



# Melbourne's Urban Expansion – Threatened Species on Our Doorstep

Planning for the survival of the Southern Brown Bandicoot in south-east Melbourne



**Western Port**  
Biosphere Reserve



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October 2011

## Victorian National Parks Association

The Victorian National Parks Association (VNPA) is the leading voice for nature conservation in Victoria. Formed in 1952, we are an independent, not-for-profit membership-based organisation dedicated to the protection of Victoria's unique natural environment and its wildlife. We also run the largest bushwalking and outdoor activities program in Victoria.

In 1952, Victoria had just 13 small national parks. Today, largely due to VNPA's efforts, Victoria has 40 national parks, 24 marine national parks and sanctuaries, and 55 other parks protecting more than 3 million hectares of Victorian habitat.

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## Western Port Biosphere Reserve

The Western Port Biosphere Reserve was designated by UNESCO under its Man and the Biosphere program in November 2002. Its board comprises representatives of the five LGAs that make up the Biosphere Reserve (Bass Coast, Cardinia and Mornington Peninsula shires and the cities of Casey and Frankston), a representative of the Minister of the Environment and Climate Change and Parks Victoria, with an Independent Chair.

Biosphere Reserves have three functions:

- Conservation – to preserve genetic resources, species, ecosystems and landscapes.
- Development – to foster sustainable economic and human development.
- Logistic support – to support demonstration projects, environmental education and training, and research and monitoring related to local, national and global issues of conservation and sustainable development.

We work with local governments, business and our partners to foster ecologically sustainable development in Western Port, a UNESCO Biosphere Reserve. We do this to benefit the community and environment, and to ensure that Western Port remains a place where our grandchildren will want to work, live and play.

Through its Research Committee the Biosphere established the Southern Brown Bandicoot Recovery Program and continues to work on this and other projects with our various stakeholders and partners.

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## Acknowledgements

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# FOREWORD

I'd like to introduce you to this Southern Brown Bandicoot.

He's a cute little fellow. He lives in grass and heath in the woodlands you see on the outskirts of Melbourne, and in a few isolated pockets elsewhere.

The grass tussocks might look a bit run of the mill to you and me, but to our bandicoot, they're food, shelter and a place to bring up the kids.

There's plenty of nutritious bugs and fungi in the root systems of the native grasses. And he can burrow into the soil, or into the grassy roots to build a nest.

This little guy was once one of the most common mammals in Victoria, but now this bandicoot is nationally endangered.

Right now, the tiny pockets of intact habitat around the edges of Melbourne, where this bandicoot and other even more endangered creatures live, are under threat.

Unusual and unique grassland creatures such as the Golden Sun Moth, Striped Legless Lizard and Growling Grass Frog are also under threat.

So what's the threat?

You probably know that there is huge pressure to expand Melbourne's urban growth boundary. Well, the federal environment minister has already approved state government plans under federal environment laws to expand it and the Victorian Government has called for submissions to open up even more land – to areas where our friend the bandicoot lives.

The second threat is that the new Victorian Government has launched a review to look at including further land from Melbourne's "green wedges".

This means that some of the last remaining intact native grasslands that provide habitats for numerous threatened creatures (to be precise, 25 animal and 32 plant species in these areas have been listed as nationally significant) may be lost to us.

That's why VNPA has identified 40 sites and key habitat corridors of high conservation value.

We intend to:

- Protect high conservation habitat areas within the existing Melbourne growth area by making them part of the urban conservation parks network.

- Protect the location of endangered species and habitat in urban growth areas.
- Deliver on promises for new grassland reserves outside the urban growth areas.
- Develop detailed regional conservation and biodiversity plans over the next 6-12 months to maximise preservation of native grasslands and wildflower meadows.

This is not just about the bandicoot. It's a push to protect rare native grasslands and the creatures that inhabit them – frogs, insects, mammals and incredibly beautiful wildflowers that we are in severe danger of wiping out.

In springtime in these grasslands you can see unusual plants like the elegant Slender Darling-pea, the Plains Rice-flower, and the endangered Matted Flax-lily with its pretty flowers and striking purple fruit.

