



The Greater Pines Reserve Master Plan

JUNE 2010

PREPARED FOR LINKING MELBOURNE AUTHORITY
IN CONJUNCTION WITH PARKS VICTORIA, FRANKSTON CITY COUNCIL,
DEPARTMENT OF SUSTAINABILITY AND ENVIRONMENT, AND
DEPARTMENT OF PRIMARY INDUSTRIES



*Healthy Parks
Healthy People*



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Foreword

This Master Plan for the Greater Pines Reserve was prepared to provide strategic directions for future management and development of an important area of open space containing highly significant flora and fauna values within the City of Frankston. Key elements of the plan include directions for the protection and enhancement of biodiversity values, provision for visitor access and circulation and an increase in the size of the Pines Flora and Fauna Reserve. Importantly, the plan incorporates measures to provide for fauna habitat and open space connectivity to mitigate the consequences of fragmentation of the study area by Peninsula Link.

The Master Plan sets directions for Parks Victoria to establish visitor facilities including a new visitor site in the Pines Flora and Fauna Reserve linked with the primary shared use path to be constructed by Linking Melbourne Authority in conjunction with Peninsula Link. The Master Plan, together with recent studies and reports on flora and fauna and cultural heritage values, will be used by Parks Victoria to prepare a Management Plan for the Pines Flora and Fauna Reserve which will describe in further detail how Parks Victoria will protect the reserve's natural and cultural values and provide for visitor services and experiences consistent with this plan.

Linking Melbourne Authority will implement those elements in the plan that relate to the construction of Peninsula Link including establishment of the shared use path and Peninsula Link underpasses, creek improvements and rehabilitation, revegetation works and stormwater management.

Parks Victoria and Linking Melbourne Authority will coordinate implementation of the plan through an ongoing partnership in consultation with key stakeholders including the Department of Sustainability and Environment, Melbourne Water, the City of Frankston and the community.

Linking Melbourne Authority and Parks Victoria wish to thank all those organisations and individuals who have contributed to this plan through participation on the working group and in commenting on the exhibited draft master plan.

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1.0 Introduction

For the purposes of this Master Plan, the Greater Pines Reserve (GPR) is defined as a number of Crown land parcels as shown on figure 1.1 including:

- The existing 220 ha Pines Flora and Fauna Reserve (Pines FFR) managed by Parks Victoria;
- Approximately 24.2 ha of the former Keith Turnbull Research Institute (KTRI) land managed by the Department of Primary Industries (DPI);
- The former landfill site managed by the City of Frankston; and.
- The road reservation set aside for the proposed Frankston Bypass

The GPR is located in Melbourne's south-eastern suburbs, approximately three kilometres northeast of the Frankston Business Centre. The original Pines FFR comprising 108 ha was established in 1989, and was expanded to 220ha in 2006 with the addition of land previously managed by the DPI. This addition included part of the former KTRI land and a major portion of the former Department of Agriculture and Rural Affairs (DARA) land. The road reservation, established in the early 1960's for the Frankston Bypass (now known as Peninsula Link), bisects the planning area.

1.1 Purpose of the Master Plan

This Master Plan was prepared in conjunction with studies undertaken for the Environment Effects Statement (EES) for the Peninsula Link. The authority responsible for the EES, the Linking Melbourne Authority (formerly Southern and Eastern Integrated Transport Authority [SEITA]), in conjunction with Parks Victoria, identified this Master Plan process as an opportunity for integrated planning to take place for the GPR. While Peninsula Link presented a number of challenges to the Pines FFR, it also allowed for some significant opportunities and improvements associated with the funding of the roadway.

The last plan for the Pines FFR was a Draft Management Plan prepared in 1993 for the original 108 ha reserve. The 2006 addition of Crown land to the Pines FFR significantly changed the opportunities for the area and an overall strategy or plan was needed to guide its future form and management directions.

The aims for this Master Plan are to:

- Establish a vision for the GPR to guide future development and management;
- Consider and incorporate the outcomes of flora and fauna assessments and cultural heritage assessments to make environmental protection and enhancement recommendations;
- Determine the nature and extent of environmental rehabilitation, both for revegetation and hydrological management and enhanced visitor experiences;

- Determine the range of visitor facilities and the location of a new principal visitor site;
- Determine access, circulation and linkages to and within the planning area; and
- Integrate the approved route and development of Peninsula Link with directions for management for conservation and recreation for the GPR and identify possibilities for integration.

An alternative route for Peninsula Link (figure 3.1) was identified through the EES process undertaken in 2008 and was based on the outcomes and recommendations of studies of flora and fauna and archaeological values. The route is based on the principles of reducing impacts on higher quality vegetation, minimising fragmentation of key fauna habitat and maintaining the natural succession of ecological vegetation communities.

1.2 The Master Plan Process

A working group including representatives from Linking Melbourne Authority (LMA), Parks Victoria, Frankston City Council, Department of Sustainability and Environment (DSE), Department of Primary Industries (DPI) and the Friends of the Pines was formed to guide the development of a Draft Master Plan. Coordination meetings with other authorities including the Country Fire Authority (CFA) and Melbourne Water were held during the Master Plan process. Results from an on-going twelve month flora and fauna survey conducted by Biosis Research (2008) were incorporated into analysis and mapping work.

A series of working group meetings were held over a four month period to examine a range of concept options and establish a preferred direction, the outcomes of which have been developed into this Master Plan. A Draft Master Plan was on public exhibition in May 2008, providing opportunity for the community to contribute to the planning for the study area. The comments from that period and subsequent refinement of proposals for the route of the main shared use path through the study area to enhance connectivity with surrounding residential areas and to improve amenity, visitor experiences and user safety have been incorporated into this final Master Plan. The Draft Master Plan was incorporated and exhibited as part of the EES exhibition.

Subsequent to the EES a conditional approval for Peninsula Link was granted under the *Environment Protection and Biodiversity Conservation Act (1999)* (EPBC Act) subject to several conditions including the development of a Threatened Species Management Plan and a Southern Brown Bandicoot Management Plan. Targeted surveys for threatened flora and fauna have been undertaken in addition to the studies conducted as part of the EES to develop the Threatened Species Management Plan and Southern Brown Bandicoot Management Plan.

The studies undertaken during the EES process and subsequently have informed the approved Peninsula Link route, as well as the development of mitigation measures to minimise impacts on environmental and cultural values.

Figure 1.1 Study Area Plan*



*Figure 1.1 shows the study area in 2008, which was identified during the Frankston Bypass (Peninsula Link) planning process. The Peninsula Link route has changed through the Pines Flora and Fauna Reserve, as indicated in Figure 3.1.

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2.0 Existing Conditions

2.1 Site Context and Summary

The Pines FFR is located within a varying urban environment with three existing road frontages; Ballarto Road to the north, Tamarisk Drive to the west and McClelland Drive to the south-east. Residential areas occur to the south, west and north of Ballarto Road. The Peninsula Country Golf Club abuts the south-west boundary and Centenary Park Public Golf Course abuts the Pines FFR in the south-east (refer figure 2.1). The Pines FFR is one of several significant open spaces in the south-eastern suburbs of Melbourne. Other nearby open space areas include the Seaford Wetlands to the north, Langwarrin Flora and Fauna Reserve and Frankston Natural Features Reserve (or Frankston Reservoir) to the south, and the Royal Cranbourne Botanical Gardens to the east (refer figure 2.2).

The former KTRI land, managed by DPI, is located centrally along the northern boundary which, along with the Centenary Park Public Golf Course to the south, creates a pinch-point in the central area of the Pines FFR and a significant division between the two major parcels comprising the Pines FFR. The Peninsula Link alignment, running from the north-west to the south-east, further bisects the Pines FFR and emphasises the sense of fragmentation.

In the surrounding residential areas, the Pines FFR is supplemented by local parks which offer both sporting and non-sporting recreational activities, including ovals, BBQ's and playgrounds. Local buses within the area provide alternative transport modes for accessing the Pines FFR.

