Western Linkage Biolink Plan

Prepared for: the Biolinks Promotion Program

Program sponsor: Devilbend Foundation

Report authors: Michele Sabto and Blair Luxmoore

The Biolinks Promotion Program is supported by the Natural Resources Conservation League

Contents

Introduction

This plan outlines the works required on private and public land to achieve a continuous corridor of vegetation between two areas of high-quality habitat in the NW of the Mornington Peninsula: Balcombe Reserve at Balcombe Estuary Mt Martha to Woods Reserve and adjoining Devilbend Natural Features Reserve, taking in The Briars Park. The section of vegetation linking these two areas is referred to here as the 'Western Linkage' (see Figure 1, p. 5).

This plan is the culmination of Stage 1 of the Mornington Peninsula Bay to Bay Biolink project, formerly known as the Biolinks Promotion Program (BPP). Bay to Bay Biolink is piloting a community-led approach to reconnect fragmented, but otherwise functional, remnants of indigenous vegetation to create wildlife corridors (biolinks) on the Mornington Peninsula. Refer to map in Appendix 1 for an overview of the Western Linkage showing its location on the northern Peninsula.

Bay to Bay Biolink is run by the Devilbend Foundation Inc. (DFI) and is funded by the Natural Resources Conservation League of Victoria (NRCL). The overall objective of this project is to enable community-driven biolinks plans to influence the strategic (as distinct from scattershot) allocation of public resources for biolink reconnection on the Mornington Peninsula. An overview of the planning and landholder engagement activities undertaken to arrive at this Western Linkage Biolink Plan is presented in Appendix 2.

This plan focuses on the works required to achieve the Western Linkage on private properties. Four private properties are covered. Additional complementary works on public land in the alignment are discussed, but not in as much detail as these works were already planned and underway prior to this project.

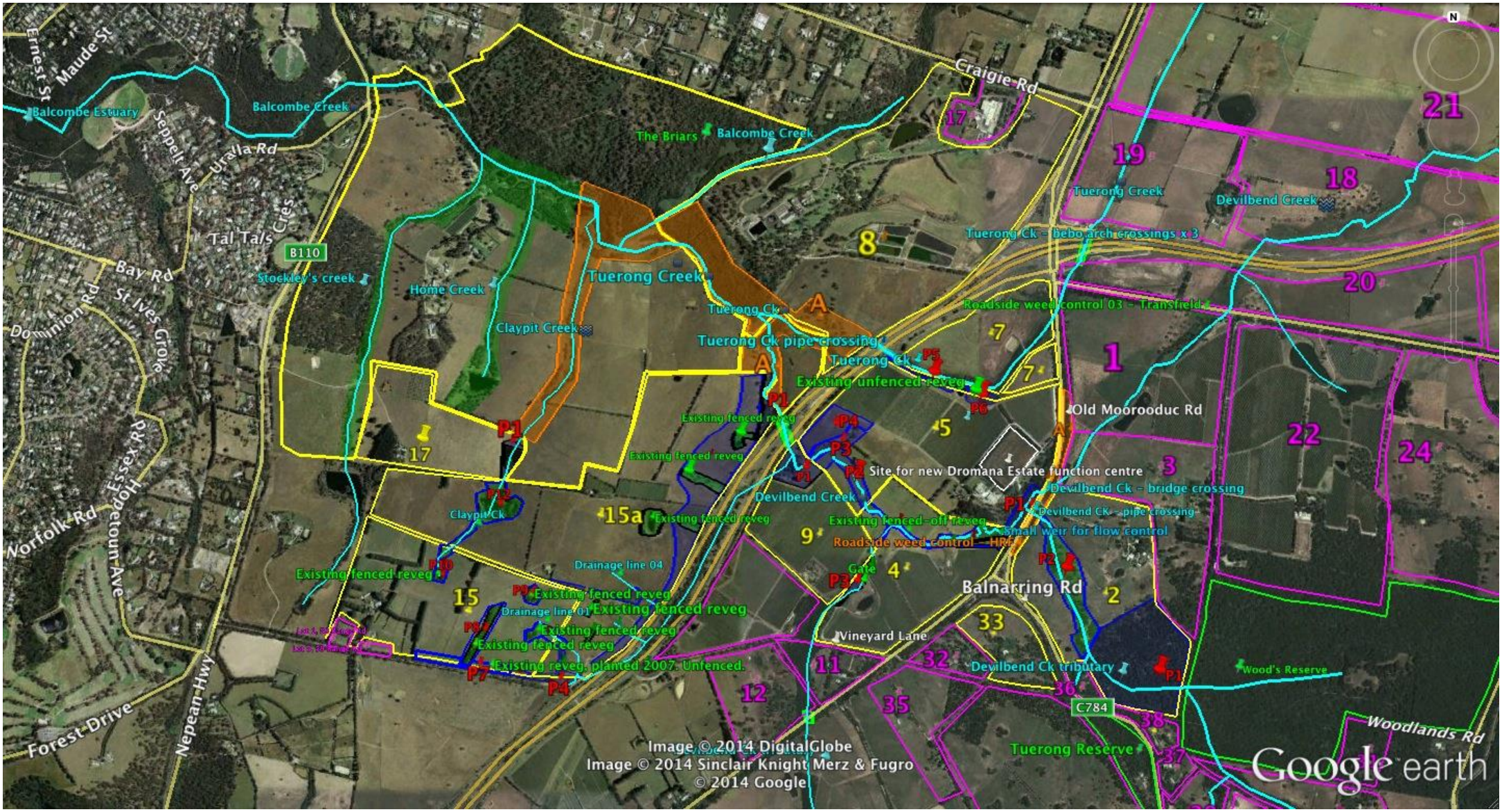

Figure 1: Western Linkage Alignment map

Key

property boundaries – properties in the Western Linkage alignment

2, 4, etc property no. for properties in the Western Linkage alignment

property boundaries – properties outside Western Linkage alignment

Western Linkage alignment

Existing revegetation/rehabilitation

P1, P2 etc polygon no. - planned on-ground works required to achieve Western Linkage alignment

Why are biolinks required on the Mornington Peninsula?

The Mornington Peninsula is an iconic and beautiful region and is considered the most biodiverse 750 km^2 in Victoria. Fragmentation of the landscape over time has led to the decline of many native birds and mammals. As native trees, shrubs, and grasslands have been cleared to make way for farms, residences, and infrastructure, mammals such as swamp wallabies, bandicoots, antechinus, echidna, and skinks have lost habitat and become vulnerable to feral cats and foxes. Many reptiles and birds are also in decline due to loss of habitat and predation from introduced animals.

In order to be healthy, native landscapes must remain connected so that wildlife can move safely between areas of food and shelter. A landscape that is highly fragmented can trap animals in areas that are too small for their needs. Where understorey has been cleared, small mammals and birds that forage on the ground are vulnerable to predators such as cats, dogs and foxes, and their numbers decline rapidly. Those that escape predation may suffer from inbreeding (lack of genetic diversity) and their populations become vulnerable to diseases or sudden death due to disturbances such as pest outbreaks and high-intensity bushfires.

Biolinks are areas of bush and other habitat (such as waterways and stands of paddock trees) that connect areas of valuable habitat and forage. Biolinks enable wildlife to move freely and safely and have access to the broader landscape. This is increasingly important in light of climate change, as the requirement of animals to move to more suitable areas becomes critical.

In a highly fragmented (partially cleared) landscape such as the Mornington Peninsula, creating biolinks involves developing corridors of native vegetation on public and private property, and/or (where possible) removing barriers such as electrified fences to allow for wildlife movement, to provide a continuous connection between habitat patches. A biolink can also be created by developing patches of bushland that act like 'stepping stones' for wildlife, reducing the distances between individual habitat patches (Bennett 2003). Some actions taken to create biolinks include weeding, planting, strategic fencing to keep out stock and feral animals and the building of underpasses and overpasses at roads to enable safe passage of wildlife.

The Western Linkage alignment

[*Numbers in brackets refer to property numbers on Figure 1 map, p.5]

The Western Linkage alignment (Figure 1 map, p. 5) begins on the [redacted] property (no. 2) and runs in a NW direction following a tributary of Devilbend Ck. After crossing Old Moorooduc Rd, the alignment follows Devilbend Ck proper to the Mornington Peninsula Fwy across Dromana Estate (no. 5) and the [redacted] property (no. 4). At [redacted] property (no. 15a) adjacent to the Mornington Peninsula Fwy, the alignment turns south running alongside the freeway in a wide strip, before turning west to run alongside Range Rd in the property of [redacted] (no. 15). The alignment encompasses the headwaters of Claypit Ck on [redacted] property (no. 15) and continues streamside along Claypit Ck through [redacted] property, to the Briars where Claypit Ck runs into Balcombe Ck, which runs towards the sea and Balcombe Estuary.

The engagement and active participation of landholders has been key to the development of this plan. A workshop to determine alignment was held on 31st January 2014 at the property [redacted] of 500 Old Moorooduc Rd (no. 2). The workshop was attended by landholders in the Western Linkage and was facilitated by consultants Blair Luxmoore and Michele Sabto, supported by the Bay to Bay Biolink Steering Committee (Appendix 2).