And on a summer afternoon, especially after a shower of rain, you might be lucky enough to hear a strange growling croak emerging from the marshes and soaks – the unusual call of the Growling Grass Frog looking for a mate.

Or if you're really lucky, you might spot the Golden Sun Moth, another inhabitant of these grasslands, which only come out for a few days each year.

Scientists estimate that only 1 per cent of the original 870,000 hectares of rich Victorian grasslands now remain intact.

I don't want to lose these rare habitats and the creatures and plants that live there. And I think we can meet the desire of the city to grow and still protect these microcosms of intact habitat.



Matt Ruchel,  
Victorian National Parks Association Executive Director

# 1.0 INTRODUCTION

## 1.1 Southern Brown Bandicoot biolinks

Melbourne is growing, and urban sprawl is eating into natural areas and green wedges, and impacting on some of the most endangered habitats and species in Victoria.

Realising this, the State Government signed an agreement with the Commonwealth to undertake a detailed 'strategic assessment' of the impact of urban development on nationally threatened species and habitats within Melbourne's proposed growth areas.

A significant population of the Southern Brown Bandicoot (*Isodon obesulus obesulus*), a nationally threatened species, still persists in south-eastern Melbourne in the cities of Casey and Cardinia. Planning to expand urban areas is under way; we need to ensure that such planning considers the survival of this and other threatened species, as well as the needs of people.

Scientists, community groups and local councils have supported the creation of 'bandicoot biolinks' or habitat corridors to ensure that the bandicoots in one of Victoria's key remaining populations can survive and flourish. The first such link, adjacent to the Royal Botanic Gardens in Cranbourne (RBGC), will be a key test of state and federal government approaches to protecting threatened species in the face of development pressures.

These links are not only beneficial for bandicoots and other native species, but also integrate flora and fauna habitat into public open space for recreation, and meet drainage and fire management requirements (Practical Ecology, 2010).

Community and environment groups are concerned that plans for these habitat corridors have slowed and become uncertain. In addition, submissions from private landholders to the State Government's 'Growth Areas Logical Inclusion Review' process to place additional land west and south-east of the RBGC within the urban growth boundary (UGB) would further block habitat links for the significant population of Southern Brown Bandicoots in the Gardens and surrounding areas.

## 1.2 Introducing the Southern Brown Bandicoot

Southern Brown Bandicoots are medium-sized ground-dwelling marsupials found in mainland Australia from the Mt Lofty Ranges in South Australia to Sydney, and generally within 50km of the coast.



Southern Brown Bandicoot.

Photo: Michael Williams

They are about the same size as small rabbits, with a long pointed snout, small eyes, rounded ears, a compact body, a large rump, and a sparsely-furred short thin tail about half of the body length. The front and hind feet are strongly clawed; the fur is coarse, greyish or yellowish-brown above and whitish on the belly.

## 1.3 Why protecting Southern Brown Bandicoots is important

In the 19th century bandicoots were described as being one of the 'very commonest' mammals in south-east Australia. But recent records, including survey work in East Gippsland, the south-west, around Wonthaggi and Wilsons Promontory and south-east of Melbourne suggest that their numbers are now low in many parts of Victoria (DSE 2007, Coates et al. 2008). There have been local extinctions at many previously occupied sites, leaving the species with a substantially reduced range.

Until the 1960s bandicoots were still known to live within greater Melbourne, in south-eastern suburbs including Clayton, Springvale, Glen Waverley, South Oakleigh, Beaumaris, Mordialloc, Carrum Downs, Dingley and Rowville. However, populations were