2.2 Landform, Soils and Hydrology

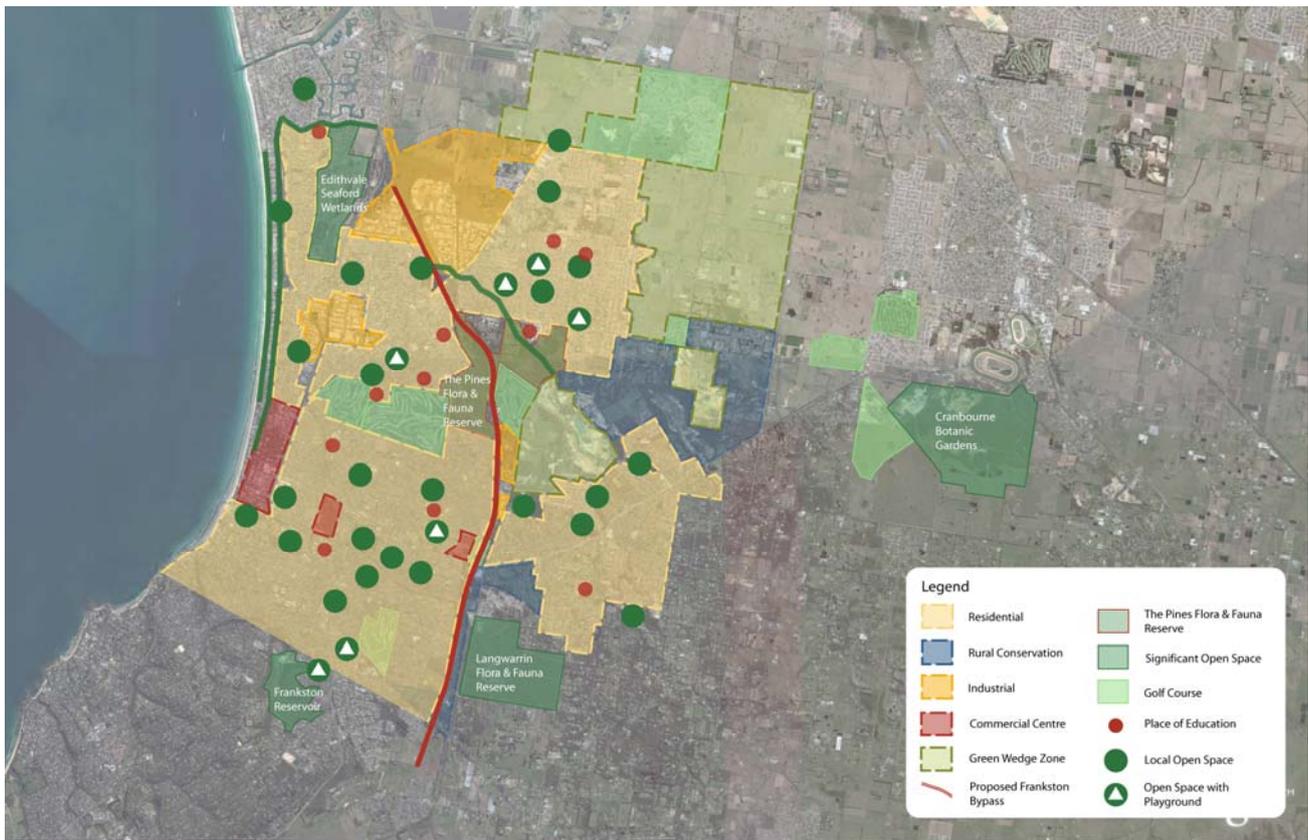
The Pines FFR is composed of sandy soils and is a remnant of a past extensive sand dune formation that existed in the Tertiary period. Clayey silts were deposited after the deposition of near-shore sands during the Miocene epoch. During the late Tertiary period the Baxter Sandstones were deposited and reworked to form the Cranbourne Sands which form the dunes of the Pines FFR (DCNR, 1993).

The dunes diminish in size from the south-west with two channelised drainage lines, Boggy Creek and Tamarisk Creek, crossing the GPR. Soil moisture is further enhanced by springs which lead to moist vegetation communities. The western portion of the Pines FFR contains the only example of a complete naturally vegetated water catchment within the south-eastern metropolitan area (DCNR, 1993).

2.3 Flora and Fauna

The Pines FFR is a State Significant Biosite due to the diversity of species and vegetation communities present (Biosis Research, 2008). A number of Ecological Vegetation Communities (EVCs) found in the Pines FFR are endangered and are of High or Very High Conservation Significance under the Native Vegetation Framework (NRE, 2002).

The Biosis Research survey and assessment of flora and fauna in 2008 mapped both the distribution and condition of EVCs within the Pines FFR and DPI land, the distribution of recorded significant flora and orchid species and the distribution of recorded significant fauna species. The results show that EVCs rated as areas of high condition are primarily located within the two largest remaining contiguous areas of remnant vegetation including the section of road reserve bounded on both sides by the existing Pines FFR. The two contiguous areas also have the greatest diversity of recorded significant species, including orchid species and records of the Southern Brown Bandicoot (*Isoodon obesulus obesulus*), a species listed as threatened under the EPBC Act and the *Flora and Fauna Guarantee Act 1988*.



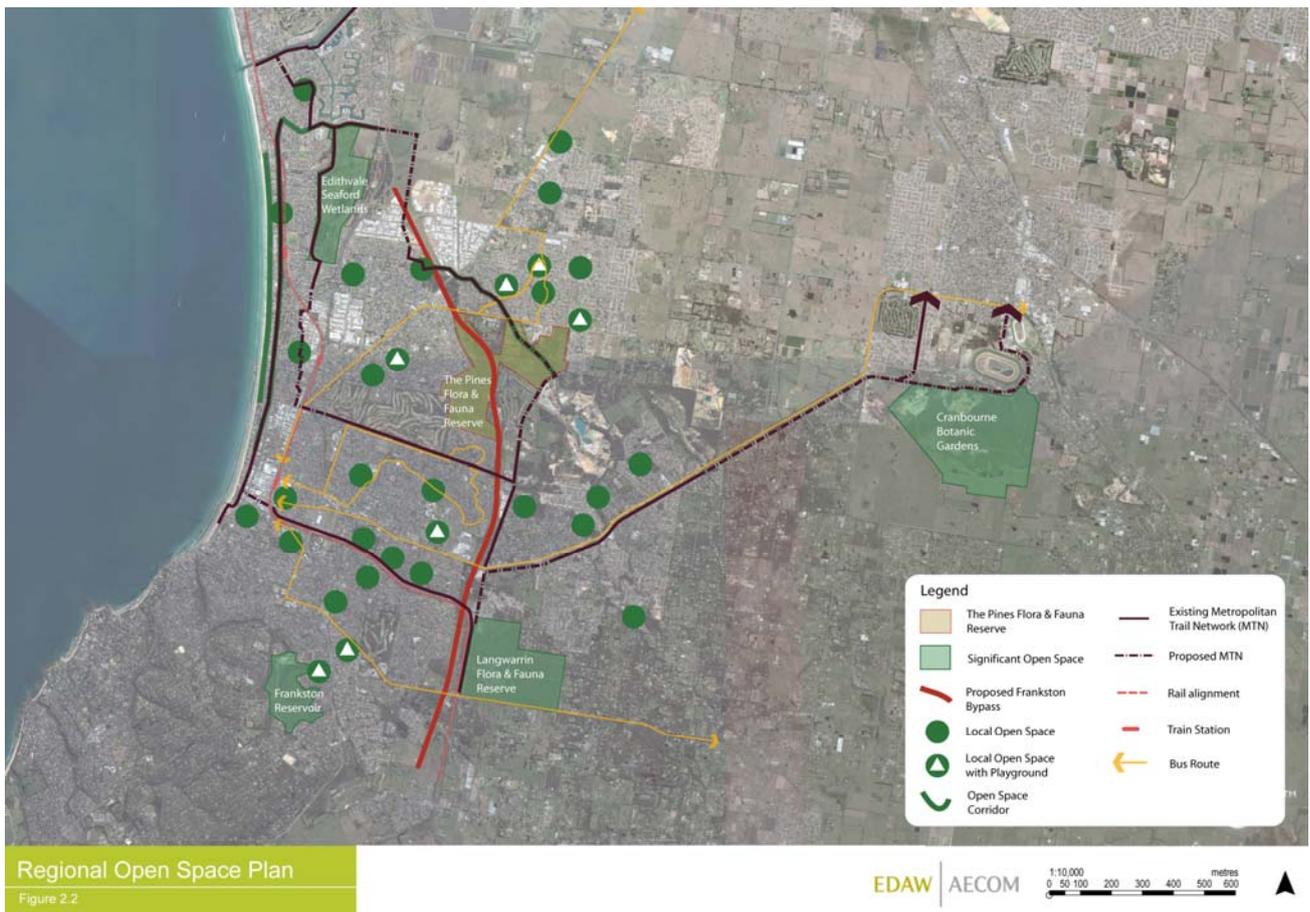
Context Plan

Figure 2.1

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0 50 100 200 300 400 500 600 metres





A number of National and State significant flora species have been recorded in past surveys and potential habitat exists for numerous other significant species.

The flora of the south-western and eastern portions of the Pines FFR is dominated by Heathy EVCs, particularly Heathy Woodland and Sands Heathland, while the central pinch-point area consists of Damp Heathland and Damp Heathy Woodland. The low-lying north-western area contains Damp Sands Herb-rich Woodland, Swampy Woodland and Swamp Scrub. The condition of the majority of the vegetation within the Pines FFR was assessed as high (Biosis Research 2008). Much of the vegetation within the DPI land was assessed as medium to high quality.

