems to birds, especially during nights of low cloud ceiling.		
	Where practicable, light sources to be utilised are to be those least attractive to insects and are to be shielded to minimise light spill toward any surrounding habitat patches.		All
Fauna connectivity maintained during construction	Fauna crossing structures (culverts) and a dedicated habitat connectivity corridor (fauna underpass) are included in the bypass design through the Pines Flora and Fauna Reserve.  Design developed in consultation with a qualified zoologist (Biosis Research) and will maintain connectivity between habitats on both sides of the road.	Project Zoologist (Biosis Research) / Abigroup	B
	Install temporary pipe crossing at the Pines to facilitate and maintain connectivity for SBB during construction, in consultation with Project Zoologist and to the satisfaction of DSE.	Abigroup/ Project Zoologist (Biosis)	B
	Install temporary fauna crossing during construction of Shared User Path, as per agreed locations to be confirmed following confirmation of design in consultation with project Ecologist	Abigroup	All
	Any open holes and/ or trenches will be suitable covered to prevent fauna mortality overnight and ensure fauna connectivity	Abigroup	All
Biodiversity values of the Herb-Rich Plains Grassy Wetland EVCs, located at the intersection of the Peninsula Link and EastLink	The islands of native vegetation to be retained at the EastLink Interchange will be retained and protected as the length of approach barriers have been shortened, resulting in a substantial reduction in the construction footprint and reducing the need to encroach on protected sites	Abigroup/ Australian Ecosystems/ DSE	A
	Adjustment of the concept bypass design alignment to ensure no works are required to Eel Race Drain bridge, thus reducing the potential for indirect impacts downstream		
	Implement salvage and translocation measures as discussed in the Salvage and Translocation Plan, prepared by Australian Ecosystems in consultation with DSE.		
River Swamp Wallaby Grass (RSWG) at the Pines.	RSWG growing at eight locations around constructed wetland within the Pines. Works have been designed to avoid (where practicable) and minimise impacts to, and where possible to protect the remainder of the River Swamp Wallaby-grass population outside the construction area from impacts of construction.  Tamarisk Creek will be realigned through the Pines and the design will consider the hydrological characteristics of the area and the wetting requirements of River Swamp Wallaby-grass. The realignment of Tamarisk Creek will result in an increased flow into the wetland area, thus improving the habitat for the species	Abigroup / Design Team in consultation with Project Ecologist (Biosis Research)	B
Groundwater and surface water – The Pines	A natural drainage regime has been designed through the Pines with Tamarisk Creek to be diverted to reinstate a natural overland flow (i.e. not in an artificial channel as is currently the case), which would benefit the EVCs and	Abigroup Design Team in consultation with Project Ecologist	B

Phase	Mitigation Measures	Responsibility	Zone
	fauna species present. This measure will support the permanence of the constructed wetland, which like Tamarisk Creek is not currently capable of permanently supporting populations of many aquatic fauna. When full it is proposed that the wetland shall discharge from the north-eastern corner back into Tamarisk Creek.	(Biosis Research)	
	The eradication of pest fish species ( <i>Eastern Gambusia</i> ) from connected dams upstream and the creation of a more natural drainage regime could potentially result in the creation of a suitable translocation site for the potential establishment of a secure Boggy Creek catchment population of Dwarf Galaxias within the Pines Flora and Fauna Reserve.	Abigroup /Design Team in consultation with Project Aquatic Ecologist / DSE	B
	Integrate Water Sensitive Road Design (Wong et al. 2000) elements including porous pavements, swale drains, buffer strips, flow detention/retention by infiltration and treatment wetlands/ponds, into the design of the bypass footprint where practical.	Abigroup /Design Team in consultation with Melbourne Water	All
	Waterway and floodway crossings designed to cater for the full range of flows, flow levels and amount of debris that could be expected at each location.		All
Weed and Pest Control	Pre-construction weed survey (species and cover) undertaken in order to set targets for weed management post-construction.	Australian Ecosystems	All
	A program for monitoring and controlling weed populations that establish during construction is incorporated into the Weed Management EMP (PLG-E-MP-0006).	Australian Ecosystems/ Abigroup	All

## 6.8 General Construction Environment Management Measures

General Construction Environment Management Measures to manage impacts to flora and fauna, for works across the alignment and applicable to activities completed in all Zones, are shown below.

They will be referenced as minimum in the SSEMPs (construction documentation), comply with the provisions of the FFG Permit, and where applicable to proposed activities will be identified on the Environmental Control Plans for each site.