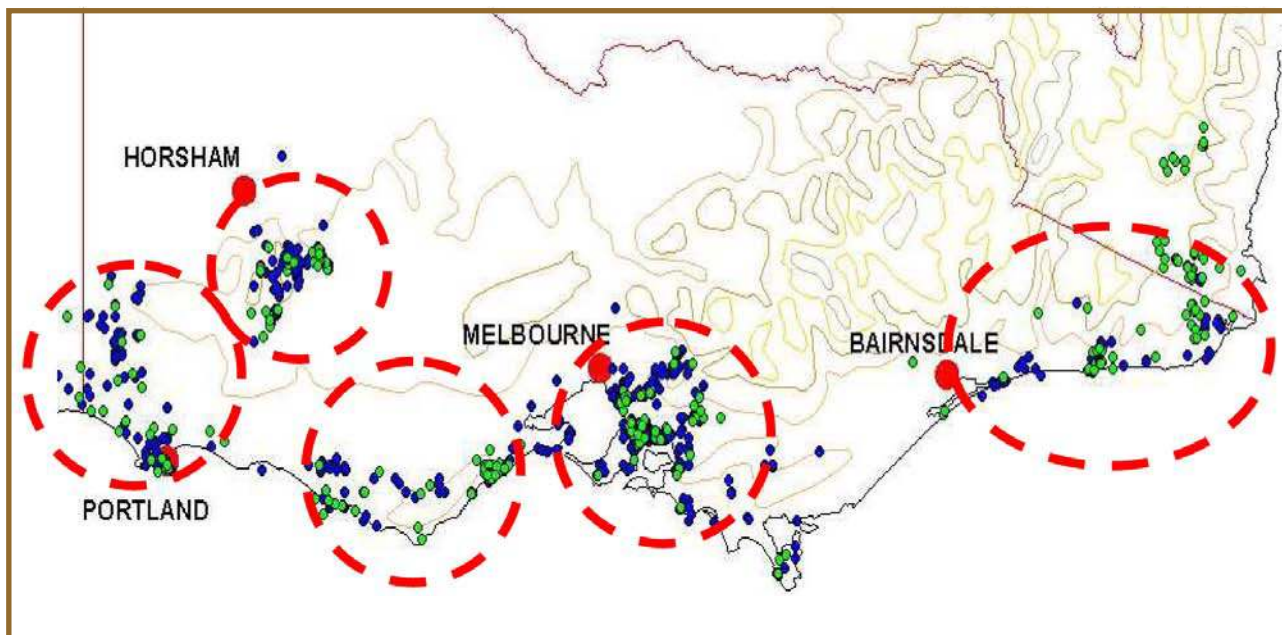


Figure 1. Victorian distribution of the Southern Brown Bandicoot. Blue dots represent official records before 1985, green dots represent official records from 1985 to the present. Red dashed circles represent rough delineations of sub-populations found in Victoria. Source: Coates 2008

decreasing across urban areas by this time, and scientists began to warn of their inevitable and continuing decline in the Melbourne region. Today there are no known populations in the suburbs of Greater Melbourne (Coates et al. 2008, Schmidt et al. 2008)

In Victoria, the species now occurs over a much reduced range within five isolated regions, including the area between Melbourne and Wilsons Promontory (DSE 2009). Other key areas are in the south-west (Portland-Glenelg), Grampians, Otways region and East Gippsland (Figure 1).

### 1.4 Threats to Southern Brown Bandicoots

Many of the remaining bandicoot populations in Victoria are in national parks or other public reserves, but most of the small, fragmented populations south-east of Melbourne are under increasing pressure from a range of threats closely associated with urbanisation.

The major current threats to bandicoots are predation, primarily by foxes but also by dogs and cats, and loss of habitat by clearing of vegetation, fragmentation and isolation, which remove or alter patches where they can live, and limit their ability to move between remaining patches.

### Conservation status

The Southern Brown Bandicoot is listed as 'endangered' under the Commonwealth Environment Protection and Biodiversity Conservation (EPBC) Act 1999. The species is also listed as 'endangered' in NSW under the Threatened Species Conservation Act, and 'vulnerable' in South Australia under the National Parks and Wildlife Act. In Victoria, Southern Brown Bandicoots are listed as 'threatened' under the Flora and Fauna Guarantee Act.

### Habitat

Southern Brown Bandicoots are usually associated with coastal or near-coastal heathlands and heathy woodlands on sandy soil. They are also found in lowland forests with a heathy understorey or a dense cover of tussock grasses or rushes and bracken. In addition, however, the species has been recorded in a wide range of vegetation types, including disturbed, cleared or weedy sites. The critical habitat feature appears to be a dense cover of low-growing vegetation.

Some studies have suggested that Southern Brown Bandicoots are relatively responsive to changes in vegetation structure such as burning or disturbance. They flourish in heathy woodlands and can increase in population through management interventions (Southwell et al. 2008). But they are susceptible to predators such as foxes, cats and domestic dogs, threats which would need to be planned for in habitat corridors.