Past research and studies have found the nationally significant Southern Brown Bandicoot in the original Pines FFR and the later addition of the former DARA land. The Biosis Research survey in 2008 confirmed the presence of the Southern Brown Bandicoot in the original 108 ha Pines FFR but not the former DARA land. Further pre-construction monitoring was undertaken during spring 2009 and summer 2009/2010 by the Australian Research Centre for Urban Ecology (ARCUE). The summer surveys confirmed the presence of Southern Brown Bandicoot in the Pines FFR with a single hair sample collected in hair tube traps however there were no scats, sightings or diggings observed. The hair sample was analysed and confirmed to be that of a Southern Brown Bandicoot. Analysis of the stomach contents of foxes captured as part of a fox control program did not provide signs of bandicoots. Indications are that bandicoot numbers in the Pines FFR continue to be extremely small.

The Biosis Research (2008) survey also confirmed the nationally significant Dwarf Galaxias (*Galaxias pusilla*) in the northern reaches of Boggy Creek, and the presence of the State significant Swamp Skink (*Egernia coventryi*) along Tamarisk Creek, adjacent to the former KTRI land. Nocturnal surveys recorded the presence of Sugar Glider, Common Ringtail and Brushtail Possums and Tawny Frogmouth. The most commonly detected species at the Pines FFR during the ARCUE surveys (2009, 2010) was the Swamp or Black-tailed Wallaby (*Wallabia bicolor*). A koala was also detected during the Summer 2010 survey. No koalas have been recorded at the Pines FFR for at least 2 decades.

At the time of writing this master plan, the final Flora and Fauna Assessment of the Pines FFR, (Biosis Research, 2008) the ARCUE surveys (2009/2010), and additional targeted flora threatened species surveys (Practical Ecology 2009/2010) are the most up to date surveys of flora and fauna conditions.

The vegetation in the Pines FFR has been subject to a high fire frequency since the 1960s due to deliberately lit fires, wildfires and prescribed burning (DCNR, 1993). While the native Heathland areas require fire to promote ongoing floristic and faunal habitat diversity, the desirable interval between fires in this environment is estimated to be eight to 30 years (DCNR, 1993). Some parts of the study area have been repeatedly burnt with an interval of only one or two years. Such frequent burning can result in an overabundance of fire tolerant species, significant weed invasion and a reduction in biodiversity.

Section 3.2 (Protection of Flora and Fauna Values) provides direction for the management of threatened species within the GPR.

2.4 Cultural Heritage Values

The landscapes and landforms of the GPR are intrinsic elements of the *Country* of the Boonwurrung People. Cultural heritage surveys within the study area have identified 6 cultural heritage sites as well as areas of Aboriginal archaeological sensitivity (Biosis Research, 2008). It is likely that extensive parts of the reserve that have not been subject to significant past ground disturbance (e.g. sand dunes and other areas covered with relatively intact indigenous vegetation) will reveal additional cultural sites and areas of Aboriginal archaeological sensitivity. The whole of the Pines FFR is identified as an area of cultural heritage sensitivity under the *Aboriginal Heritage Act 2006*.

A Cultural Heritage Management Plan (CHMP) has been prepared for the Ballarto Road Visitor Site. A Cultural Heritage Management Plan has also been developed by Peninsula Link construction contractors, and will be applied during the construction of Peninsula Link.

2.5 Landscape Character

The dense vegetation cover across the western portion of the Pines FFR evokes a sense of remoteness within a largely urbanised setting. Elevated areas offer expansive views out over the region, including to Port Phillip Bay.

The landscape character of the eastern portion of the Pines FFR is substantially different in that this area contains significant evidence of past land use. The former orchard areas comprising some 16 hectares of cleared land emphasise the highly modified nature of parts of the area associated with past use by the Department of Agriculture and Rural Affairs. Other open areas have become predominantly weed infested. Some of the areas of higher quality vegetation in the eastern area of the Pines FFR provide a more remote setting for visitors, in a generally undulating landscape.

2.6 Visitor Experiences and Services

Currently the Pines FFR primarily attracts local visitors generally seeking passive recreational experiences within predominantly natural settings. Activities undertaken include walking, nature study, jogging, informal picnicking and dog walking. Cycling and some illegal trail bike riding occur periodically. No visitor surveys have been undertaken and visitor numbers are estimated at between 10,000 and 20,000 visitors per year.

The Parks Victoria *'Visitor Service Levels Framework'* provides guidance to the appropriate types and extent of facilities in parks and reserves across Victoria based on size and location, and visitor demand. The framework aims to strike a balance between standardisation for consistency, and flexibility to allow for local character and environment. (Parks Victoria, 2002)

The existing service level at the Pines FFR is 'Basic'. There is currently one public vehicle access point and a small parking area off Excelsior Drive in the western area of the Pines FFR. This arrival area contains some signage and a small information shelter. A boardwalk loop runs from this visitor site and meets up with the track network. All other public entry points into the reserve are through pedestrian openings. The tracks within the western area are generally unsurfaced and consist of the deep sandy soils making walking challenging in some areas. The only furniture provided in the Pines FFR consists of a minimal number of rustic benches and seating platforms. Consistent with the Level of Service Framework there is no provision of facilities such as toilets, playgrounds, barbecues, potable water, shelters and rubbish bins. Signage is present indicating that rubbish is to be carried out by visitors.

Linking People and Spaces, Park Victoria's strategy for Melbourne's open space network, identifies the south-eastern suburbs as an expanding population base with an under-supply of open space (Parks Victoria, 2002). The Pines FFR forms an important node in the open space network in the Frankston/Cranbourne area. As an urban fringe reserve located within an identified residential growth area visitation is expected to grow, particularly with proposals to establish trail linkages with other open space areas within the City of Frankston (Robin Crocker & Associates, 2002).



3

3.0 Vision and Principles

The vision and guiding principles for the Greater Pines Reserve emphasise a delicate balance between the ecological priorities of the area and the importance of visitor experiences and appreciation.

3.1 Vision for the GPR

A future visitor to the GPR finds a well preserved conservation reserve, carefully managed for the preservation of its diverse indigenous flora and fauna species. The previously disturbed areas of the Pines FFR are being rehabilitated to create additional fauna habitat and improve habitat connectivity between areas of high conservation significance. The GPR achieves a sensitive balance between the primary goal of ecological conservation and visitor use and enjoyment in this rapidly growing urban area.

The GPR is well-known and widely used by surrounding residents of Melbourne's south-eastern suburbs and forms an important part of Park Victoria's network of open spaces. Shared trail and linear open space links connect the GPR to other nearby regional open spaces. Visitors experience and appreciate the reserve's values through activities including walking, cycling, jogging and nature study.

Promotion of the ecological importance of the GPR, assisted by a strong local Friends group, ensures that the reserve is highly valued by Melbournians. A communal sense of ownership and responsibility for this regional open space assures that it is maintained with the best interests of future generations in mind.

3.2 Protection of Flora and Fauna Values

The primary management principle for the GPR is the protection of flora and fauna consistent with its reservation as an area of ecological importance. This can be achieved by managing access to the areas of highest sensitivity, providing for low-impact recreational use and concentrating visitor activity in previously modified and disturbed areas. The movement and habitat requirements of significant fauna species will be considered in all management practices. In addition to protecting and improving existing habitats, the expansion of habitat through restoration of degraded areas with original EVCs as far as practicable will be important.

The Management Plan for The Pines FFR to be prepared by Parks Victoria will provide detailed direction for the management of flora and fauna, particularly threatened species known to exist within the GPR. The requirements of the Linking Melbourne Authority Southern Brown Bandicoot Management Plan will also be considered within the Management Plan for The Pines FFR, where applicable.

3.3 Meeting Future Visitor Needs

Management objectives for Nature Conservation Reserves (Parks Victoria 2003) include provision of opportunities for appropriate enjoyment, recreation and education by the public where this does not conflict with the primary objective to conserve and protect biodiversity. Nature Conservation Reserves generally only provide for passive recreation by small numbers of people.

However, due to its status as an urban fringe park, planned linkages with other areas through the metropolitan trail network (Linking People and Spaces, Parks Victoria 2002) and predicted growth in visitation (section 2.6) increased visitor services are required at the GPR to meet growing demand.

Any increase in accessibility and provision of new visitor facilities provides opportunities to raise community awareness of the presence and the importance of the Pines FFR flora and fauna values.

There is a need to provide a balance between increased visitor demand and protecting the flora and fauna values of the GPR. Previously disturbed areas provide the opportunity to concentrate visitor access and activity in locations with relatively low environmental value while providing for dispersed activities within the larger contiguous areas of remnant vegetation of high habitat value. Opportunities for more intensive recreational use are well provided for within the surrounding open space network.

3.4 Sustainability

Reserves such as the Pines FFR, which protect rare and endangered flora and fauna, play an essential role in achieving a sustainable future for this rapidly developing urban area. It is important that the future of the GPR is in turn protected by its surrounding community. The value of the Pines FFR will be promoted to the local community and visitors through opportunities to appreciate and enjoy the conservation and recreation values. Enhanced accessibility and visitor services will bring more people to the reserve and will assist in this goal. Organised programs involving local school and volunteer groups will be encouraged to increase a sense of community ownership and stewardship. Sustainable management practices and guidelines should be incorporated into the Management Plan for the Pines FFR.