**Table 19 - Construction - Management and Mitigation Measures**

Activity/ Phase	Mitigation Measures	Responsibility
<b>Construction Activities</b>		
Pre-construction	Where possible select construction methods and machinery that minimise disturbance to soil, vegetation and fauna habitat	Construction Team
	Minimise the width of the area to be cleared or otherwise disturbed during construction within areas of native vegetation.	Survey/Construction team
	Seed collection by LMA and also where possible during construction process	LMA and Abigroup
Site Preparation	Mark or fence all areas of retained native vegetation outside the construction zone (including scattered native trees) prior to any construction activities to prevent accidental damage.	Proj Ecologist in conjunction with Env Manager
	Marked/ fenced areas should be clearly identified as 'no go zones', and access by machinery or construction personnel will be restricted to prevent access to areas of ecological sensitivity.	Foreman/ Environmental Co-ordinator
	Locate material stockpiles, construction buildings, infrastructure and access	Engineers/

Activity/ Phase	Mitigation Measures	Responsibility
	roads within cleared land rather than in areas of native vegetation.	Superintendents
	Construction earthworks, machinery traffic and other disturbance shall be restricted to the final easement width wherever possible.	Superintendent
	Maintain or allow ground cover and shrubs to re-establish to maximise potential fauna habitat.	Construction team
Site Clearance	Clearing prior to construction will be completed carefully to prevent mechanical or other damage (i.e. fuel spills) to retained vegetation. No windrows, soil or other debris are to be pushed into retained vegetation.	Foreman/ Environmental Co-ordinator
	Material piled into windrows checked for fauna species the following day after activity by the Wildlife carer	Wildlife Carer
	Minimise the width of the area cleared or otherwise disturbed during construction within areas of native vegetation, to those depicted on the ECM. Construction earthworks, machinery traffic and other disturbance shall be restricted to the final easement width wherever possible.	Superintendent/ Foreman
	Access points, machinery and truck turning areas, machinery working areas, parking areas and temporary storage sites must be located on areas not containing retained native vegetation or high threat weeds, and these areas must be clearly identified on the relevant site EMPs.  Every effort will be made to establish these areas on existing disturbed areas. No machinery, equipment or vehicles shall be permitted outside designated work areas	Foreman
	Soil, mulch, or any other spoil, including any removed native vegetation, must not be stockpiled or spread on any retained native vegetation, and all works must be in accordance with the approved SSEMPs, controls shown on the ECPs and detailed in Construction Packages	Foreman
Clearing and Grubbing	Refer 'Procedure 13 - Clearing and Grubbing'  The procedures will be incorporated into all construction packages for all zones relating to clearing and grubbing works.	
Weeds	Wash down of construction vehicles must be regularly undertaken (at agreed washdown locations) to remove the potential for spread of weeds and plant pathogens, in accordance with work plans and hygiene protocols. In particular appropriate measures must be taken to minimise the spread of Cinnamon Fungus (as per recommendations in appropriate and approved EMPs.	Foreman
	Washdown locations to be shown on ECPs and included within construction packages	Env Team/ Project engineer
Pests	Pre-construction clearing works are expected to result in mortality on pest species including rats. Some will be captured by the appointed Wildlife Carer and euthanized, where possible.	Wildlife Carer
Tree Removal	Minimise clearance and disturbance of fauna habitat, particularly hollow-bearing trees and other habitat features where fauna may be sheltering, to what is absolutely necessary. Retain habitat features such as shrubs and other understorey species to the extent possible.	Env team / Foreman
	A qualified zoologist wildlife carer to assist with fauna salvage and relocation. Fauna to be handled in accordance with the fauna handling procedures	Wildlife Carer
Waterway Crossings	Avoid reclamation of waterways wherever possible. Where avoidance of aquatic habitat is not possible, native aquatic fauna is to be salvaged and translocated to the nearest suitable habitat within the same catchment by qualified aquatic ecologists.	Project Zoologist
	Construction Works in Devilbend and Tuerong Creek are restricted to low or no-flow conditions to reduce impacts to Dwarf Galaxias habitat and maintain connectivity between waterway systems.	Construction team / Environment Team
	All translocations would be subject to an approval process and should abide by the Guidelines for Assessing Translocations of Live Aquatic Organisms in Victoria (DPI 2003).	Environment Team/ Project Ecologist
	Impacts on riparian vegetation will be minimised during construction but where this is unavoidable, restoration of the affected areas is to include measures as	Construction team /