Following a presentation by local ecologist Mal Legg on the flora and fauna in the Western Linkage, workshop participants collectively determined the linkage alignment through their properties. Among the factors influencing the choice of alignment were the relatively higher level of biodiversity along creeklines, as well as efficiency gains from consolidating existing conservation works on each property which tended to be streamside based, and other existing land uses - i.e grazing and viticulture. Workshop participants mapped their features on their properties and suggested alignments onto a large map, created in Google Earth, and projected onto butcher's paper.

Follow up landholder meetings and site visits were conducted to develop the details of works required on each property. Futher information about the process used to arrive at this plan is provided in Appendix 2.

What flora and fauna is the Western Linkage aiming to protect?

Flora

Native vegetation in Victoria has been classified into distinctive groupings known as Ecological Vegetation Classes or EVCs. These groupings are based on floristic, structural and ecological features of the vegetation. Each EVC has been assigned a distinct descriptive name (i.e. EVC 175 Grassy Woodland Class Profile). A 2006 study commissioned by the Mornington Peninsula Shire Council found 32 EVCs on the Peninsula (Yugovic 2006).

Within the Western Linkage area, there are at least 20 EVCs (Legg 2014). Some, such as Swamp Scrub (EVC 053) and Grassy Woodland (EVC 175), are classified as endangered (bioregional conservation status). This means not only that these vegetation communities under threat but also the animals that depend on them.

One example of an EVC that occurs within the Western Linkage is Grassy Woodland (EVC 175). This is the most species rich ecosystem in temperate Australia and is among the most species-rich vegetation communities in the world, particularly rich in native grasses, orchids and lilies. Its bioregional conservation status is 'endangered'. The tree canopy of this EVC is dominated by iconic species such as Black Wattle (*Acacia mearnsii*), Blackwood (*Acacia melanoxylon*), and Manna Gum (*Eucalyptus viminalis*). Species in the shrub layer include the beautifully scented Bursaria spinosa, awash with butterflies in season, and Hop Bitter Pea (*Daviesia latifolia*) with its bright yellow flowers. Animals that use the Grassy Woodland EVC for foraging and shelter include koalas, echidnas, antechinus (small native marsupial), and various species of microbats. The shrub layer is particularly important for insectivorous birds such as the Superb Blue Wren, and reptiles such as the Blotched Blue Tongue Lizard.

Figure 2: Dusky Antechinus
Source: Mal Legg

Over 50 species of animals that occur the Western Linkage are threatened within the Gippsland Plains Bioregion (Legg 2014).

EVCs found in the high-quality habitat areas at either end of the Western Linkage are listed in Appendix 4 along with a general explanation of EVCs and their usage in natural resource management.

The Western Linkage aims to connect ecologically important high-habitat quality patches of remnant bushland. Running from West (Port Phillip side) to east, these patches are:

> **Balcombe Reserve**, Mt Martha. Begins at Balcombe Estuary on the Port Phillip side of the Peninsula, and follows Balcombe Creek, covering approximately 44 hectares between the Port Phillip coastline and Nepean Highway. The Reserve is a haven for local flora and fauna. Plants range from native orchids, tiny ground hugging herbs and flowering shrubs, to swamp paperbarks, she-oaks and stately manna gums. Wetland birds that graze and roost about the estuary include egrets, spoonbills, cormorants, and herons. Lizards, skinks and frogs find shelter among fallen logs and low plants.

The Briars Park, Mt Martha on Nepean Highway. Includes 98 hectares of wildlife reserve and has significant sections of habitat quality bushland along Balcombe Ck.

Devilbend Natural Features Reserve, Tuerong. Covers 1005 hectares, includes the largest (250 ha) inland water body on the Mornington Peninsula, and encompasses 422 hectares of native vegetation. The Reserve provides valuable habitat for waterbirds, and many native animals. For more information on Devilbend Natural Features Reserve, see Parks Victoria's Devilbend website**.**

Woods Reserve, Tuerong, a small reserve adjoining Devilbend Natural Features Reserve, is home to a high quality native grass community and is known for its abundant bird life.

Fauna

Based on recent fauna surveys in the Western Linkage (Mal Legg 2014), 220 indigenous vertebrate fauna species are found in this area. These include 155 species of birds, 21 species of mammals 9 species of amphibians, 21 species of reptiles, and 7 species of freshwater fish.

Figure 3. Superb Fairy Wren, one of the 155 species of birds identified in the Western Linkage
Source: Birdlife Australia

Of these species:

- Over 50 are listed as bioregionally threatened (i.e. within the Gippsland Plains Bioregion).
- 4 are listed as threatened nationally, including the growling grass frog and the grey-headed flying fox
- 31 are listed as threatened in the state of Victoria

Figure 4. The Growling Grass Frog is listed as threatened nationally.
Source: Mal Legg

Works required on private land

[redacted], 500 Old Moorooduc Rd, Tuerong (property no. 2)

Property and landholders

This is a 40 ha property on the corner of Balnarring Rd and Old Moorooduc Rd.

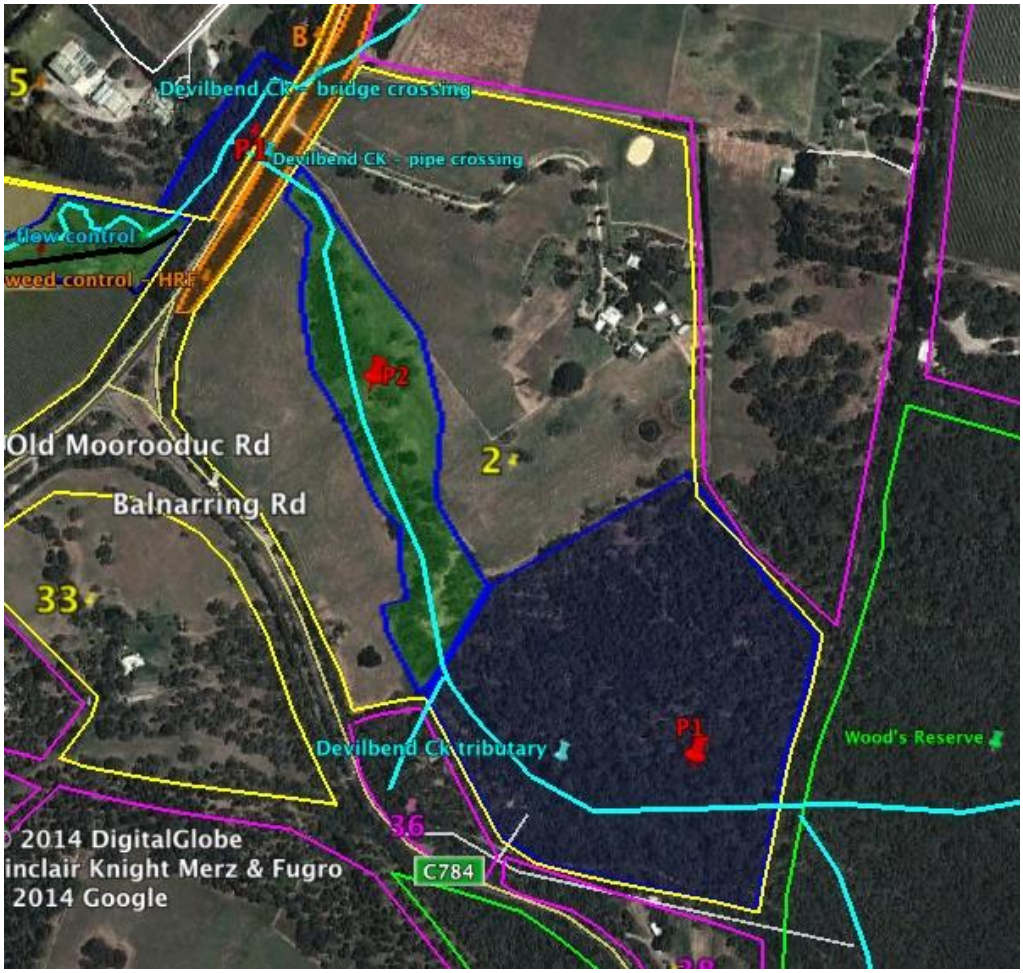

Figure 5. Property [redacted] (no. 2).

This property contains a significant tributary to Devilbend Ck and abuts Old Moorooduc Rd, under which both the tributary and Devilbend Ck proper run.

A bridge over Devilbend Ck on Old Moorooduc Rd (Figure 5) is large enough underneath to facilitate large mammal movement, thus creating a continual physical connection between Woods Reserve and the Devilbend Ck corridor. This is a critical feature of the Biolink. However both the bridge crossing and the smaller pipe crossing slightly downstream are heavily infested with weeds, particularly blackberry.

This property is also connected to:

- a large council reserve to the east (Woods Reserve – Figures 5 and 1).
- a smaller council reserve to the south (Tuerong Reserve – Figure 1)
- significant privately owned bushland to the south on a property abutting Balnarring road (property no. 36, Figure 1 map)
- privately owned bushland to the north on a property abutting Tuerong road (property no. 3, Figure 1 map)
- significant roadside vegetation on both Balnarring Rd and Old Moorooduc Rd.

The landholders [redacted] are newcomers to 'environmental sustainability' on rural land, but are very receptive to new ideas. There are no livestock on the property. Led by their knowledgeable groundskeeper [redacted], they have already begun weed control and a small amount of revegetation. [redacted] has advised that he wishes to eventually get rid of all high-threat weeds, and revegetate key areas of the riparian zone.