3.5 Opportunities and Constraints

A number of opportunities and constraints were identified by the Working Group for the GPR.

Constraints identified for the GPR (figure 3.1) include:

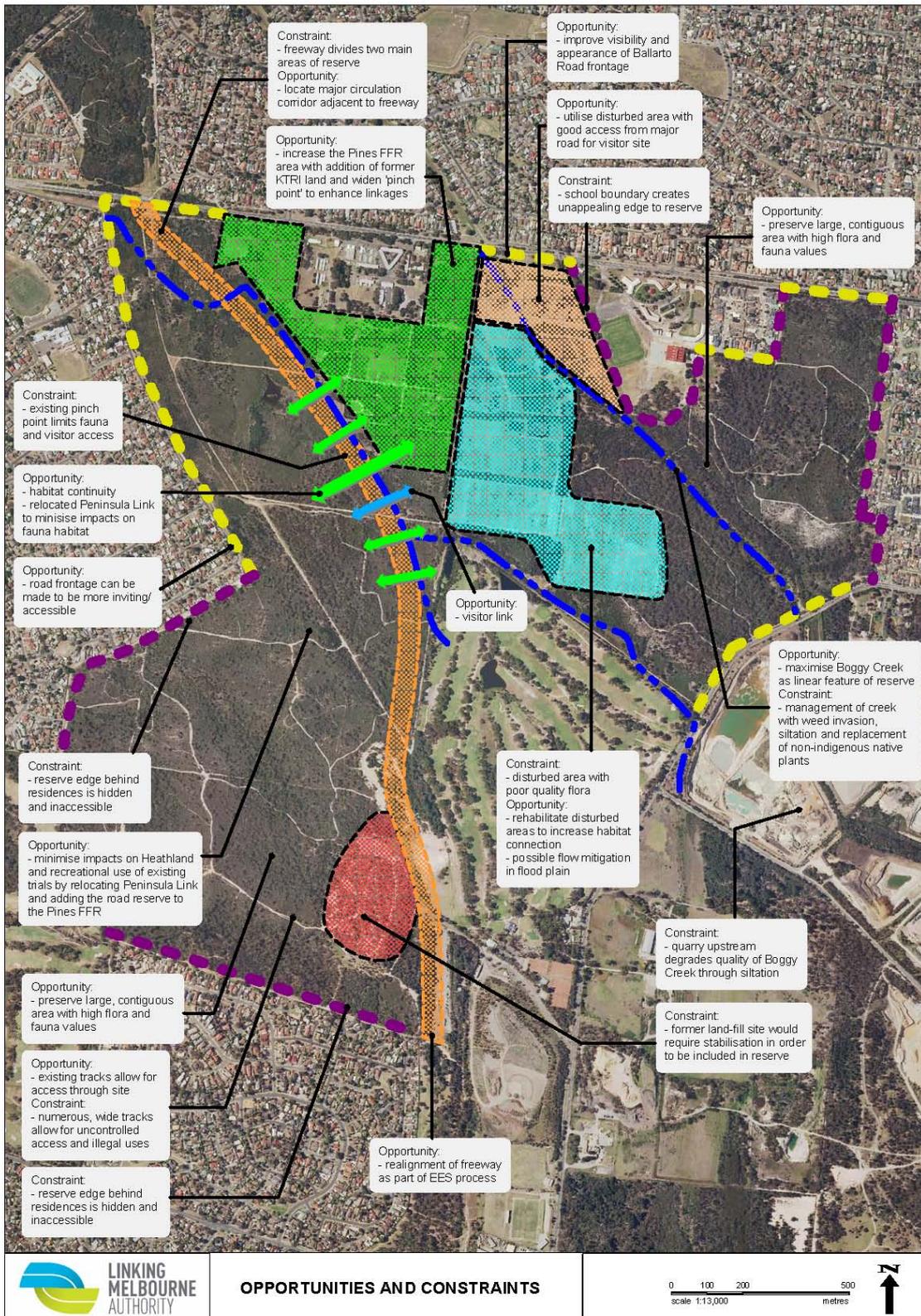
- The existing pinch-point between the eastern and western sections of the Pines FFR limits visitor and fauna access;
- The Peninsula Link alignment further divides the GPR;
- The lack of fauna habitat connectivity with the presence of the disturbed area of former orchard site which contain poor quality flora;
- The neighbouring boundaries that back onto the GPR, including residential and school properties, make it hidden and inaccessible;
- Numerous, wide tracks allow for uncontrolled access and inappropriate uses;

- The existing quarry upstream of Boggy Creek creates siltation management problems;
- Weed invasion along Boggy Creek and the presence of non-indigenous native vegetation degrades the quality of waterway; and
- The former land-fill site in the south-east corner of the GPR is not yet stabilised or rehabilitated.

Opportunities identified for the GPR (figure 3.1) include:

- The realignment of Peninsula Link through relocation from the original road reserve to minimise impacts on higher value habitats and flora and fauna values and minimise impacts on existing recreational use of trails. This includes minimising impacts on the only example of Heathland on an extensive dune field within the protected area left in the Melbourne area;
- The preservation of large, contiguous areas of high quality flora and fauna values in the western and eastern portions of the Pines FFR;
- The establishment of connectivity across Peninsula Link (via fauna underpass and culverts) for fauna movement and recreational access;
- The improved connection of the eastern and western portions of the Pines FFR by the rehabilitation of the former orchard area;
- the increase in the size of the Pines FFR area by the inclusion of additional former KTRI land including areas of high quality vegetation;
- The development of a readily accessible visitor site in a previously disturbed area on the former DARA land with low flora and fauna values;
- Improvement of edges with visible street frontage, including Tamarisk Drive, Ballarto Road, and McClelland Drive;
- The rationalisation of tracks for recreational uses and to minimise fragmentation impacts on fauna habitat;
- The establishment of a shared use path through the area as part of the Peninsula Link development utilising existing trails as far as practical;
- The rehabilitation of Boggy Creek as a linear feature of the Pines FFR;
- The rehabilitation of the former land-fill site off McClelland Drive and incorporation into the Pines FFR; and
- The addition of the road reserve not required for Peninsula Link to the Pines FFR.

Figure 3.1 Opportunities & Constraints



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4

4.0 Recommendations

4.1 Flora and Fauna Protection and Connection

Connectivity between the western and eastern portions of the Pines FFR will be enhanced through the revegetation of the former orchard areas (section 4.3) and the inclusion of approximately 24 ha of vegetated areas of the former KTRI into the Pines FFR.

A physical link will be established under Peninsula Link to allow Southern Brown Bandicoots and other fauna to move between the western and eastern portions of the Pines FFR. A connecting link/zone, as recommended by Biosis Research, will take the form of a large fauna underpass plus a number of smaller culverts and be designed in consultation with a fauna specialist so as to arrive at the solution most appropriate for the Southern Brown Bandicoot and other specific fauna. It is recommended that the large underpass is physically separate from the visitor/pedestrian link. Elements such as rope bridges and poles to help other animals such as Sugar Gliders to cross the proposed Peninsula Link should also be further studied and implemented where recommended by the Flora and Fauna Report (figures 4.1 and 4.2).

The inclusion of parts of the former KTRI land declared as surplus to DPI requirements into the Pines FFR will also enhance open space connectivity.



Figure 4.1 Elevation - Longitudinal Profile (View from East)

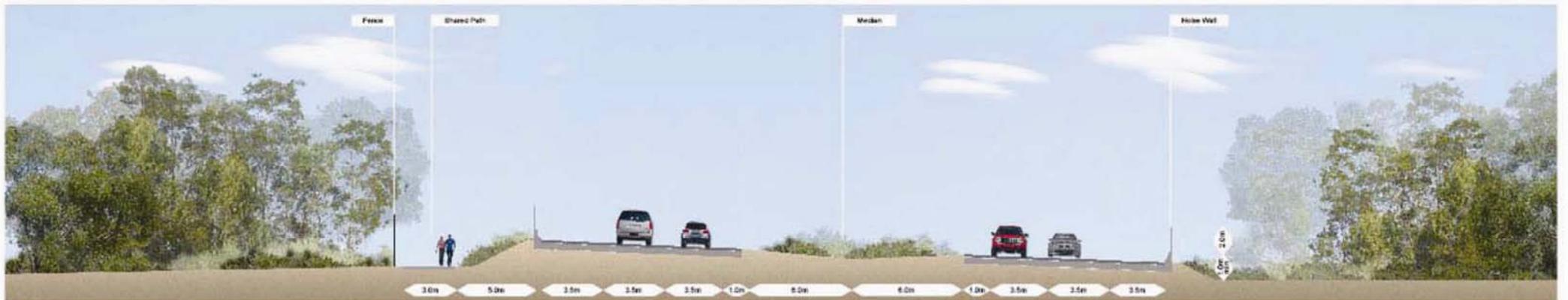


Figure 4.2 Typical Cross Section near Ground Level

4.2 Hydrology

The two channelised waterways in the Pines FFR, Boggy Creek and Tamarisk Creek, are recommended to be rehabilitated. It has been suggested by Biosis Research (2008) that Dwarf Galaxias could benefit from certain modifications to both waterways, however any proposed modifications would require Melbourne Water approval, as well as specialist advice from aquatic ecologists with expertise in the management of Dwarf Galaxias.