Activity/ Phase	Mitigation Measures	Responsibility
	<p>required to ensure localised improvement to the waterway area.</p> <ul style="list-style-type: none"> <li>Refer Procedure 6: Creek Crossings Procedure</li> </ul>	Environment Team
Waterway Crossings – Dwarf Galaxias Habitat: Balcombe/ Watsons/ Tuerong/ Devilbend Creeks	<p>During works, a clear indication will be made to construction personnel of the mitigation measures expected at each waterway. Compliance of mitigation practices during the construction period will be randomly checked by a qualified aquatic ecologist or by the site environment officer trained by a qualified aquatic ecologist. Non compliance issues will be addressed, in keeping with Section 8.3 of the FFMP.</p> <ul style="list-style-type: none"> <li>Refer Procedure 6: Creek Crossings Procedure</li> <li>Procedure 11: Dwarf Galaxias Construction Management Procedure.</li> </ul>	Environment Team/ Construction team
Impacts on Seaford Wetlands, Western Port Wetland and migratory species	<p>Avoid night construction where possible.</p> <p>Dust to be suppressed by means given in the Air Quality Management Plan (PLG-E-MP-0008).</p>	Construction team/ Environmental Team
Impacts to Creeks from works	<p>Monitoring of Boggy Creek and Watsons Creek will be compliant with the required provisions stated in the PSR A6.1.1 and A6.2. Monitoring will be undertaken prior to works commencing, weekly during works and for each rain event.</p>	Environmental Team
Open Trenches – Fauna habitat connectivity	<p>Ensure construction trenches are closed overnight, where possible.</p> <p>Where this is not practical, provide wooden ramps to permit fauna to exit trenches and ensure that trenches are monitored by an appropriately qualified zoologist to remove any trapped fauna.</p>	Construction Team/ Wildlife Carer
Groundwater and Surface Water	<p>The use of groundwater for construction activities and the dewatering of excavations shall be avoided wherever practicable. Where extraction of groundwater is necessary, this shall occur as far away from waterways as practicable and the volume of groundwater involved and duration of these activities will be minimised</p>	Environmental Manager in consultation with Melbourne Water
Access and Traffic	<p>Access to the construction site is from the public road network and does not create further roads through sensitive areas, including 'no-go' zones.</p> <p>Restrict access, to agreed access and egress points into the Pines FF Reserve from the construction zone.</p>	Superintendent  Environmental Co-ordinator/ Superintendent

**Table 20 - Post- Construction Management and Mitigation Measures**

Activity/ Phase	Mitigation Measures	Responsibility
<b>Post- Construction</b>		
Habitat Enhancement	<p>Following construction, vegetation adjacent to the freeway within the road reserve will be managed to reduce invasion by weed species.</p>	Maintenance team
Revegetation	<p>Only native and locally indigenous plants (local Ecological Vegetation Classes) as appropriate for the site conditions (soil type, moisture levels etc.) shall be used in the landscaping to reduce weed invasion into the surrounding vegetation.</p> <p>Stabilise areas within 4 weeks of disturbance through the use of temporary (i.e. grass seeding) or permanent (i.e. landscaping) measures to ensure stabilisation of soils and reduce the risk of erosion.</p>	Engineers/Ecologist  Engineers
Wildlife Corridors	<p>Connectivity will be to the wildlife underpasses and smaller culvert underpasses in the "Pines". These underpasses have been designed in consultation with project ecologist (Biosis).</p>	
	<p>Monitor effectiveness of fauna underpass and culverts post-construction</p>	Project Ecologist

## 7 MONITORING, INSPECTIONS, AUDITING AND REVIEW

### 7.1 Environmental Monitoring

During construction daily informal visual checks and monitoring of the works site will be completed by the Environment Team.

#### Flora and Fauna Checklist

The Flora and Fauna Checklist and Threatened Species Checklist will be completed on a daily basis for key environmental areas of concern supporting threatened flora and fauna species, in keeping with the provisions stated in Section 4.2.7 of the TSMP.

When works occur in identified habitat areas, qualified wildlife carer will be present to relocate any fauna where practicable, in accordance with the Fauna Salvage Protocol.

#### Flora and Fauna Management Procedure

The Environmental Co-ordinator, in consultation with the Wildlife Carer and Project Ecologist, will ensure construction management and mitigation measures for flora and fauna are being carried out appropriately, in keeping with the procedures shown in Flora and Fauna Management Procedure.