## WESTERN PORT AND PORT PHILLIP REGION

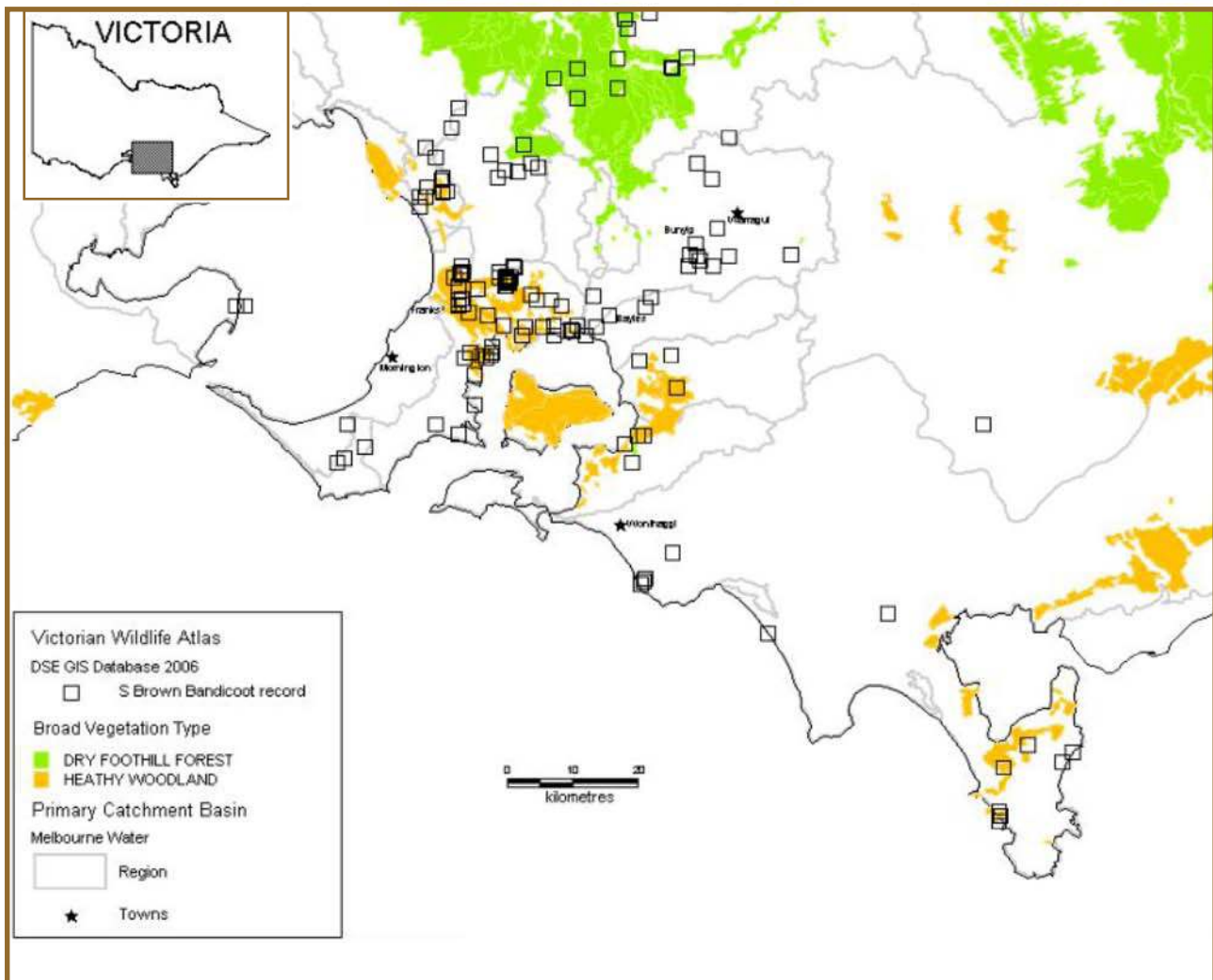


Figure 2. Mornington Peninsula Southern Brown Bandicoot records and heathy woodland vegetation in the Western Port and Port Phillip Region  
Source: Coates 2008