As at the time of writing this report (2014), [redacted] and two assistants have a weekly allocation of time (paid for by the landholders) for environmental weeding in the SE wooded area of the property. This will be enough to maintain what has already been achieved, but will not be enough to advance the works required to achieve the linkage (see below and Appendix 3A and 3B for details).

Relevant works to date

- Small number of indigenous plants installed into riparian zone, and several hundred along south boundary fence.
- Some woody weed control in the south-eastern bush paddock

Figure 6. Wedge-tailed Eagle on [redacted] property in south-eastern bush paddock: Notice the head poking just above nest/gum leaves in centre of photo. 31 Jan 2014.

- Customised 'fauna-friendly' gateways installed into old stock fencing that allow movement of kangaroos/koalas/echidnas (quite innovative and unique).

Figure 7. [redacted] property: fauna-friendly gate built into fenceline. 31 January 2014.

Proposed works to achieve linkage

No. of polygons	2
Linear creek frontage in polygons	1,100m

Area in polygons (measured flat from above)	13.5Ha

P1 and P2, marked in red on Figure 5 map. See Appendix 3A and 3B for details of works required and costing estimate.

P1 is the south-eastern bush block connected to Woods Reserve with Devilbend Ck tributary running through it. Removal of woody weeds (particularly Sweet pittosporum and Boneseed) is the key task in this polygon. Devilbend Ck Tributary continues through P2 where the main task will be ongoing blackberry control (a large proportion of the blackberries have already been controlled by the landholder). Revegetation of old pasture areas is also required in this polygon. No fencing is required as stock are not run on this property.

P1 and P2 require a fox control program, coordinated with other landowners.

[redacted], 445 Old Moorooduc Rd, Tuerong (property no. 4)

Property and landholders

This is a 30 ha property. Vineyards occupy the majority of the property, with the rest used for grazing.

The property contains a significant length of both Devilbend Ck proper (northern stream on Figure 8) and a Devilbend Ck tributary to the south, and the landholder owns both sides in both cases. The landholders report seeing echidnas and Eastern Grey kangaroos using their property (they believe these kangaroos are coming from the [redacted] property across the road). The relative seclusion of the north-western section of the property may be encouraging wildlife to use it.

The landholders are active in weed control and revegetation. With the assistance of Melbourne Water they have fenced off and revegetated Devilbend Ck proper over the past 8 years. This has resulted in a tree canopy being established along almost the entire length of their creekline. It is of various age classes.

However, the time that the landholders are able to devote to conservation works is limited due to other commitments. Progress, while important and well-directed (by Melbourne Water) has been slow and marked by low establishment rates for many of the species planted.

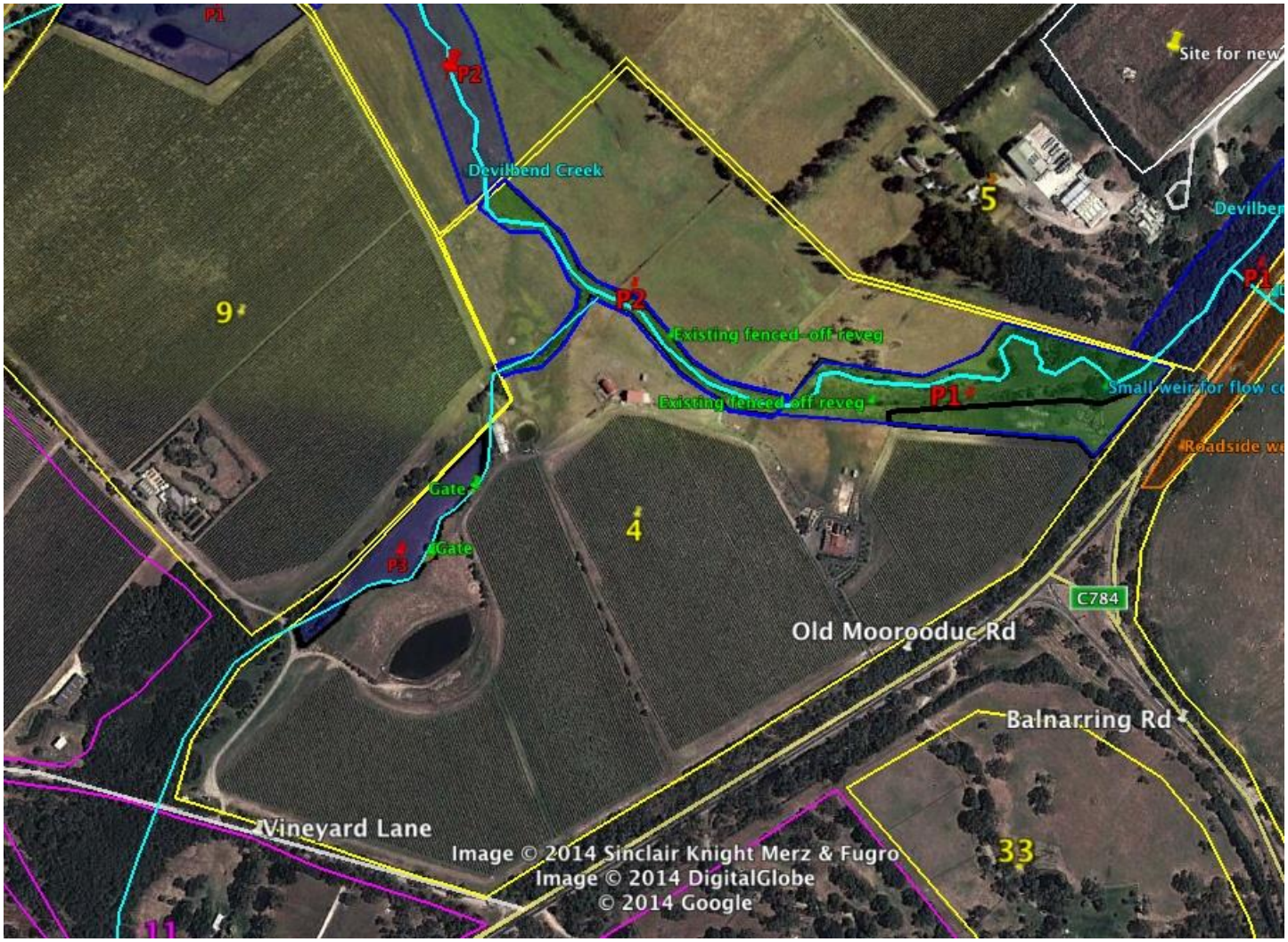

Figure 8. Property of [redacted] (no. 4)

Relevant works to date

Devilbend Ck proper (the northern stream on no. 4) has been fenced off and revegetated with assistance from Melbourne Water. However, the strip either side of the creek is narrow. In the north-eastern corner of the property is a larger streamside area (Devilbend Ck tributary) bordered by Dromana Estate to the north and Old Moorooduc Rd to the east. In this area, rockwork has been completed by Melbourne Water to counter erosion, and direct waterflow down the original natural creekline, rather than an artificial channel created by the previous owner.

Cattle crash graze within the fenced off areas (bar a section in the far north-east corner) to control grassy weeds.

While revegetation advice was the best available at the time of planting, there are some species (e.g. . *Allocasuarina verticillata* that would no longer be considered suitable for this streamside. While the cattle control grassy weeds, they also prevent the establishment of an understorey and aquatic/riparian vegetation.

Permanent exclusion of cattle is needed to allow revegetation of the understorey and aquatic vegetation to establish successfully, and out compete grassy weeds to a significant extent.

Figure 9. Devilbend Creek fenced off streamside, [redacted] property. [redacted] and Blair Luxmoore during site visit of 29th Nov 2013.

Proposed works to achieve linkage

No. of polygons	3
Linear creek frontage in polygons	1,500m
Area in polygons (measured flat from above)	3.5Ha

See P1- P3, Figure 8. See Appendix 3A and 3B for details of works required and costing estimate.

- P1 in the north-east of the property is an existing revegetated fenced off area around Devilbend Ck. The main task here is to expand on previous revegetation and weed control works, in order to fill out the entire polygon..
- P2 is streamside revegetation along Devilbend Ck, also fenced off, that runs the entire length of the property (to the north-western boundary with Dromana estate). The main task here is supplementation of existing plantings with understorey species, and introduction of tree and ground hollows
- P3 is along a Devilbend Ck tributary, running along the boundary with property no. 9. It requires fencing, control of grassy weeds, and revegetation. It also requires introduction of tree & ground hollows.
- The property requires a fox control program, coordinated with other landowners.

Dromana Estate, 535, 539, 537 Old Moorooduc Rd, Tuerong, property no. 5

Property and landholders

This is a 47.5 ha property run as a commercial vineyard and associated restaurant. In an area in the east of the property, along the border with Old Moorooduc Rd is a 3 ha site destined for development as a function centre (See Figure 10a). This does not represent a conflict with proposed works. In the western half of the property, on the land not occupied by vineyards, cattle are agisted by [redacted], landholder at no. 4. Dromana Estate is managed by winemakers Hannah Stace and and Peter Bauer.