### 7.2 Threatened Species Monitoring

#### Dwarf Galaxias Monitoring

The TSMP is the key reference document implemented to effectively roll-out monitoring of Dwarf Galaxias during works. The TSMP requires the monitoring procedures for the Dwarf Galaxias population at Tuerong Creek be incorporated into Abigroup's Flora and Fauna Management Plan.

Additional pre-clearing survey and monitoring for Dwarf Galaxias has been completed by the Project Ecologist sub-consultant (Biosis Research) for Abigroup in the Tuerong, Devilbend and Balcombe Creek catchments.

Results of the Dwarf Galaxias pre-construction targeted survey were provided to DSE for review and comment 'Follow-up targeted survey of Dwarf Galaxias Galaxiella pusilla in the Boggy, Watsons and Balcombe Creek catchments, Victoria (Biosis, 2010).

Pre-construction monitoring of Dwarf Galaxias will be undertaken by the aquatic ecologist on behalf of Abigroup. Construction and post-construction Dwarf Galaxias Monitoring will be completed in accordance with the monitoring program discussed in 'Dwarf Galaxias Monitoring Program for Tuerong Creek and Balcombe Tributary' (PLG-E-MP-0119), prepared in consultation with DSE and Melbourne Water.

#### **Balcombe Creek catchment**

It should be noted that at the time of the EES, the Tuerong Creek Dwarf Galaxias population was the only population located in the vicinity of Peninsula Link and considered to be the largest (i.e. highest density) and most important known population in the Balcombe Creek catchment. A second population of comparable size and importance was discovered to occur in a Balcombe Creek tributary near Baxter. This population is located in the vicinity of Peninsula Link and the habitat usage (i.e. breeding) was confirmed to extend into the alignment itself.

#### **Southern Toadlet**

Southern Toadlet surveys were completed by Biosis Research (May 2010 – June 2010). No frogs of this species were identified during the surveys. No further survey will be undertaken for the species along the alignment.

Should the species be identified during works, the Fauna Salvage protocol for the Southern Toadlet will be implemented.

**Table 21- Flora and Fauna Monitoring**

Enviro Aspect	Criteria	Timing	Frequency	Location	Responsibility
General Site Inspections	Inspect work sites to assess compliance with mitigation requirements to minimise impacts on flora and fauna	Construction	Weekly	Along entire alignment	Environmental Manager/ Site Engineers
Fauna Mortality	Inspect open trenches	Construction	As occurring	Along entire alignment	Construction team Wildlife Carer(s)
Retained Vegetation - 'No-go' Zones and protective fencing	No incursion into protected areas.  Check integrity of fencing	Construction	Daily when works located within the Pines  Weekly	Where vegetation is retained but mainly existing reserves and other vegetation of Very High conservation significance	Environmental Team/ Site Foreman
Perimeter of Construction zone	Inspect construction activities confined to fenced areas	Construction	Monthly	Pines FF Reserve	Environmental officer
Scattered Trees marked for Retention	All listed trees to maintain health for at least 2 years post construction	Construction and Operation	6- months	Along entire alignment	Project Ecologist
Habitat Connectivity	Temporary culverts maintained	Construction	Monthly	Pines FF Reserve	Environmental officer/ Wildlife Carer(s)
Landscaping and Habitat Enhancement	Salvage existing vegetation for use in landscape planting	Before construction	Where possible	Areas of remnant native vegetation	Environmental Manager/ Project Ecologist/Design team
Pest/ Weed Management	No increase in pest plants, animals or pathogens	During Construction	6 monthly	Areas of remnant native vegetation	Environmental officer
Waterways and Creek Crossings	Maintain habitat continuity and condition	During and after Construction	Weekly during waterway crossing construction	All waterway/ creek crossings	Project Ecologist/ Environmental officer/ Site foreman
Dwarf Galaxias	Maintain habitat continuity downstream	During and after Construction	In keeping with PLG-E-MP-0119  Weekly	Tuerong Creek/ Balcombe Creek tributary	Project Ecologist/Environmental officer/ Site foreman

### 7.3 Site Inspections

Inspections are a key to ensuring the range of flora and fauna management measures are effective within the field and construction zone. The Project will implement an Inspection program with weekly visual environmental inspections, of each of the route sections, undertaken throughout the construction period by the Environmental Co-ordinators.