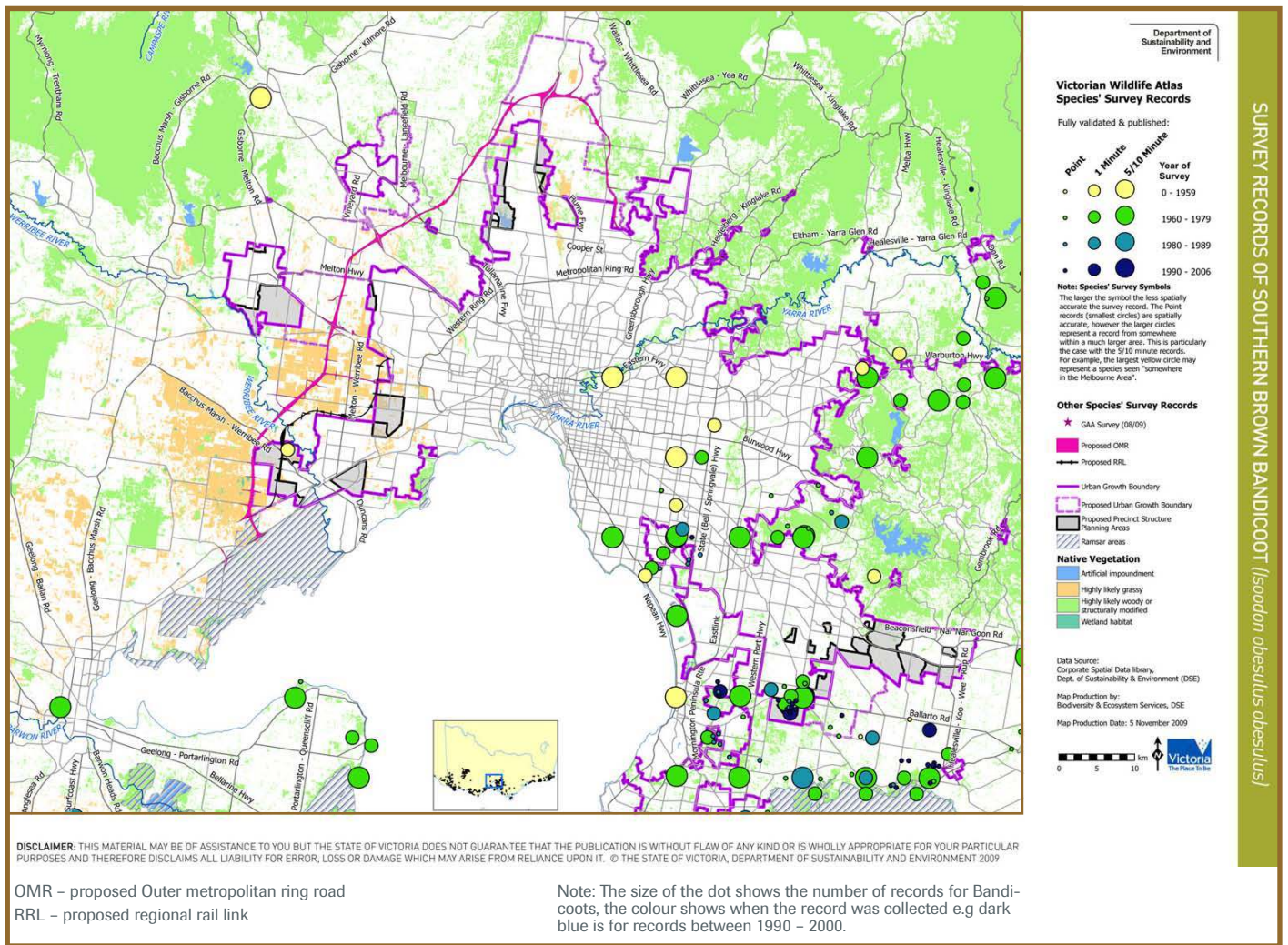


Figure 3. Survey records of Southern Brown Bandicoots from the Victorian Wildlife Atlas.