At the south-eastern corner of the property is a short stretch of Devilbend Ck. Large drainage pipes running under the freeway connect this stretch of creek with the creek across the freeway (in properties nos. 6 and 15a), providing potential passage for some species of animals. There is also approximately 1 ha of old eucalypts in this south-eastern corner of the property. This corner of the property is currently grazed, and is isolated at present. The creek is not fenced.

Along the northern boundary of the property (border with property no. 7) Tuerong Ck and the associated wetland are on property no. 7, which is owned by a landholder who at present does not wish to participate in this project. In 2010, Hannah Stace and Peter Bauer revegetated an area adjacent to the eastern portion of this

wetland (P6), with funding for plants and herbicide supplied by Melbourne Water. This and other areas adjacent to this wetland provide an opportunity for revegetation. This would increase the width of creekline vegetation, thus enhancing the overall ecological value of the creek.

Hannah and Peter wish they had more time to do environmental works, as they appreciate the values of the native vegetation and are keen to encourage more native wildlife. However, at present, due to work commitments their capacity to undertake on-ground environmental works is limited.

Hannah has briefed the owners of Dromana Estate on this project and they are supportive, provided vineyard duties are up-to-date.

Figure 10a Dromana Estate, property no. 5.

Proposed works to achieve linkage

No. of polygons	6
Linear creek frontage in polygons	1,300m
Area in polygons (measured flat from above)	6.75Ha

See P1- P6 on Figure 10a See Appendix 3A for details of works required and costing estimate.

- P1. This is streamside (Devilbend Ck), and is currently seriously weed infested with Pittosporum, blackberries and ivy, with almost no native vegetation. Weed control, revegetation & introduction of tree and ground hollows are required. As cattle are not grazed here, fencing is not required.
- P2. This is also streamside (Devilbend Ck). No native vegetation exists. Fencing, grassy weed control, revegetation and introduction of tree and ground hollows is required.
- P3. A seasonally wet area with remnant gums including some old growth trees with hollows. There are some large old logs on the ground, and indigenous grasses including stipas. It is steep and rocky in places. Key action required is woody weed control. Should adjoining landholders (property no. 9) end up revegetating their stretch of Devilbend Ck, it is likely that animals would use this area as a refuge.
- P4. Bare grazing paddocks. Grass weed control and revegetation are the key actions required to establish the western linkage.

Fencing for P2-P4 would need to be continuous.

- P5. Area along northern boundary adjacent to Tuerong Ck wetland. Revegetation along this boundary needs to take into account space limitations – room for tractor turn-around is required to access the vineyards to the west. Despite this, there is space for a strip of revegetation several acres encompassing augmentation of both P5 and P6. There is also the risk that if eucalypts were to be planted too close to the wines, they would taint the wine with eucalyptol.
- P6. In 2010, Hannah Stace and Peter Bauer revegetated this area. Ongoing weed control is required.
- The property also requires a fox control program, coordinated with other landowners.

Figure 10b. Blair Luxmore and Hannah Stace walk towards a revegetated area alongside Tuerong Ck on Dromana Estate (P6 on Figure 10a), planted out by Hannah and Peter Bauer in 2010.

[redacted], 59 Range Rd, Mt Martha, nos. 15 and 15a

Property and landholders

These two properties (Figure 11) occupy 127Ha ha combined. To the south west they are bounded by Range Rd, to the east by the Mornington Peninsula Fwy.

Cattle are grazed on this property and [redacted] and [redacted] have established significant weed control and revegetation plots in strips along fencelines, around waterbodies and drainage lines over the past two decades. A pipeline easement, managed by Melbourne Water, runs along the western edge of the property (western boundary of P2).

In the north-east corner of [redacted] property is a section of Devilbend Ck. [redacted] property contains the headwaters of Claypit Ck.

These properties are also connected with:

- The Briars property, and its many tributaries to Balcombe Ck
- Range Rd to the south, with its significant roadside vegetation

Of particular significance is that [redacted] wishes to revegetate the entire area between the ‘pipeline’ easement and her boundary with the Mornington Peninsula Fwy (P2), an area of over 10 ha. The north-east boundary of this polygon connects with the Devilbend Ck streamside polygon (P1).

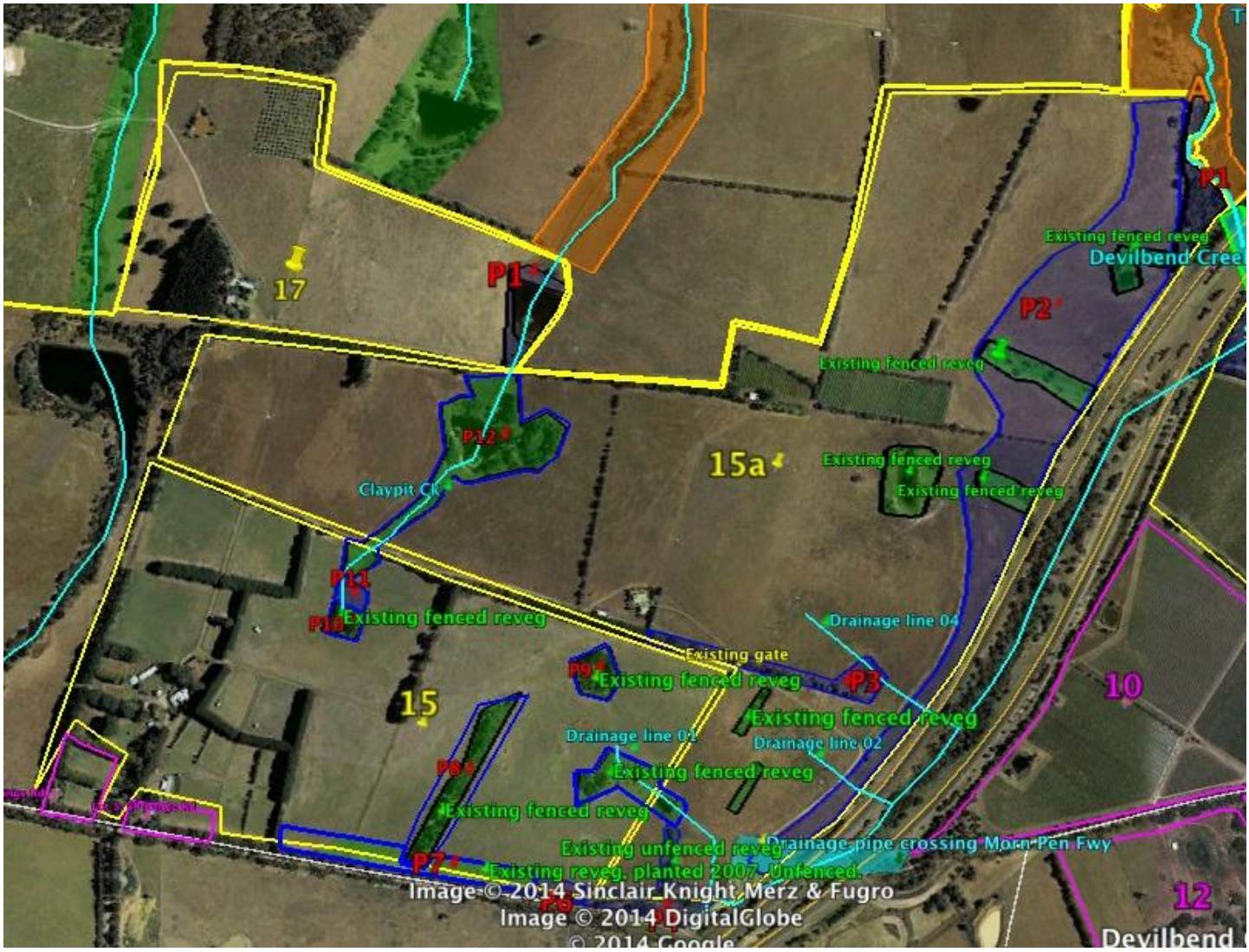

Figure 11. [redacted] and [redacted] properties – 15 and 15a.

Relevant works to date

As can be seen from Figure 11, [redacted] and [redacted] have undertaken significant rehabilitation works over the years, mostly along fencelines, around waterbodies and drainage lines over the past two decades.

Proposed works to achieve linkage

No. of polygons	12
Linear creek frontage in polygons	1,240m
Area in polygons (measured flat from above)	24Ha

See P1- P12, Figure 11. See Appendix 3A and 3B for details of works required and costing estimate.

Many of these polygons build on existing plots of revegetation and weed control (i.e P3-P12).

P1 is Devilbend Ck streamside. The other side of the creek is on property no. 6 (owned by VicRoads) and is managed by Melbourne Water who are conducting weed control and revegetation here (pers. comm. Paul Hodgson, River Health Officer, South East, Melbourne Water).

It is proposed to use direct seeding to revegetate the large polygon P2. In the future, tree and ground hollows can be added.

The property requires a fox control program, coordinated with other landowners.

Complementary activities on public land

South East Water Treatment Plant, 390 Craigie Rd, Mt Martha, property no. 8

This property (see Figure 12) contains extensive stretches of Tuerong and Balcombe Creeks. It has a significant amount of native vegetation, primarily along these creeklines, providing a biolink from Mornington Peninsula Fwy to The Briars.

Over 70,000 plants have been planted, most along Balcombe Ck, and significant weed control efforts have been made at least the last 6 years, in both aquatic and terrestrial areas of native vegetation.