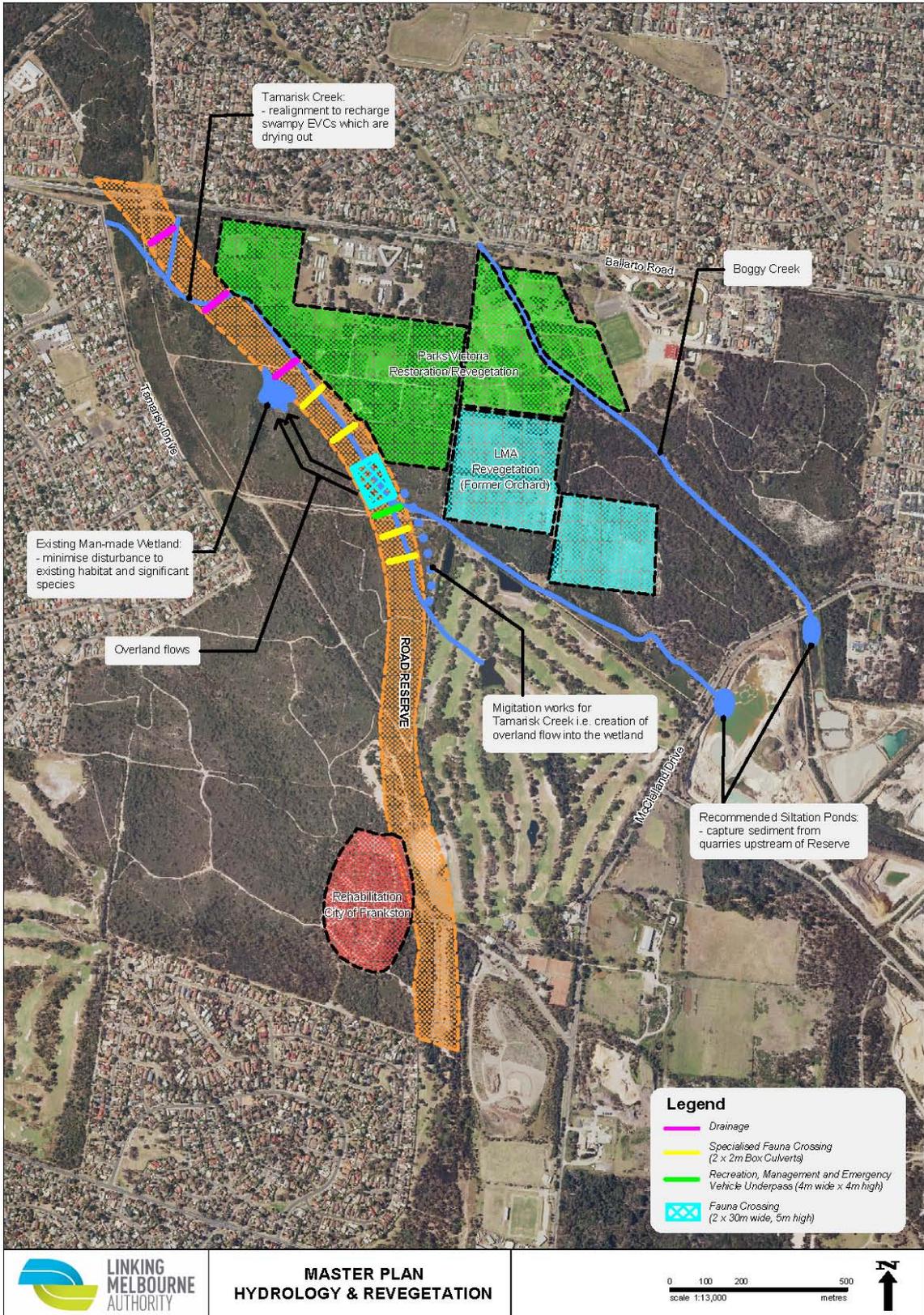
Hydrology improvements include recommended sedimentation ponds located upstream of Boggy Creek and Tamarisk Creek, to the east of McClelland Road in the quarry properties (figure 4.3). These ponds are required to trap the substantial amount of sediment which is currently being carried downstream into the Pines FFR, creating an on-going water quality management issue for Melbourne Water.

A Stormwater Management Plan will be developed for Peninsula Link and will require some above ground detention and treatment of stormwater. It is recommended that treatment of construction stormwater occurs in specially created swales or ponds (possibly on the disturbed western edge of the former KTRI land so as to minimise the Peninsula Link footprint on the GPR) before being discharged to Tamarisk Creek.

The constructed wetland on the western side of Tamarisk Creek has been identified as containing an area of the nationally significant River Swamp Wallaby Grass (*Amphibromus fluitans*) and providing an area of quality habitat. Disturbance of this wetland will be avoided wherever possible. The vegetation communities adjacent to the wetland in this low-lying area of the Pines FFR have slowly been drying out over years of drought. The Peninsula Link alignment will require approximately 0.5km of Tamarisk Creek to be realigned. This provides an opportunity to reinstate a more natural overland flow regime with recharge of the EVCs. The creek would need to be re-channelised in its lower reaches (at the northern end of the GPR) to ensure no negative impacts on properties in Tamarisk Drive. There will also be the need to sustain natural water flows across Peninsula Link from the former KTRI land to the western portion of the Pines FFR by the inclusion of culverts under the roadway.



Figure 4.3: Hydrology and Revegetation Areas



4.3 Environmental Rehabilitation

The former orchard areas comprising some 16 ha will be rehabilitated, and is the highest priority area for revegetation (Figure 4.3). This priority relates to the importance of establishing a habitat link across the GPR at the earliest opportunity, including improved habitat potential for the Southern Brown Bandicoot. Linking Melbourne Authority will revegetate this area to Southern Brown Bandicoot habitat, which will be detailed in a Revegetation Plan (prepared by Linking Melbourne Authority). The revegetation will be consistent with the recommendations of the Frankston Bypass EES Study (2008), where revegetation of a portion of cleared land, including the former orchards should be with appropriate indigenous species from Heathy Woodland (on deep nutrient poor sands), Damp Sands Herb-rich Woodland (on moderately fertile well drained deep sands), and Swampy Riparian Woodland (adjacent to Boggy Creek and any offline constructed wetlands). A map of these EVC's is provided in Appendix B. These actions aim to improve habitat connectivity between the former DARA Block and the remainder of the Reserve.

The second priority area for rehabilitation is the revegetation along Boggy Creek to achieve a healthy riparian buffer zone, which would improve site hydrology as well as provide potential habitat for the Dwarf Galaxias and Swamp Skink (Figure 4.3).

Additional rehabilitation and restoration to be undertaken over time includes:

- Rehabilitating remaining disturbed areas on former DARA land. Sufficient open area will be retained around the primary visitor site for recreation, visual amenity, visibility from Ballarto Road and fire protection.
- Rehabilitating modified and disturbed areas on former KTRI land; track rationalisation, weed removal and restoration of former animal enclosures will be required.
- Rehabilitating the former landfill through weed control and revegetation for future inclusion into the Pines FFR.

A list of species which occur within the Pines FFR and which are typically be found within the vegetation communities is provided in Appendix A. Plants will be selected to reflect the appropriate landscape character and EVC of the areas.

4.4 Visitor Access and Services

Consistent with the previously identified principles, a primary visitor site will be established within the former DARA land with Ballarto Road frontage on previously disturbed land (Figure 4.4). It is anticipated that the majority of visitors will enter the Pines FFR at this location and then access the range of recreation opportunities provided, particularly the trail network.

A public vehicular access road to the new visitor site will be established utilising the existing management vehicle track. A car park with a capacity for approximately twenty cars (including two disabled parking spaces) and two mini-buses will be located near the entrance outside of the inundation or 100 year flood zone. If required in the future this car park has the potential for extension to provide parking for an additional 20 vehicles. The new car park will have an unsealed surface, such as a compacted gravel, to allow for infiltration of stormwater and prevent increased urban runoff to Boggy Creek.

Facilities to be established at the new visitor site include picnic facilities and information and orientation signage. No rubbish bins are proposed consistent with the Parks Victoria policy that all litter must be carried out. Future facilities may include toilets and barbecues and enhanced information/interpretation structures.

The existing vehicular entrance and car park at Excelsior Drive are in good condition and are proposed to be retained for local access on the western side of the Pines FFR.

Site furniture elements should generally be selected to comply with those recommended for Basic Level of Service in the *Visitor Facility Manual* (Parks Victoria, 2002). The dominant bush character of the Pines FFR should be reflected in the site furniture.