Source: DSE 2009



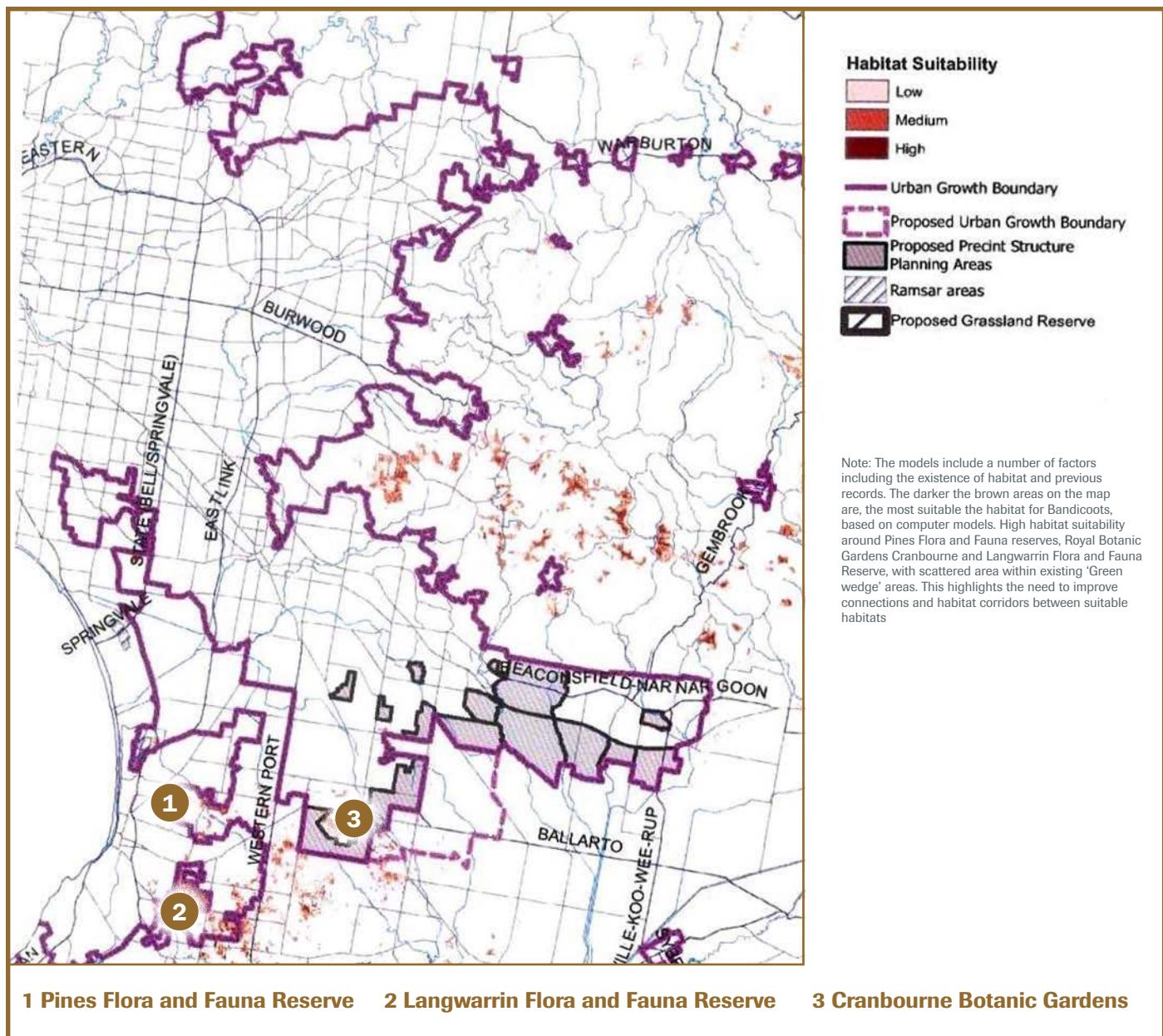


Figure 4. Modelled habitat suitability of Southern Brown Bandicoot in the region. Extract from Modelled habitat suitability for Southern Brown Bandicoot (DSE 2009). Source: DSE 2009

## 2.0 MELBOURNE'S URBAN GROWTH: POTENTIAL IMPACTS & ISSUES

The Southern Brown Bandicoot is well known in the south-east of Melbourne, and has been recorded in the Melbourne South-East Investigation Area and adjacent precincts. There is an important population at the Royal Botanic Gardens, Cranbourne (RBGC), protected by an integrated fox control program and appropriate vegetation management. This is the only population of bandicoots remaining within the Melbourne Urban Growth Boundary (Coates et al. 2008).