Environmental works plans, largely directed by internal management plans that are unlikely to be altered in the short term, are complementary to the Western Linkage Alignment. Ben Speddings is Environmental Officer at South East Water, and has participated in the Western Linkage planning workshop, as well as meeting privately to discuss South East Water's plans.

The polygon marked 'A' on South East Water Treatment Plant is in the alignment and abuts onto both Tuerong Ck and Balcombe Ck.

Figure 12. South East Water Treatment Plant, property no. 8

Vic Roads land parcel, property no. 6

This is owned by Vic Roads and managed by Melbourne Water.

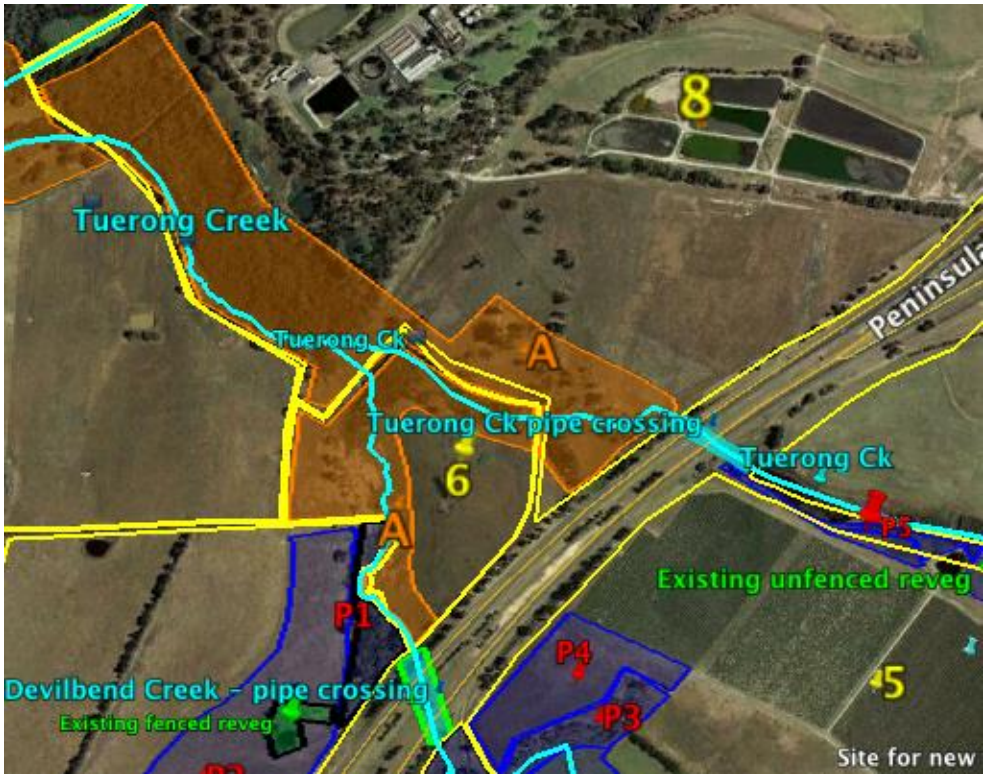

Figure 13, Vic Roads land parcel, property no. 6

The polygon marked 'A' in property no. 6 is in the alignment and is Tuerong Ck streamside and Devilbend Ck streamside. Melbourne Water is conducting weed control and revegetation here (pers. comm. Paul Hodgson, River Health Officer, South East, Melbourne Water).

The Briars

In the south of the Briars property is a 95 ha area that is largely cleared and has historically been leased to local graziers. Three creeks (Stockleys, Home and Claypit Cks) run through this area, each running into Balcombe Ck, which runs East-West through the Briars, forming the southern boundary of the Briars's fenced Wildlife Sanctuary.

This area is connective with the Western Linkage, via Claypit Ck.

The Briars has now taken back control of this 95 ha area (it is no longer leased to graziers), and is conducting a whole farm plan that includes a proposed extension to all three creek widths (at least 30 m either side). In addition mini bio-links are planned. These will dissect small paddocks along the contour and will be made up of indigenous species that can be grazed, such as She-oak, Bursaria, Goodia, and Indigofera. This gives smaller birds a chance to move throughout the landscape whilst still allowing production for grazing.

The key to the plan is temporary solar powered electric fencing, creating small cells rotated daily. This means Briars management can be creative as to the extent of revegetation because the stock can be directed to specific areas, rather than being free to wander at will. The mini bio-links will be grazed to hedge them, keeping them as 900mm high x 800mm high in size, tight shrubs

Jarrod Ruch, Senior Ranger at the Briars advises that this type of farming lends itself to being one large bio-link for the whole of the 95 ha farming area.

Briars management anticipates that feral animal control efforts will be increased in the 95ha farming area because the fenced Wildlife Sanctuary will soon be feral animal free, freeing up resources to control feral animals on the rest of the property.

The Briars management is aiming to use this 95 ha farming area to display best practice sustainable land management, including how to incorporate large riparian bio-links and mini paddock bio-links for the purpose of both increased production and increased biodiversity.

Roadsides

Both Transfield and Habitat Restoration Fund are undertaking weeding along Old Moorooduc Rd. See polygons A and B in Figure 14 below.

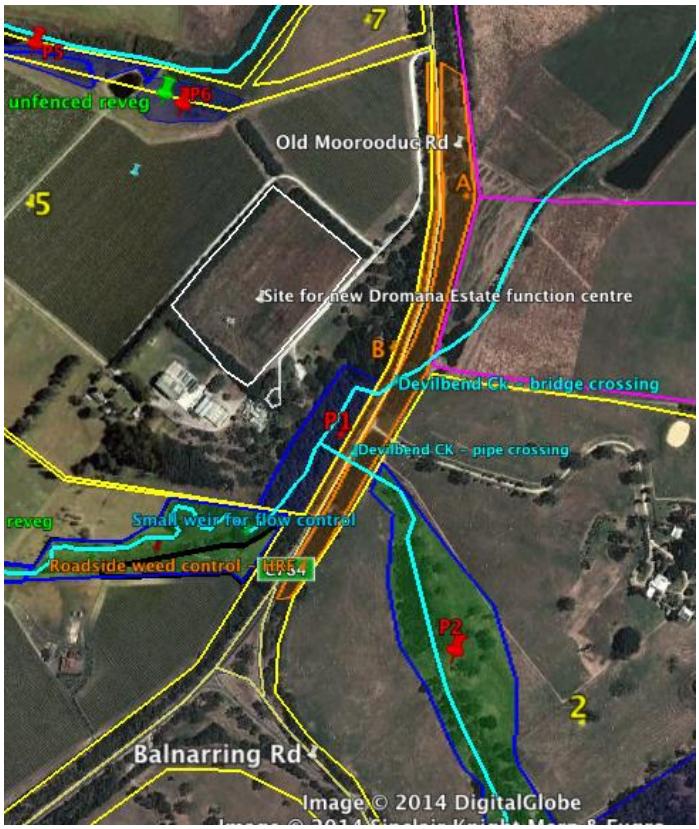

Figure 14. Weeding along Old Mooroduc Rd, A and B

Woods Reserve

This reserve marks the eastern point of the Western Linkage, and is some 83 ha of remnant Eucalypt forest. The reserve has high floral diversity, but is being invaded by woody weeds such as Sweet Pittosporum and Boneseed. Mornington Peninsula Shire Council and Parks Victoria have jurisdiction over different sections of the reserve, and have a long-term program to eliminate these weeds. Large areas have already been cleared of these weeds. Habitat Restoration Fund is also contributing significantly to this effort along the boundary with Property 2 of this Biolink Plan. On Woods' Reserve Eastern boundary, a dirt road and cyclone fence are all that separates it from Devilbend Natural Features Reserve.

Balcombe Estuary Reserves

This area of approximately 44 ha between the Port Phillip coastline and Nepean Highway is a haven for local flora and fauna. Plants range from native orchids, tiny ground hugging herbs and flowering shrubs, to swamp paperbarks, she-oaks and stately manna gums.

Balcombe Estuary Reserves Group (BERG), are an active volunteer group that has done and continues to undertake significant works in Balcombe Estuary. BERG volunteers and contractors, with help from local schools and other groups, continue to remove pest plants, plant many thousands of indigenous plants raised from local seed, control feral animals (mainly foxes and rabbits), and build community awareness, knowledge and involvement.

BERG Committee member Liz Barraclough assisted the Bay to Bay Biolink project in its initial stages.

Balcombe Creek Nature Trail

The Balcombe Creek Nature Trail is a project of the Balcombe Mooroduc Landcare Group whose Vice President Nick Veltjens is a member of the Bay to Bay Biolink Steering Committee.

Work has begun on a 0.5 km section of this trail, along Balcombe Ck, from the retarding basin at 7 Century Dve Mt Martha to the boundary of private property (with creek frontage) just north of Craigie Rd. This work is

being done with a Communities for Nature grant and involves three local primary schools and one secondary school. Working with local ecologist Gidja Walker, the children select a preferred wildlife species and then plan and build habitat for it. Habitats are being built for frogs, microbats, lizards, and possums, among other animals. The children build bat and possum nesting boxes using flat-pack templates provided by ecologist and Balcombe Mooroduc Landcare member Paul Bertuch, with materials donated by Bunnings. At a recent working bee for the project, over 70 children and their parents attended, along with the Federal Environment Minister Greg Hunt.