4.5 Circulation and Linkages

All existing pedestrian entrance points from the surrounding neighbourhoods are recommended to be retained. Additional pedestrian entry points will occur at the primary visitor site and at the entry points along the primary shared use path.

The existing network of tracks (Figure 4.4) allows visitors and maintenance vehicles to circulate through and around the reserve.

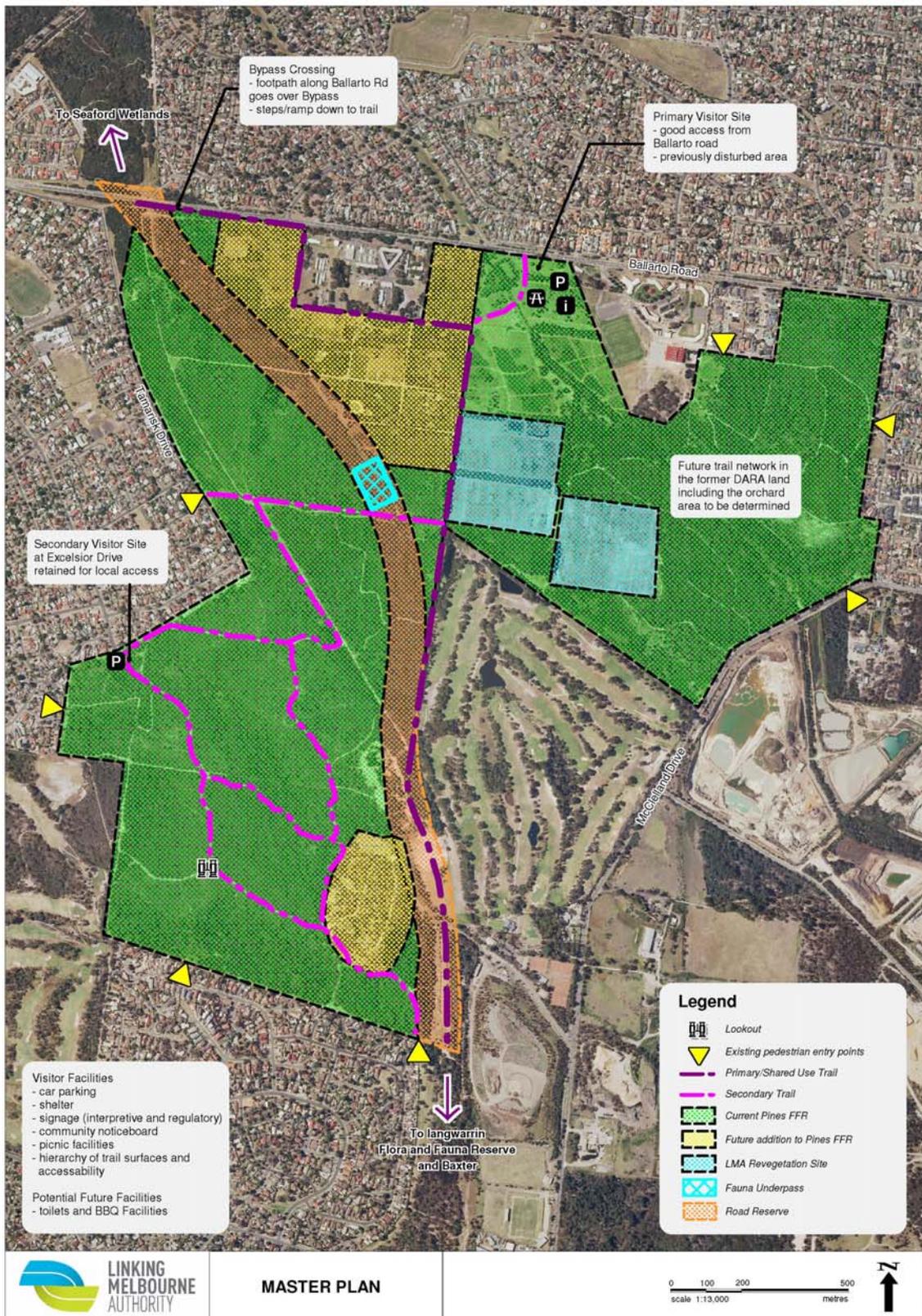
The spine of the circulation network consists of the planned regional shared use path associated with Peninsula Link which provides for linkages with existing tracks and the new visitor site at Ballarto Road. This primary trail will provide an important link to the surrounding open space network, forming a connection from Seaford in the north, to the Langwarrin Flora and Fauna Reserve and Baxter in the south. The route of the shared use path passes through the DPI land proposed for inclusion in the Pines FFR and through the Pines FFR on existing track alignments. The design of the shared use path will include an elevated boardwalk section adjacent to the Peninsula Link fauna underpass to provide for unimpeded movement of fauna.

The track crossing under Peninsula Link will be designed to facilitate access for emergency and management vehicles including access for the CFA and is a key secondary trail providing for recreational access between the western and eastern parcels of the Pines FFR.

The Management Plan to be prepared by Parks Victoria will review the existing track network based on recommendations to protect existing and proposed fauna habitat areas, particularly protection of Southern Brown Bandicoot habitat and revegetation/restoration areas and access needs for fire management.

Trails are broadly categorised based on a hierarchy of surface treatments relative to expected levels of use. Primary trails would carry most visitor traffic and would be sealed to the appropriate standard for users including accessibility for persons with limited mobility. Secondary trails would have a soft surface with some level of surfacing in areas to allow for ease of visitor movement. To prevent spreading of tracks, or migration of edges and damage to vegetation which currently occurs in some areas, edge treatments are recommended along secondary trails. Tertiary trails will generally be narrower unsurfaced trails.

Figure 4.4 Master Plan



4.6 Perimeter Treatment

Future perimeter fencing treatments will need to fully consider objectives for fencing and the potential to improve the aesthetics of the boundary landscapes and consider options to provide for predator proof fencing in accordance with the approved Southern Brown Bandicoot Management Plan. The current chain mesh fence around the perimeter of the study area, particularly along prominent boundaries, presents an uninviting image fence and many sections are in poor condition and have significant vegetation growing through or adjacent to the fence. Boundary fencing needs to consider ensuring appropriate visitor access and use, and control of access by domestic animals. Options for treatment of boundary fencing will be addressed by Parks Victoria in the preparation of a Management Plan for the Pines FFR.

4.7 Fire Regime

The study area has been subject to both wildfires and prescribed burning for both ecological and asset protection purposes. Fire protection is undertaken in accordance with the *Port Phillip East Fire Protection Plan* (DSE 2003) and includes maintenance of perimeter firebreaks, maintenance of the track network and prescribed burning. Fire management will be reviewed by Parks Victoria in preparing a Management Plan for the Pines FFR.

Consultation with the CFA has identified good access for fire trucks around and within much of the perimeter areas however unsurfaced tracks in steeper dune areas limit access for fire suppression to four wheel drive vehicle. The main shared use path will be accessible for fire fighting and the route provides opportunities to create passing bays along its length. Future access for fire management will be addressed by Parks Victoria in the management planning process.

4.8 Predator Control

Parks Victoria undertakes predator control programs within the Pines FFR. This includes soft-jaw trapping for foxes and trapping of cats through the deployment of cat cages. Cats are surrendered to the local council for identification and owners are notified for collection. Feral cats are destroyed. Linking Melbourne Authority has also undertaken predator control works during the pre-construction phase of the Peninsula Link project, aiming to reduce the number of foxes and cats that prey on native fauna, including the Southern Brown Bandicoot. Linking Melbourne Authority will develop a predator control program for both the construction and post construction phases of Peninsula Link.

Parks Victoria will continue to undertake predator control works within the Pines FFR and will review options for improved predator control outcomes in the preparation of a management plan, which could include baiting. Recommendations for monitoring of fox abundance within The Pines FFR will be considered during the Management Planning process,

4.9 Domestic Pets

There has been dog walking in the Pines FFR since establishment in the late 1980s. Under Local laws, dogs are permitted provided they kept on a leash and kept under control. Parks Victoria works in partnership with the City of Frankston to enforce the current controls.

There is clearly an established demand for dog walking in the Pines FFR and dog walking in parks and reserves is a popular activity which is known to provide benefits to human and dog health. However, dogs can be a disturbance to wildlife and dogs off leash can be a concern for other visitors. Parks Victoria will review current dog walking during the preparation of the Pines

FFR Management Plan in consultation with the community. This will address the need to enhance protection of flora and fauna and determine future areas for dog walking in accordance with regulations for Nature Conservation Reserves.

5

5.0 Integration with Peninsula Link

The specialist studies carried out for the Peninsula Link have been reviewed as part of the Master Plan process.

The key recommendations and actions from the EES sections which relate directly to the GPR have been summarised below. For a detailed analysis and description of mitigation refer to the original reports in the EES.

5.1 Ecological Systems

Recommendations to minimise the impact of Peninsula Link on flora and fauna in the GPR include using retaining walls to reduce the Peninsula Link footprint and fencing off sensitive areas (including the constructed wetland to the west of Tamarisk Creek) as no-go zones prior to construction.