In 2009, State and Federal Governments signed an agreement to undertake a Strategic Impact Assessment under the federal Environment Protection and Biodiversity Conservation Act 1999. This process allowed the State Government, on behalf of property developers, to seek a one-off assessment of the impacts of urban expansion on nationally listed species via one process, instead of each individual development or precinct having to be assessed on a case-by-case basis.

The VNPA and local community and environment groups have had numerous concerns about this process, particularly the rushed consultation period. The final recommendations or 'prescriptions' approved by the Commonwealth listed a range of actions including the development of Sub-Regional Biodiversity Conservation Strategies to inform the specific measures needed to protect nationally threatened species in urban growth areas (UGA).

The Strategic Impact Assessment Report, produced by the Victorian Government in various versions between July and November 2009, was the key document underpinning the Government's approach to, and Commonwealth approval of, biodiversity conservation in Melbourne's UGAs. Final conditions or prescriptions were approved for 28 precincts within the previous urban growth area on 27 May 2010. See:

<http://www.dse.vic.gov.au/land-management/land/native-vegetation-home/strategic-assessment-agreement-for-future-melbourne-growth>

The report noted that the greatest threats to the Southern Brown Bandicoot are habitat loss and habitat degradation from alteration of the vegetation structure by rabbits, weeds or fuel reduction burning; predation by foxes and cats; and population fragmentation and isolation, particularly of small populations. It adds that:

*"Direct impacts resulting from future urban development inside the new Urban Growth Boundary are likely, but will be of a relatively local scale if key mitigation measures are taken....If connectivity can be maintained through careful planning and management in the long term, impacts on the species can be kept to a local scale or even reduced further" (DSE 2009 p189).*

The final approved 'prescriptions' or conditions for areas in existing precincts within the report are as follows.

*"In the south east of Melbourne the following objectives should apply to management of Southern Brown Bandicoot in relation to urban development planning:*

- Retain, upgrade and connect existing habitats within proposed precincts and outside the Urban Growth Boundary, including the important population at the Royal Botanic Gardens Cranbourne;*
- Secure, manage and monitor retained habitat and linkages to conserve Southern Brown Bandicoot and adjust management accordingly; and*
- Carefully plan and construct urban development within precincts to minimise impacts on species (such as employing road design and other techniques that facilitate road crossings, and restricting cat, dog and human access in particular areas)."*

An assessment of regional biodiversity links (Practical Ecology 2008 & April 2010) has also identified options for increasing habitat connectivity for the Southern Brown Bandicoot in and around the RBGC, to the immediate west of the Melbourne South-East Investigation Area. An overall diagram of modelled habitat suitability for the Southern Brown Bandicoot is shown as Figures 6 & 7.

On 7 and 21 December 2010 the City of Casey supported the report's recommendation for the establishment of two 'biolinks' (wildlife corridors) in the Botanic Ridge Precinct Structure Plan directly adjacent to the RBGC (see Figure 7). The Council report quotes the Practical Ecology study as concluding that:

*"To isolate the RBGC with housing development would be an inappropriate development when considering the likely detrimental impacts to one of south-east Melbourne's most significant areas of biodiversity (p.74)."*

In addition, the Commonwealth approval process requires the development of sub-regional conservation strategies for key species including the Southern Brown Bandicoot. The Strategic Impact Assessment report describes the process as follows:

*"Case studies will be used to develop a targeted Sub-Regional Strategy that includes the Melbourne South-East Investigation Area, retained habitat areas and linkages to the east, south and west (including between Botanic Ridge Precinct and the Quarry to the south west of the South-East Investigation Area). This Sub-Regional*