Future planned stages of this project envisage the continuation of the Trail south along Balcombe Creek, into the South East Water Treatment Plant (property no. 8 in this Western Linkage Plan). South East Water supports the extension of the Trail. Balcombe Mooroduc Landcare has applied for the federal government's Green Army program to undertake this extension.

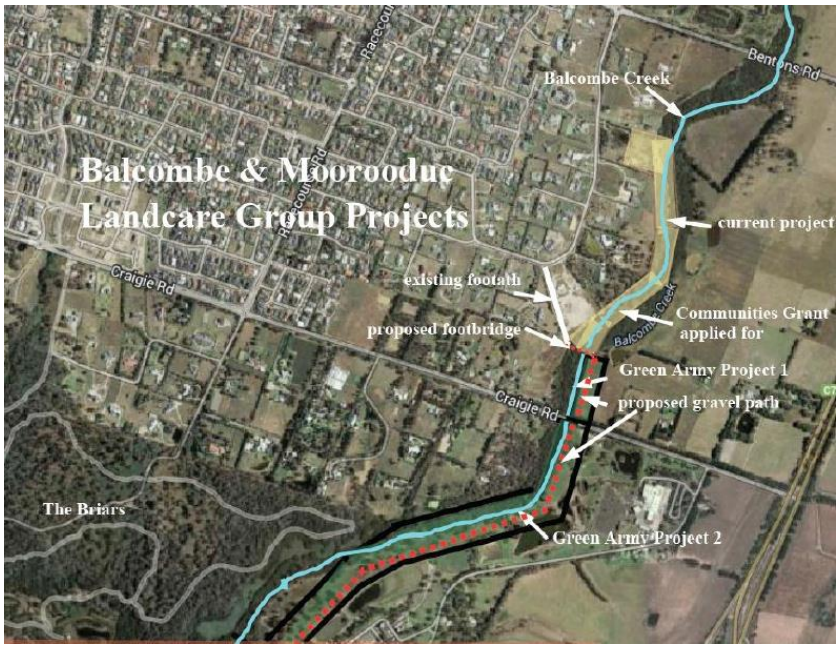

Figure 14b. Balcombe Ck Nature Trail
Source: Nick Veltjens, VP Balcombe Mooroduc Landcare

Crossings: culverts and underpasses

The Western Linkage alignment includes the following crossings.

1. Devilbend Ck, underpass under Old Moorooduc Rd, connecting to P1 on Dromana Estate (property no. 4).
   A wide underpass under a bridge, large enough to allow large mammals to pass through.
2. Devilbend Ck, culvert under Old Moorooduc Rd, connecting P2 on [redacted] property (property no. 2) to P1 on Dromana Estate (property no. 4).

A narrow, dark underpass. Possibly not useful for terrestrial animals.

Figure 15, Devilbend Ck culvert, Old Moorooduc Rd

3. Tuerong Ck, culvert under Mornington Peninsula Fwy, connecting P5 wetland on Dromana Estate (property no. 4) to Vic Roads land parcel (property no. 6).

Figure 16, Tuerong Ck culvert under Mornington Peninsula Fwy. Photo taken on border between Dromana Estate and property no. 7

Figure 17, Tuerong Ck, culvert under Mornington Peninsula Fwy, photo taken on Vic Roads Land parcel (property no. 6)

4. Devilbend Ck, culvert under Mornington Peninsula Fwy. Connects P1 on property no. 9 to P1 on [redacted] property (no. 15a) and A on Vic Roads land parcel (property no. 6).
   Three large pipes may allow for terrestrial animals to cross the freeway at this point.

Figure 18, Devilbend Ck, culvert under Mornington Peninsula Fwy, photo taken on Fwy side of fenceline of [redacted] property (no. 15a).

Overpasses

In the future when alignment works are significantly underway and connectivity has been enhanced, fauna overpasses in the form of rope bridges for wildlife to cross Old Moorooduc Rd and Mornington Peninsula Fwy may support native wildlife movement through the alignment.

Monitoring

In order to evaluate the effectiveness of the alignment in terms of assisting wildlife passage, fauna surveys would need to be conducted at 5-year intervals. Monitoring could be done using ScoutGuard infrared cameras, installed on properties in the linkage by an ecologist.

Feral animal control

Foxes and rabbits are the key feral animals that require controlling to ensure that native animals are able to take advantage of increased connectivity (Legg 2014). A program of fox and rabbit control would need to be conducted across the properties in the linkage, complemented by feral animal control conducted by Mornington Peninsula Shire at either end of the linkage (Woods Reserve and Balcombe Estuary).

Nesting boxes for hollow-breeding birds, antechinus, sugar gliders and microbats

Figure 19. Microbats (Chocolate Wattled Bats) nesting in a bat box installed at Balcombe Estuary. The boxes are monitored by members of Birdlife Mornington Peninsula
Credit: Birdlife Mornington Peninsula

Land clearing across the Mornington Peninsula has resulted in a shortage of nesting hollows, which form in old growth trees (trees need to be at least 80 years old for hollows to form). In order to encourage use of the Western Linkage hollow-breeding birds, antechinus, sugar gliders and microbats, it is recommended that nesting boxes be installed at appropriate sites, such as the patch of large eucalypts on Dromana Estate in P3.

Where to from here?

One of the main purposes of producing this community-driven biolink plan is to enable you to expand your environmental works beyond that which you are currently capable of. This can largely be achieved by attracting grant money from government, business and philanthropists. For legal and other reasons outside your control, these grants normally require the applicant/s to be some sort of legal entity. This is especially the case when dealing with business and philanthropic organisations, and where you are seeking larger sums of money. There are a range of legal entities that a landowner or group can consider. By far the simplest option is to join Devilbend Landcare Group, which is already established in your area. Landcare Groups have access to grant offers that are unique to this organisation. The next simplest option is to find a group that already has legal requirements in place and ask them if they are willing to let you apply for grants in their name; basically have them as your 'sponsoring organisation'. You can always become a legal entity in your own right, but this is a lengthy process, and unless you are trying to achieve something that is new or unique, there is no reason to 'recreate the wheel', at least not initially. There is no guarantee that the government will accept your attempt either.

Someone in your group should act as 'communications manager'. That is to say, someone should be in charge of keeping all landowners/managers up to date on each other's progress. This can be done via group email, newsletter, regular meetings etc. Most importantly, this will alert everyone to grant opportunities. Application periods are usually short, so you need to know the moment they are released.

As a group, you should build a database of people you can go to for expertise, in-kind contributions, legal issues etc.

Under a biolink plan, you have a much better chance of securing larger funding amounts. You can highlight the:-

- Landscape-scale approach of your group,

- Length of creekline within the project area,
- The fact that the biolink is aligned to reconnect very large and important existing natural areas: i.e. Devilbend Natural Features Reserve and The Briars/Balcombe Estuary.
- Community-driven cooperative approach,
- The grand design, of which each grant application contributes to incrementally.

Regular sources of government-based funding:

- Melbourne Water
- Port Phillip and Westernport Catchment Management Authority (PPWCMA)
- Victorian Department of Environment and Primary Industries (DEPI)
- Various sources via Landcare

Last but not least, don't just rely on government grants. There are many other sources of funding out there; you just have to find them. A good place to start is the Australian Environmental Grantmakers Network website, which has a section of resources for grantseekers.

References

Bennett A. 2003. *Linkages in the Landscape: The Role of Corridors and Connectivity in Wildlife Conservation*. International Union for Conservation of Nature: Forest Conservation Programme.

Bond RA, Jones DN. 2008. Temporal trends in use of fauna-friendly underpasses and overpasses. *Wildlife Research* 35:2, 103–112.

Fitzsimons J, Pulsford I, Wescott G. 2013. *Linking Australia's Landscapes: Lessons and Opportunities from Large-scale Conservation Networks*, CSIRO Publishing, Collingwood, Melbourne.

Harris, IM, Mills, HR, Bencini, R. 2010. Multiple individual southern brown bandicoots (Isoodon obesulus fusciventer) and foxes (Vulpes vulpes) use underpasses installed at a new highway in Perth, Western Australia. *Wildlife Research* 37:2, 127–133.

Legg M. 2014. *Fauna of the Mornington Peninsula Bay to Bay Biolink*, Powerpoint Presentation delivered to Western Linkage workshop, 31 January 2014.

Maclagan S. 2008. *Biolinks Project Action Plan: Linking Habitats Across the Westernport Catchment Central Region*, Cardinia Environment Coalition Inc.

Appendix 1: Western Linkage map in context of northern Peninsula

Appendix 2: Overview of Bay to Bay Biolink activities leading up to this Plan

Introduction

The Devilbend Foundation Biolinks Promotion Program (BPP), named the Bay to Bay Biolink project in this plan, aimed to pilot a community-led approach to reconnect fragmented, but otherwise functional, remnants of indigenous vegetation to create wildlife corridors (biolinks) on the Mornington Peninsula. The BPP was a project of the Devilbend Foundation Inc. (DFI) and was funded by the Natural Resources Conservation League of Victoria (NRCL).

The overall objective of the BPP was to enable community-driven biolinks plans to influence the strategic (as distinct from scattershot) allocation of public resources for biolink reconnection on the Mornington Peninsula.