In general the Peninsula Link alignment has been designed to avoid areas of high quality vegetation where possible. The loss of native vegetation as a result of the construction of Peninsula Link is required to be offset by the policy of Net Gain in accordance with the *Native Vegetation Management Framework* (SEITA 2008).

Fragmentation of habitat is to be mitigated by providing fauna underpasses (Section 4.1) to connect the two major areas of habitat. The proposed connectivity structures are to be monitored after completion. Connection of habitat will be further provided by the revegetation/restoration of the orchard areas (as outlined in Section 4.3).

Light and noise impacts on fauna are to be avoided by the installation of light/noise attenuation barriers as noted below. The noise/light attenuation barriers also have the potential to act as a predator barrier along the alignment of Peninsula Link.

Any indirect disruption to flora and fauna due to construction impacts, such as the spread of weeds, pests or dust, during construction are to be controlled by the contractor's Environmental Management Plans (EMP) (SEITA 2008).

A *Threatened Species Management Plan* (Practical Ecology, 2009) has been developed that is aimed at protecting and recovering threatened flora along the Peninsula Link route. Linking Melbourne Authority has also developed a *Southern Brown Bandicoot Management Plan* (ARCUE, 2010), to address species protection, rehabilitation of land within the Pines FFR to Southern Brown Bandicoot habitat, predator control and monitoring and recovery actions for the Southern Brown Bandicoot.

5.2 Surface Water

Design of Peninsula Link is to be based on Water Sensitive Road Design and will be required to include spill containment facilities to mitigate the risk of discharge of chemical or fuel spills into receiving waterways.

Mitigation measures for the construction of Peninsula Link (such as increased sedimentation, increased stormwater runoff, and disturbance of the channel) will be managed under the EMP.

The *Surface Water Report* proposed a preliminary conceptual plan for the realignment of Tamarisk Creek (refer to EES for plan) to reinstate a more natural overland flow regime which would contribute peak flows to the constructed wetland (as outlined in Section 4.2).

5.3 Noise & light

The Traffic Noise Objective for Peninsula Link (being 63 dB(A) $L_{10, 18hr}$ at year 2021 based on VicRoads *Traffic Noise Reduction Policy (2005)*) is planned to be met with the installation of noise barriers.

The construction of light/noise attenuation barriers will act to mitigate any potential negative impacts of noise and visual pollution. The noise/light attenuation barriers also have the potential to act as a predator barrier along the alignment of Peninsula Link. These attenuation barriers will help to prevent ingress of foxes from the Peninsula Link alignment into the GPR.

Noise during the construction of Peninsula Link is planned to be managed by measures included in the contractor's EMP with special mitigation and monitoring measures for sensitive areas, including the Pines FFR (SEITA 2008).

5.4 Air Quality

Future air quality was modelled to assess the likely impact of the operation of Peninsula Link on air quality at both a local and a regional scale. The models predicted that the pollutant loads to the atmosphere in 2011, 2021 and 2031 would be reduced with Peninsula Link, compared with the 'no build' scenario. Based on the modelling undertaken, pollutant concentrations are predicted to be below the State Environment Protection Policy (Ambient Air Quality) intervention levels (SEITA, 2008).

5.5 Visual Impact

The visual impact of Peninsula Link through the GPR will be generally restricted to reserve visitors in close proximity to the Peninsula Link corridor, while elsewhere dense existing vegetation will effectively screen most distant views. The greatest visual impact will occur where visitors cross under Peninsula Link at the pedestrian underpass, where there will be clear views along the retaining and noise/light attenuation barriers. The currently open orchard areas will also be subject to views of Peninsula Link until revegetation is carried out and able to mature. The elevated dunes in the south-west of the Pines FFR are generally not impacted by views of Peninsula Link as they are screened by rolling topography and dense vegetation. There may be some glimpses of the tops of the noise barriers from the highest point in the Pines FFR.

Overall, the *Landscape and Visual Impact Assessment* identifies the potential visual impact of Peninsula Link on the GPR visual setting as 'moderate'. (The visual modification of the setting is rated as low, while the visual sensitivity of the setting is rated as high).

Landscape mitigation treatments are proposed to reduce the visual impact over time as vegetation establishes (SEITA, 2008). Night time lighting is expected to have a minimal visual impact as no carriageway lighting is proposed for Peninsula Link.

A more detailed analysis of visual impacts of Peninsula Link from key viewpoints within the Pines FFR can be found in the original reports in the EES.

6

6.0 Implementation

The Master Plan sets the strategic direction for the Greater Pines Reserve. Parks Victoria is to prepare a Management Plan, which will describe in further detail how Parks Victoria will protect the Pines FFR natural and cultural values and implementation of the Master Plan. Specifically, the Management Plan will address the following:

- Flora and fauna protection and connection. This includes incorporating requirements of the approved Southern Brown Bandicoot Management Plan and Threatened Species Management Plan for the Peninsula Link project, where required.
- Hydrology
- Environmental rehabilitation
- Visitor Access and Services
- Circulation and linkages
- Perimeter treatment
- Fire regime
- Predator Control

Implementation of this Master Plan will be phased over time and will be influenced by the outcomes of the Pines FFR Management Plan and funding for specific projects as well as desired on-going participation of the Friends Group and other volunteers.

Parks Victoria has identified rehabilitation of the orchard area as a high priority to enhance habitat values in the area adjacent to the fauna underpass and improve habitat connectivity for the protection of fauna. Parks Victoria has removed the orchards as the first phase of a restoration program to be implemented over time and has also implemented a program for improved signage in the area on the west side of Peninsula Link.

Current funding under the *Urban Parks and Trails Program* provides for the design and establishment of the new visitor site at Ballarto Road in 2010.

Parks Victoria will undertake further planning to develop the Management Plan and prepare a fire management plan for the reserve. Linking Melbourne Authority has committed to revegetate 16 ha of the former DARA land.

7

7.0 Appendices

7.1 Appendix A – Planting List

This list is based on indigenous species found in the Pines FFR which are commercially available.

Note that plants to be used in revegetation should be matched to the appropriate EVCs based on specific site conditions (eg. Swampy Woodland EVC plantings in areas occasionally subject to inundation and Heathy Woodland EVC plantings on deep sands). (Biosis Research, 2008).