Inspections for compliance with the Flora and Fauna Management Plan and Pre Clearing obligations will follow the Flora and Fauna Checklist and the Pre-Clearing Checklists. The checklists will be completed and logged with the Environmental Manager and are auditable documents.

The inspections would allow for identification of any additional monitoring which would be undertaken as a result of changes to activities/construction methods, advice received and community complaints. The inspection checklist include matters relating to flora and fauna management such as:

- integrity of No-Go zone fencing and signage;
- checking whether works located adjacent to and over waterways is acceptable with relation to potential impacts on aquatic flora and fauna;
- checking the health of areas of protected vegetation; and
- inspecting fauna connectivity structures to ensure they aren't blocked.

Site specific checklists for key areas including; Willow Road wetland, the Westerfield property and the Pines will be included in the construction documentation and implemented on site.

## 7.4 Operation Environmental Monitoring

Operational monitoring shall include periodic surveys for significant species and communities. This would focus on species such as Southern Brown Bandicoot, Dwarf Galaxias and River Swamp Wallaby-grass as well as examining retained areas including the EastLink Interchange, Pines Flora and Fauna Reserve and Westerfield. All operational monitoring should be assessed against pre-construction baseline data, without which there is no benchmark to assess against.

Offset management plans will be prepared for any offset sites, in consultation with DSE. The Offset management plans will require regular monitoring to take place and be in keeping with approval conditions stipulated by DEWHA and DSE and are to be completed.

# 8 INTERNAL AND EXTERNAL AUDITING

## 8.1 Internal Audits

The Environmental Manager, in conjunction with the Quality Manager, will undertake an Internal System Audit (as it relates to Environmental Elements) on a quarterly (3 monthly) basis. The objective of these audits is to determine whether the Management System is achieving the specified environmental objectives, performance criteria and Minimum Procedural Requirements across the Project. Audit dates will be noted in the nominated Audit Schedule (Refer EMS).

The audit schedule shall be integrated with the proposed construction task program to ensure that any high-risk construction impact activities may be targeted and integrated within the auditing process. This will ensure Project resources are efficiently allocated and utilised to achieve improved environmental outcomes.

The Environmental Manager will also conduct six-monthly reviews of the project environmental aspects/impacts and risk register, complaints register and environmental incidents investigation reports to identify trends in environmental management and report findings to senior management. The Environmental Manager may also identify additional audits to be conducted (and nominate appropriate personnel to conduct the audits) in response to identified environmental issues, including 'no-go' zones and sites of environmental sensitivity.

The scope for each audit shall be set by the Environmental Manager, operational personnel notified and a date set for the audit. The outcomes of any audit will be documented and a closing meeting held. The response to any issues raised within the audit will be addressed using the Issues response register and include recommendations that are capable of being used to improve management practices. Audit reports will be used in conjunction with monitoring results reports, to evaluate the Project environmental performance and to provide a basis for the continual improvement of the FFMP.

## 8.2 External Audits

External audits will be conducted by the independent environmental auditor, relevant Government agencies and/or the Independent Reviewer. Audits will address:

- compliance with regulatory requirements (including FFG Permit, EPBC Approval)
- compliance with the FFMP
- documentation and record keeping
- compliance with approval, permit and licence obligations
- complaint response
- opportunities to improve environmental performance.

The outcomes of any audit will be documented and noted (including any non-conformances, 'opportunities for improvement') within an Environmental Audit Report. Adverse or non-conforming activities requiring corrective action will be the subject of a Corrective Action Request (CAR). Minor items that need improvement, but do not constitute a clear breach of environmental standards may be the subject of an "audit observation".

## 8.3 Continuous improvement, non-conformances, corrective and preventative actions

The environmental team will be responsible for the routine monitoring, identification of environmental non-conformances and instigation of preventative and corrective actions.

Where the flora and fauna monitoring (and auditing) identifies: non-compliance with the requirements of the PSR, the conditions stipulated in the EPBC Referral, the conditions of the FFG Permit, the Project's goals, exceedance of the EES and FFMP requirements, or where a series of community complaints are received in relation to the same activity, an Environmental Non-Conformance Report will be generated, in accordance with the procedure outlined in the EMP. This will provide details of the nature and cause of the environmental non-conformance as well as required preventative or corrective action(s).

Non-conformances may occur in the following circumstances:

- disturbance to areas identified as 'no-go' zones and within retained native vegetation
- injury or mortality of native fauna from unplanned/reckless construction activities
- disturbed areas not revegetated or rehabilitated within nominated timeframes
- mortality of significant trees, retained on site, from construction work practices
- adverse impacts to water quality downstream following activities occurring within significant waterways including Devilbend, Tuerong, Balcombe and Watsons Creek.