DFI was incorporated in 2006, and was formed in response to serious concerns about the future of native plant and wildlife communities on the Mornington Peninsula. DFI has worked with many Mornington Peninsula community groups, including Landcare and Friends groups. The DFI supports the creation and maintenance of a world-class conservation reserve at Devilbend Reserve, in the northern-central portion of the Mornington Peninsula.

This Western Linkage Plan is the final deliverable for Stage 1 of the BPP

BPP design and activities

Two basic principles underlay the BPP design.

1. Promoting a spatial strategy for habitat restoration to more efficiently restore landscape connectivity across the Mornington Peninsula. Effectively this means seeking to concentrate investments in 'linkage areas' to complete otherwise functional biolinks.
2. Promoting community-driven planning of habitat restoration work to counteract the current largely un-coordinated agency-driven investments.

Stage 1 of the BPP, the culimination of which is this Western Linkage Plan, has been managed by the Bay to Bay Biolink Steering Committee [1], under the oversight of a Biolinks sub-committee of the DFI Council.

Additional stages (2&3) were planned, to roll out the planning methodology piloted in Stage 1, to other areas of the Peninsula. As at the time of writing this report, the NRCL is considering a funding application from the newly formed Mornington Peninsula Network to undertake this work over a 3-year period. The Network's application has an expanded area, based on Landcare-mapped Peninsula wide biolinks, and a more defined role for Landcare groups. The Network's application envisages that the planning, landholder engagement and contracting methodologies piloted during BPP Stage 1 would be introduced, through local Landcare Groups, to other priority areas for biolink reconnection across the Mornington Peninsula.

[1] Steering Committee members as at May 2014

Nick Veltjens – Vice President Balcombe Moorooduc LC
Karri Giles – President Westernport and Peninsula Protection Council, Merricks Coolart Catchment LC
Jamie Edgerton - Project Director MP Bay to Bay Biolinks, DFI Council, Devilbend LC
Phil Palmer - DFI Council
Michele Sabto - Coordinator MP Bay to Bay Biolinks, Secretary Merricks Coolart Catchment LC
Blair Luxmoore - Habitat Restoration Fund
Jacqui Salter – Facilitator Mornington Peninsula Landcare

Identification of priority areas

Stage 1 activity began with the identification of a biolink area. A west-east biolink across the Peninsula was mapped, running from Balcombe Estuary Mt Martha on the western (Port Phillip) side through The Briars, Woods Reserve and Devilbend Reserve to Kings Creek Hastings on the eastern (Western Port) side (see map in Appendix 1 of this Plan). Within this west-east biolink, there are two portions where landscape connectivity is broken: the western portion (the 'Western Linkage' in this plan), and the eastern portion (Devilbend Reserve to the western end of Kings Creek Hastings).

This proposed bay to bay biolink was identified in a meeting in December 2012. The following people provided input into this process at the meeting, including provision of habitat-quality maps to guide the decision making process

- Jamie Edgerton - Project Director MP Bay to Bay Biolinks, DFI Council, Devilbend LC
- Karri Giles – President Westernport and Peninsula Protection Council, Merricks Coolart Catchment LC
- Phil Palmer - DFI Council
- Jacqui Salter - Mornington Peninsula Landcare Facilitator
- Gidja Walker - local ecologist, Conservation and Land Management teacher at Chisholm TAFE, Vice Chair Southern Peninsula Indigenous Flora and Fauna Association
- Phillip Jenson - Secretary Southern Peninsula Indigenous Flora and Fauna
- Liz Barraclough - Balcombe Estuary Rehabilitation Group
- Julie Edgerton - Devilbend Landcare Group and Friends of Daangean
- Jan Oliver - Mornington Environment Association

Western Linkage activities

A decision was made to begin with the Western Linkage rather than the Eastern Linkage, due to the smaller number of landholders and the high-habitat quality remnant vegetation at either end.

Brochure and initial site visits

Following the mapping of the priority area, a brochure was produced and mailed out to 8 Western Linkage landholders, as well as key stakeholders (including Landcare groups and Shire NRM employees).

This brochure described the project and invited Western Linkage landholders to contact the project coordinator to arrange an initial site visit. Follow up on the brochure mailout was conducted by Blair Luxmore, who called landholders and arranged site visits, attended by Blair and Michele. A site report was produced for each of the 4 private landholders covered in this report, as well as for South East Water.

Throughout this period, strong working relationships were forged with the Mornington Peninsula Landcare Facilitator, Jacqui Salter, and a range of environment stakeholders on the Peninsula, including: the two Landcare groups in the Western Linkage (Devilbend Landcare and Balcombe Moorooduc Landcare) Mornington Peninsula Shire's Natural Systems Team, and Balcombe Estuary Reserves Group.

In addition to distribution of the Bay to Bay Biolink brochure to non-landholder stakeholders, outreach has included presentations given at community environment events by members of the Bay to Bay Biolink Steering Committee.

Workshops

The first landholder planning workshop was held in January 2014 and brought together private landholders from the 4 properties in this plan, together with Ben Speddings of South East Water. After an presentation by local ecologist Mal Legg on the decline of local flora and fauna, and how biolinks can help to address this, participants shared their stories about established and planned conservation works on their own properties. They then jointly identified two biolink alignments for the Western Linkage and the type of conservation works that will be required.

A feature of the workshop was the innovative use of a Google Earth map with overlays of property boundaries, waterways, existing patches of quality habitat, and areas on landholder properties already subject to conservation actions. This was projected onto a paper-covered wall, enabling participants to draw directly on it as they talked about their properties and identified biolink alignments and the conservation works still required. Participants expressed satisfaction with the workshop outcomes; with the opportunity to meet and work with their neighbours; and with the support offered by the project to work together towards a Western Linkage biolink.

Following this workshop, Michele Sabto and Blair Luxmoore produced a draft map of the planned works on each property. A second follow-up workshop was held in April 2014 with landholders from property no. 2 and property no 15. Blair and Michele subsequently met separately with landholders from properties no. 4 and 6, and Michele then visited landholder from property no. 15 a final time to refine the map.

The map became the backbone of this plan.

Appendix 3A: Western linkage works on private land: actions required and indicative costings

[See spreadsheet marked ‘Appendix 3A]

Appendix 3B: Considerations for actions and indicative costings

Introduction

While every care has been taken to accurately represent the cost of activities, these figures should only be taken as a firm guide. You should always seek up-to-date quotes, as market forces will affect pricing over time. More importantly, I have chosen an underlying methodology that I believe is most appropriate in each case, that therefore directly influences price calculations. There are other methodologies to consider, but to price all options would be almost open-ended.

These prices are based on measuring dimensions off Google Earth, which is very accurate except that it does not take into account slope so if your site is on a hill, you will have more ground to weed/plant/fence than you think! Even though this factor has been taken into account here as far as reasonably practicable, it's still another good reason to seek exact site-based quotes that have been ground-truthed.

There is also a wide variety of capability, skill, experience and work ethic amongst professional environmental companies. They also have differing opinions on what is the 'right' way to do things, given the complexity of dealing with natural systems. You can ask for references, or ask them to show you one of their comparable projects that are further advanced than your own, and decide for yourself which contractor you will put your trust in.

Most professional contractors with appropriate OHS and insurance in place charge from $40 p/h to $60 p/h ex GST. Price estimates have been based on the lower end of this range. However keep in mind that the cheapest hourly rate is not necessarily the best, as it still depends on the skill level and quantity of work that can be achieved 'per hour'.

You may be able to reduce the cost of your project by delegating simple tasks to your regular service providers such as groundskeepers, farmhands etc. Discuss this option with your contractor to make sure that what you see as 'simple' is actually simple. For example, a common mistake is made when farmers mistake Native Raspberry with Blackberry. Another common mistake is to assume that Bracken is a weed. In conservation projects, Bracken is not a weed. It is actually highly beneficial.

There is alot to digest here, so I am happy to discuss further if you wish to contact me on 0402 200 761

Regards

Blair Luxmoore

Woody weed control

The bulk of the cost of woody weed control is usually incurred in the first 3 years. There will be a significant drop in maintenance costs after this, and by year 5 you should even be able to start skipping a year or two between maintenance passes.

These figures are based on your individual property needs as of April 2014. Please note that Blackberry in particular grows rapidly, so applicable estimates should be revised yearly.

Skilled contractors using the right herbicide can kill weeds without significant off-target damage.
Source: Wetland Wildlife Creations Pty Ltd

Grassy/herbaceous weeds

There are two sub-categories here: grassy/herbaceous weed control within existing bushland, and within revegetation sites.

Bushland Situation: The sheer cost, consistency and level of botanical skill required to effectively manage grassy and other herbaceous weeds usually makes it impractical to address this problem on a large scale. Therefore, in my costings, I have concentrated on obvious priorities only, such as Ragwort and Spear Thistle. This is one of those tasks where different contractors will have varying views. All you can do is hear them out, look at their other projects, and decide for yourself.

Revegetation Situation: In contrast to the above situation, contractors will all agree that grassy/herbaceous weed control in young revegetation sites is definitely necessary and often overlooked. Since most of you are intending large-scale revegetation, thereby making handweeding hugely expensive, I have opted for a method where a person would use their feet only to stomp the weeds down, and spray a general herbicide around the plant like a halo. While this is not 100% effective, it will significantly reduce the competitionof pasture towards the newly installed plants. For large projects where no mulch is being used, this is a good compromise on a 'cost vs benefit' basis.