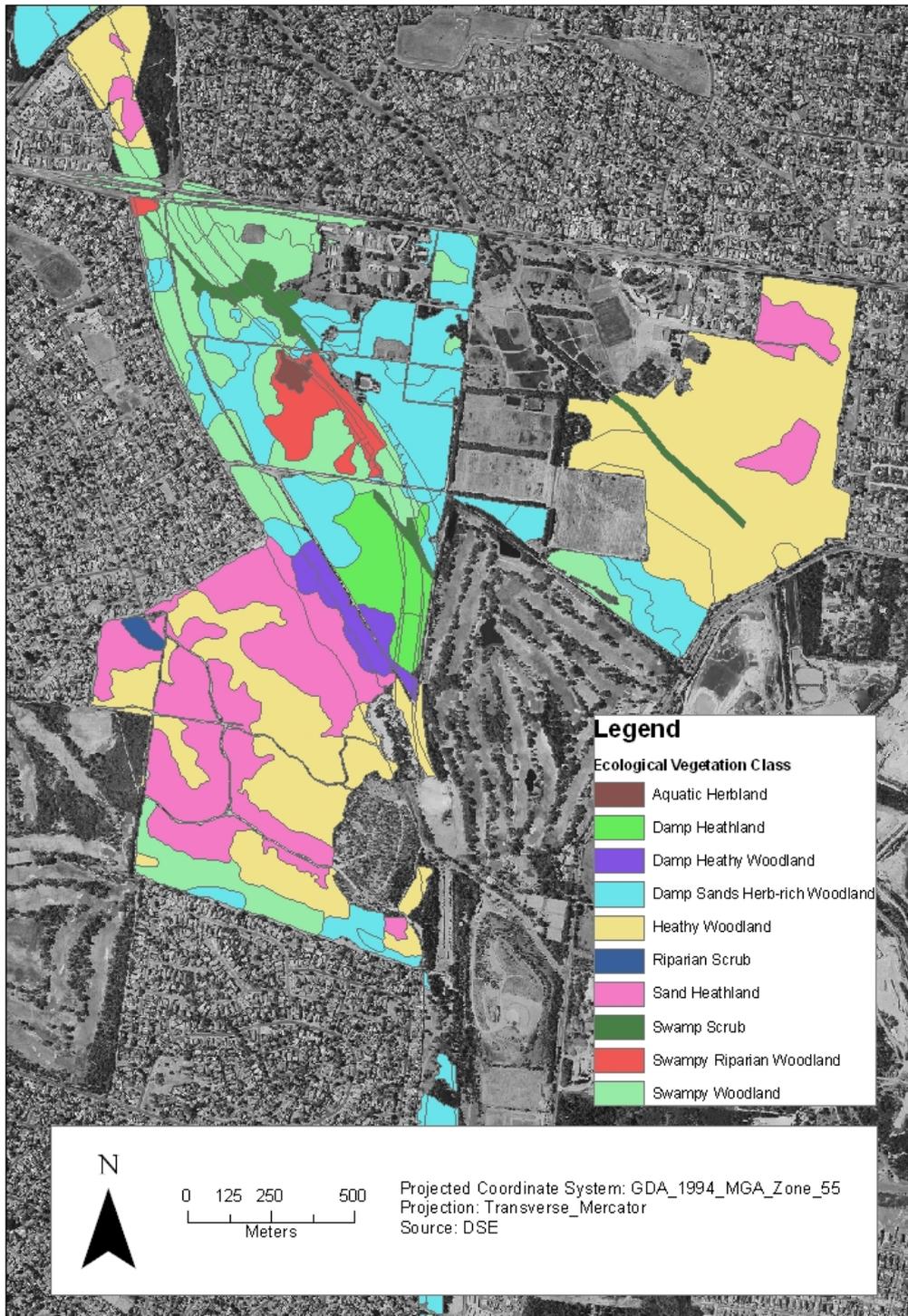
Scientific Name	Common Name
<i>Acacia dealbata</i>	Silver Wattle
<i>Acacia mearnsii</i>	Black Wattle
<i>Acacia melanoxylon</i>	Blackwood
<i>Acacia paradoxa</i>	Hedge Wattle
<i>Acacia suaveolens</i>	Sweet Wattle
<i>Acacia verticillata</i>	Prickly Moses
<i>Acaena novae-zelandiae</i>	Bidgee-widgee
<i>Acrotriche serrulata</i>	Honey-pots
<i>Allocasuarina littoralis</i>	Black Sheoak
<i>Allocasuarina verticillata</i>	Drooping Sheoak
<i>Amperea xiphoclada</i> var. <i>xiphoclada</i>	Broom Spurge
<i>Aotus ericoides</i>	Common Aotus
<i>Arthropodium strictum</i>	Chocolate Lily
<i>Astroloma humifusum</i>	Cranberry Heath
<i>Austrodanthonia caespitosa</i>	Common Wallaby-grass
<i>Austrodanthonia geniculata</i>	Kneed Wallaby-grass
<i>Austrodanthonia racemosa</i> var. <i>racemosa</i>	Slender Wallaby-grass
<i>Austrodanthonia setacea</i>	Bristly Wallaby-grass
<i>Austrostipa mollis</i>	Supple Spear-grass
<i>Austrostipa rudis</i> subsp. <i>rudis</i>	Veined Spear-grass
<i>Banksia integrifolia</i> subsp. <i>integrifolia</i>	Coast Banksia
<i>Banksia marginata</i>	Silver Banksia
<i>Baumea tetragona</i>	Square Twig-sedge
<i>Bossiaea cinerea</i>	Showy Bossiaea

Scientific Name	Common Name
<i>Bursaria spinosa</i> subsp. <i>spinosa</i>	Sweet Bursaria
<i>Caesia calliantha</i>	Blue Grass-lily
<i>Carex breviculmis</i>	Common Grass-sedge
<i>Cassinia aculeata</i>	Common Cassinia
<i>Centella cordifolia</i>	Centella
<i>Clematis microphylla</i>	Small-leaved Clematis
<i>Correa reflexa</i> var. <i>reflexa</i>	Common Correa
<i>Dianella brevicaulis</i>	Small-flower Flax-lily
<i>Dianella tasmanica</i>	Tasman Flax-lily
<i>Dichondra repens</i>	Kidney-weed
<i>Dillwynia glaberrima</i>	Smooth Parrot-pea
<i>Eleocharis acuta</i>	Common Spike-sedge
<i>Eleocharis sphacelata</i>	Tall Spike-sedge
<i>Epacris impressa</i>	Common Heath
<i>Eucalyptus cephalocarpa</i>	Silver-leaf Stringybark
<i>Eucalyptus ovata</i>	Swamp Gum
<i>Eucalyptus radiata</i>	Narrow-leaf Peppermint
<i>Eucalyptus viminalis</i> subsp. <i>pryoriana</i>	Coast Manna-gum
<i>Ficinia nodosa</i>	Knobby Club-sedge
<i>Gahnia sieberiana</i>	Red-fruit Saw-sedge
<i>Goodenia geniculata</i>	Bent Goodenia
<i>Goodenia humilis</i>	Swamp Goodenia
<i>Goodenia ovata</i>	Hop Goodenia
<i>Hakea nodosa</i>	Yellow Hakea
<i>Hakea ulicina</i>	Furze Hakea
<i>Helichrysum scorpioides</i>	Button Everlasting
<i>Hibbertia acicularis</i>	Prickly Guinea-flower
<i>Hibbertia fasciculata</i> var. <i>prostrata</i>	Bundled Guinea-flower
<i>Hibbertia riparia</i>	Erect Guinea-flower
<i>Hibbertia sericea</i>	Silky Guinea-flower
<i>Hypolaena fastigiata</i>	Tassel Rope-rush
<i>Indigofera australis</i>	Austral Indigo
<i>Isolepis inundata</i>	Swamp Club-sedge
<i>Isolepis marginata</i>	Little Club-sedge
<i>Juncus pallidus</i>	Pale Rush
<i>Kennedia prostrata</i>	Running Postman
<i>Kunzea ericoides</i> spp. agg.	Burgan
<i>Lepidosperma concavum</i>	Sandhill Sword-sedge
<i>Lepidosperma laterale</i>	Variable Sword-sedge
<i>Leptospermum lanigerum</i>	Woolly Tea-tree
<i>Leptospermum myrsinoides</i>	Heath Tea-tree
<i>Leucopogon ericoides</i>	Pink Beard-heath
<i>Leucopogon virgatus</i>	Common Beard-heath
<i>Lobelia anceps</i>	Angled Lobelia
<i>Lomandra filiformis</i>	Wattle Mat-rush
<i>Lomandra longifolia</i> subsp. <i>longifolia</i>	Spiny-headed Mat-rush
<i>Melaleuca ericifolia</i>	Swamp Paperbark
<i>Melaleuca squarrosa</i>	Scented Paperbark
<i>Microlaena stipoides</i> var. <i>stipoides</i>	Weeping Grass

Scientific Name	Common Name
<i>Olearia ramulosa</i>	Twiggy Daisy-bush
<i>Ozothamnus ferrugineus</i>	Tree Everlasting
<i>Patersonia fragilis</i>	Short Purple-flag
<i>Patersonia occidentalis</i>	Long Purple-flag
<i>Pelargonium australe</i>	Austral Stork's-bill
<i>Persicaria decipiens</i>	Slender Knotweed
<i>Phragmites australis</i>	Common Reed
<i>Pimelea humilis</i>	Common Rice-flower
<i>Poa labillardierei</i>	Common Tussock-grass
<i>Poa morrisii</i>	Soft Tussock-grass
<i>Poa sieberiana</i> var. <i>sieberiana</i>	Grey Tussock-grass
<i>Pultenaea stricta</i>	Rigid Bush-pea
<i>Ricinocarpos pinifolius</i>	Wedding Bush
<i>Solanum laciniatum</i>	Large Kangaroo Apple
<i>Stylidium graminifolium</i>	Grass Triggerplant
<i>Tetragonia implexicoma</i>	Bower Spinach
<i>Tetralochea ciliata</i>	Pink-bells
<i>Themeda triandra</i>	Kangaroo Grass
<i>Thysanotus tuberosus</i>	Common Fringe-lily
<i>Triglochin procera</i>	Water Ribbons
<i>Triglochin striata</i>	Streaked Arrowgrass
<i>Viminaria juncea</i>	Golden Spray
<i>Viola hederacea</i>	Native Violet
<i>Wahlenbergia stricta</i> subsp. <i>stricta</i>	Tall Bluebell
<i>Xanthorrhoea minor</i> subsp. <i>lutea</i>	Small Grass-tree



7.2 Appendix B –The Pines FFR Ecological Vegetation Classes



8.0 References

ARCUE (2010) Results of surveys of Southern brown Bandicoots at the Pines Flora and Fauna Reserve, Frankston. *Pre-construction Survey, Spring 2009*. Produced for Linking Melbourne Authority, Melbourne.

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SEITA (2008) *Frankston Bypass Environmental Effects Statement*, Melbourne

VicRoads (2005) *VicRoads Traffic Noise Reduction Policy*, Melbourne

9.0 List of Acronyms

CFA	Country Fire Authority
DARA	Department of Agriculture and Rural Affairs
DDA	Disability Discrimination Act
DSE	Department of Sustainability and Environment
DPI	Department of Primary Industries
EES	Environment Effects Statement
EVC	Ecological Vegetation Community
GPRA	Greater Pines Reserve Area
KTRI	Keith Turnbull Research Institute
LMA	Linking Melbourne Authority
Pines FFR	Pines Flora and Fauna Reserve
Parks Vic	Parks Victoria
SEITA	Southern and Eastern Integrated Transport Authority