Any non-conformance will be required to be acted on within the timeframes agreed. Where there is high potential for harm to the environment this period will be reduced to 24 hours. Controls, including "No-Go" flagging and protective fencing, or policies that are continually being damaged or breached would be seen as an indication of the need for corrective action, for example:

- review of current controls
- implementation of additional or alternative controls methods
- reiteration to relevant staff of environmental policies through methods such as Toolbox Talks.

## 9 OTHER MANAGEMENT ITEMS

### 9.1 Training and Awareness

Site induction and environmental awareness training will be completed for all site personnel, as detailed in Section 8 of the EMS (PLG-E-MP-0001).

Abigroup, as the holder of the FFG permit will ensure that all staff, contractors and sub-contractors are appropriately trained to minimise threats to and impacts on flora and fauna and are made aware of their obligations in relation to this permit, to satisfy condition 19 of the FFG permit.

Environmental awareness across all aspects of the Project will be communicated to staff on a regular basis via induction, toolbox talks and the implementation of Section Specific EMPs, Environmental Control Plans and construction packages during work. The Environment Manager, Environment co-ordinator, Project Engineers and Site foreman will all be accountable for ensuring contractors and site personnel are aware of ecological sensitivities and constraints within the Project Right of Way.

#### Toolbox Talks

Toolbox talks will be delivered by the Environmental Co-ordinator on a regular basis to various sectors of the construction team at specific sensitive locations including: the Pines/ Westerfield/ Eastlink/ Creek Crossings.

Abigroup's Environmental Training Attendance Record (AR701B) will be used to record attendance at Toolbox Training Sessions. Copies will be retained.

The Threatened Flora and Fauna Awareness Poster will be communicated to site personnel and copies of the posters distributed to Site Foreman and posted to the site office and shed walls.

Environmental Due Diligence (PLG-E-ID-0096) and Threatened Species (PLG-E-ID-0102) Toolbox Posters will be communicated to sub-contractors and site personnel and the content concentrates on key aspects relevant to Flora and Fauna including:

- environmental controls included in construction packages
- environmentally sensitive areas e.g. The Pines, Westerfield, Eastlink interchange/ Tuerong, Devilbend and Balcombe Creeks
- locations of threatened species e.g. Dwarf Galaxias and Southern Brown Bandicoot
- no-go zones and retention of native vegetation and scattered trees

## 10 REFERENCE DOCUMENTS

1. Flora and fauna assessment of the proposed Frankston Bypass, Carrum to Mount Martha, Victoria – existing conditions and impact assessment (Biosis Research, 2008),
2. EES Technical Volume 1 – Flora and Fauna Assessment (Biosis Research, 2008)
3. EES Technical Volume 1 – Draft Pines Master Plan (LMA, 2008)
4. Environmental Best Practice Guidelines 7: Managing Riparian Vegetation (DPIW, 2003)
5. EPBC Referral 2007/3480, Commonwealth approval document: Frankston Bypass - Carrum Downs To Mount Martha, Victoria - EPBC 2007/3480 (DEWHA, 2009)
6. FFG Permit 10005378', 'PERMIT TO TAKE PROTECTED FLORA (DSE, 2010)
7. Frankston Bypass Assessment (Environment Effects Act 1978) – Minister for Planning (DPCD, 2009)

8. Flora and Fauna assessment of The Pines Flora & Fauna Reserve – Seasonal survey (Biosis Research, 2008)
9. 'Follow up targeted survey of Dwarf Galaxias *Galaxiella pusilla* in the Boggy, Watsons and Balcombe Creek catchments, Victoria' (Draft Version 01; Biosis Research, May 2010)
10. Growling Grass Frog Salvage and Translocation Plan Peninsula Link (Biosis 2010)
11. Project Scope and Requirements
12. Threatened Species Management Plan: Peninsula Link – Carrum Downs to Mount Martha (Practical Ecology, 2009).
13. Southern Brown Bandicoot Management Plan – Pines Flora and Fauna Reserve (ARCUE, 2010)
14. Swamp Skink Translocation Plan The Pines Flora and Fauna Reserve, Frankston (Biosis, 2010)
15. Peninsula Link Plains Grassy Wetland (EVC 125) Translocation Plan (Australian Ecosystems, 2010)