Look closely and you can see the dead 'halos' of grassy weeds around the installed shrubs. This is an economical alternative to full spraying out and mulching for large areas.
Source: Wetland Wildlife Creations Pty Ltd

Fencing

You will probably only ever install your fencing once, so try to think towards the future and be generous where you can regarding how much land you devote to conservation. Besides the ecologically beneficial concept that 'more is better', there are some more practical realities to consider.

When applying for grants, particularly from Melbourne Water, your case is that much stronger if you have devoted enough land to make a real habitat corridor. Grants are generally assessed by people that know about ecological principles. Melbourne Water is much more interested in projects that fence off/devote at least 20m *each side* of the waterway.

The more land you devote to conservation, the less 'edge-effect' of weed invasion you will have. Therefore the less weed maintenance you will have. Wider revegetation areas are also more resilient to wind and drought, thus decreasing the likelihood that trees will come down across your paddock when there is a storm. Also, don't expect a Koala to cross an entire paddock to use a couple of trees!

Your fence may be actively restricting cattle, hence the need for barbed wire and/or electric wiring. Kangaroos and Wallabies are most at risk of these devices. They will either go under the lowest wire, or over the highest wire. Try running the barbed/electrified wire at positions other than the top and bottom strand. Think about installing wildlife gates such as the ones shown in Figure 7 of this plan, on property 2 in the Western Linkage. It only takes a few; animals will find them.

Plant supply & install

The cost of plant supply and installation varies widely, depending on three main points. They are:-

1) The overall number of plants you purchase in a single order. Obviously the more you buy, the cheaper they get.

2) The planting density i.e. how plants per acre you intend to install. The closer they are, the faster it is to install. This actually makes a bigger difference than the first point!

3) Access to AND AROUND the planting site.

Nurseries may require a deposit, and may even offer a discount if you are willing to pay this. There are large up-front outlays in growing plants, which specialist indigenous nurseries are sensitive to when quoting you a price. If you are in a position to offer a deposit, bring this up early in negotiations.

My costings are based on the assumption that the nursery that grows the plants will also be employed to install the plants, hence attracting a wholesale price. If the plants are grown by one company and installed by either yourselves or another company, expect to pay at least 50 cents more per plant.

Typical paddock revegetation project using standard tree 'bags' and bamboo stakes. Planting density here is approximately 1 plant per 2m^2. This is appropriate for trees and shrubs, but is not enough to recreate full understorey diversity alone.
Source: Wetland Wildlife Creations Pty Ltd

5 years after installation, this windbreak contains trees, shrubs and understorey species. 4 plants per m^2 were installed to create this windbreak, thus providing better habitat value.
Source: Wetland Wildlife Creations Pty Ltd

Water edges often require the highest density of plant installation. There are 6 plants per m^2 here to aid in erosion control and recreate habitat, particularly for frogs and birds.
Source: Wetland Wildlife Creations Pty Ltd

Supply & install guards

The supply and install of guards is a relatively expensive activity. Therefore guards should be considered in respect of each project and property. The correct guard must be chosen for the situation. It is a common misconception that guards are 100% effective in protecting plants from animals, especially kangaroos/wallabies. Guards can also make weed maintenance more difficult.

A typical green treeguard (or bag as commonly known) with 3 bamboo stakes only costs about 50 cents. The expense is really in the installation, and similar to plant install pricing, depends on spacing, access, hardness of the ground etc. For most sites within the western biolink, installing guards on a plant spacing of approx. 1 plant per $3m^2$ would cost about $2.00 per guard. This is close to the cost of the plant itself, so you can see how much cost it adds to a project.

Make sure you consider the removal and disposal of guards about 3 years (or less in many cases) after installation. Not all guards are biodegradable, so do check into this before purchasing. I have not priced the removal of guards as I have assumed all guards will be biodegradable. Having said that, your revegetation will not look 'natural' until all theses guards (and stakes) disappear from view, and a lot of people don't like the look of them in the meantime. This is a personal choice for you to consider.

Installing hollow logs on the ground

I did not go to the extent of quoting this item due to too many variables. Having said that, I've never met owners of a large parcel of land who didn't accumulate branches, logs and leaf litter somehow. Wait till the branches/logs are dead and free of seeds (to avoid spreading weeds) and then throw them around your revegetation area or into your creek, rather than burning or chipping them. You'll be surprised how quickly it builds up. Try offering this disposal method to your neighbours too.

'Scrap' logs from surrounding paddocks have been reused along the water's edge of the dam to create hiding spots for frogs and perches for birds.
Source: Wetland Wildlife Creations Pty Ltd

Installing nest boxes above ground

I did not go to the extent of quoting this item in full, as there are too many variables. However please don't ignore this important aspect. Just think, ten thousand seedlings will not produce one useable tree hollow for maybe 20 years! Ready-made nestboxes (starting at $25 ea) and 'How-to-Install' guides are available from Latrobe University Wildlife Reserve. They are custom-made for the actual creatures you are trying to attract, and have been researched and developed over a number of years, so they are very effective.

Nest boxes require some maintenance to the extent that they may be colonised by feral creatures such as Indian Mynas, exotic bee species (Italian Honey Bee), Starlings and European Wasps.

Nest boxes appropriate for any species you wish to attract, available from Latrobe University. Source: Wetland Wildlife Creations Pty Ltd

Fox control

Fox control is another one of those aspects that is often overlooked, as the average person cannot 'see' the results in comparison to seeing the results of say, installing 500 plants. However, research being done particularly over the last 10 years is consistently showing that foxes are having a much greater impact than previously thought. Foxes are also one of the main spreaders of Sweet Pittosporum berries, Blackberries and other woody weeds that have berries.

Fox control is only effective if adjoining landowners have a coordinated plan, or if your own property is so large that it can be considered a 'landscape-scale program' in its own right. It's actually not that expensive, but just like weed control, it should only be started if you have the means to conduct follow-ups on a yearly basis.

I have not quoted this task for each property as there are too many variables. Furthermore, given that there are ethical concerns here, there are alternate options which are a very personal decision for each landowner to make. These will affect the price too.

Planning permits

Believe it or not, Planning Permits from Mornington Peninsula Shire are actually required in some circumstances for killing trees/large shrubs *even if they are known weeds.* You should check with the shire or an independent consultant if you are unsure.

Appendix 4: EVCs

About EVCs

Some of this information is reproduced from the Mornington Peninsula Shire Council website (http://www.mornpen.vic.gov.au/Environment_Waste/Environment/Flora_Fauna)

What is an Ecological Vegetation Class?

Native vegetation in Victoria has been classified into distinctive groupings known as Ecological Vegetation Classes or EVCs. These groupings are based on floristic, structural and ecological features of the vegetation. The Department of Sustainability and Environment (DSE) have defined over 300 EVCs within Victoria. Each EVC has been assigned a distinct descriptive name (e.g. 'Coast Banks Woodland) and number (e.g. 002).

EVC profiles

The Shire also commissioned Jeff Yugovic to put together a profile for each EVC that occurs on the Peninsula. These EVC profiles describe the structure of vegetation within that EVC, what sort of environment it occurs in, its bioregional conservation status, its past and present distribution and major species (all specific to the Mornington Peninsula).

What are bioregions?

EVCs are classified according to the geographic area or bioregion in which they occur. Victoria has been divided into 28 bioregions - the Mornington Peninsula occurs within the Gippsland Plains Bioregion. The bioregional conservation status of an EVC is an assessment of its conservation status within a particular bioregion based on a number of factors including how commonly it originally occurred, its current level of depletion and current level of degradation. For example, the EVC Grassy Woodland (no. 122) has a bioregional conservation status of vulnerable within the Gippsland Plains Bioregion.

Why use EVCs?

EVCs are a very useful way to describe different types of vegetation; it means everyone across Victoria is using the same system and common terminology when talking about vegetation. Becoming familiar with the EVC maps and profiles for your area is a great starting point to help you to understand the natural environment around you. Recognising how the composition and structure of native vegetation in your area changes and how these changes relate to soil, topography and other features can really help you to understand the broader ecological picture of what is happening in your patch. EVC profiles can also be used a guide to help you restore a particular EVC.

Limitations

EVC are a somewhat simplified way to look at vegetation - we humans have a tendency to want to categorise the natural world into distinct units such as EVCs, but nature is not so straight forward, plants do not always arrange themselves into clear, distinct groupings. It can be difficult for the untrained eye (and sometimes the trained one!) to discern just what EVC a certain patch of vegetation should be categorised as - especially if the vegetation is highly modified through weed infestation. But try not to get too bogged down in the finer details - there is no need to draw a definitive line in the sand on your site where one EVC stops and another starts (most of the time in nature there is almost always a gradual change where EVC overlap one another anyway). Just think of EVCs as a useful tool to for describing vegetation and use the maps and profiles provided by the Shire to help you to understand more about the bushland in your area.

Further information

A list of EVCs by bioregion can be found on the website of The Victorian Department of Sustainability and Environment, at:
http://www.dse.vic.gov.au/conservation-and-environment/ecological-vegetation-class-evc-benchmarks-by-bioregion#gipp

To locate EVCs in your area, you can use this Victorian government website:
http://mapshare2.dse.vic.gov.au/MapShare2EXT/imf.jsp?site=bim