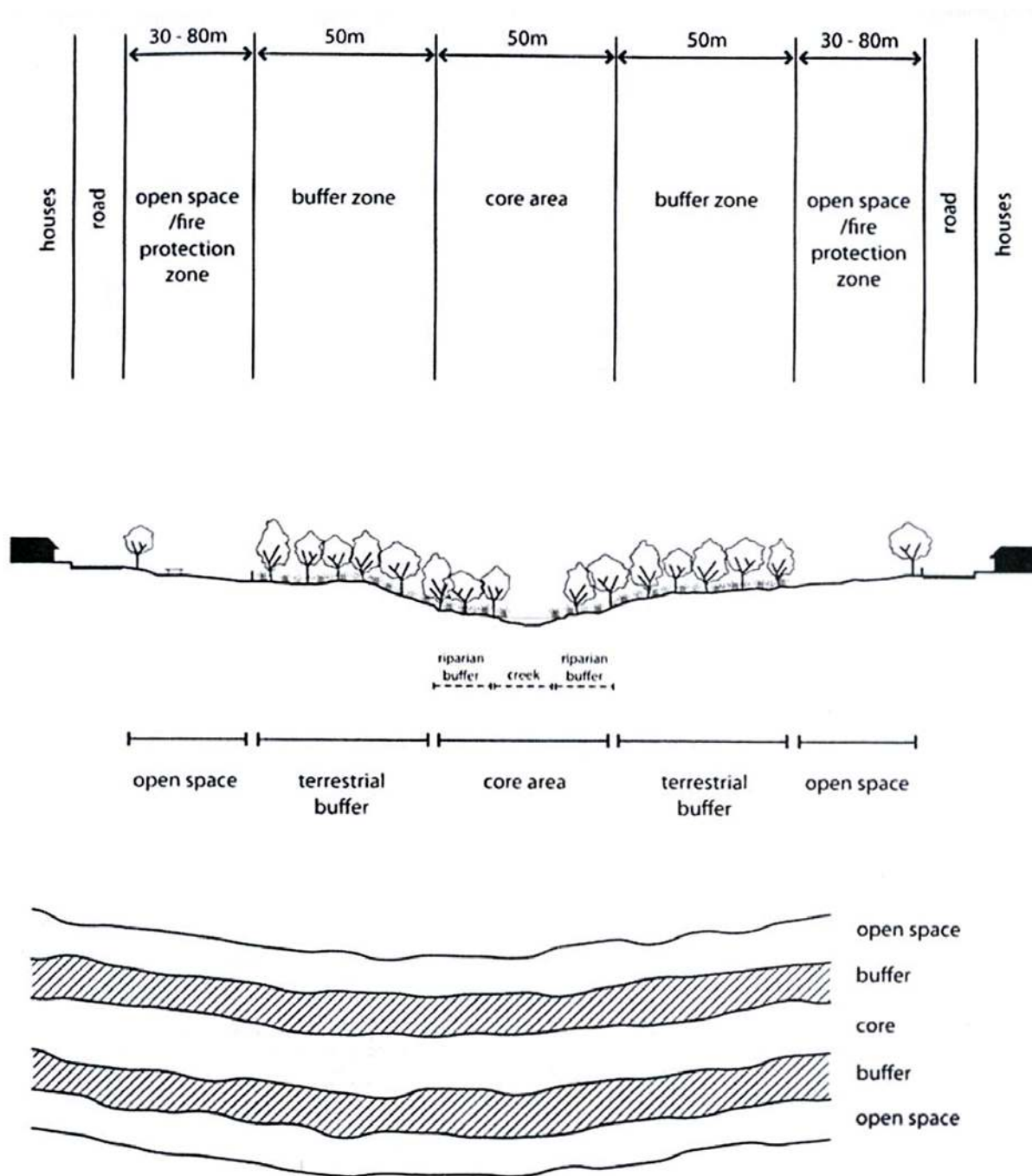


Figure 5. Design requirements for biolinks. This diagram highlights the recommended minimal zones and demonstrates how biolinks should work. The 30-80m public space zone for fire management is of limited value for fauna, as trees are scattered and shrub patches isolated, some animals such as bandicoots or swamp wallabies may use the areas for feeding. The buffer zone is a recommended 50m on either side of the core area (i.e. a total of 100m width) for terrestrial or riparian habitats. A 50-100m wide core area zone is recommended for riparian linear strips; this is a minimum requirement for terrestrial habitats (Practical Ecology, p69).



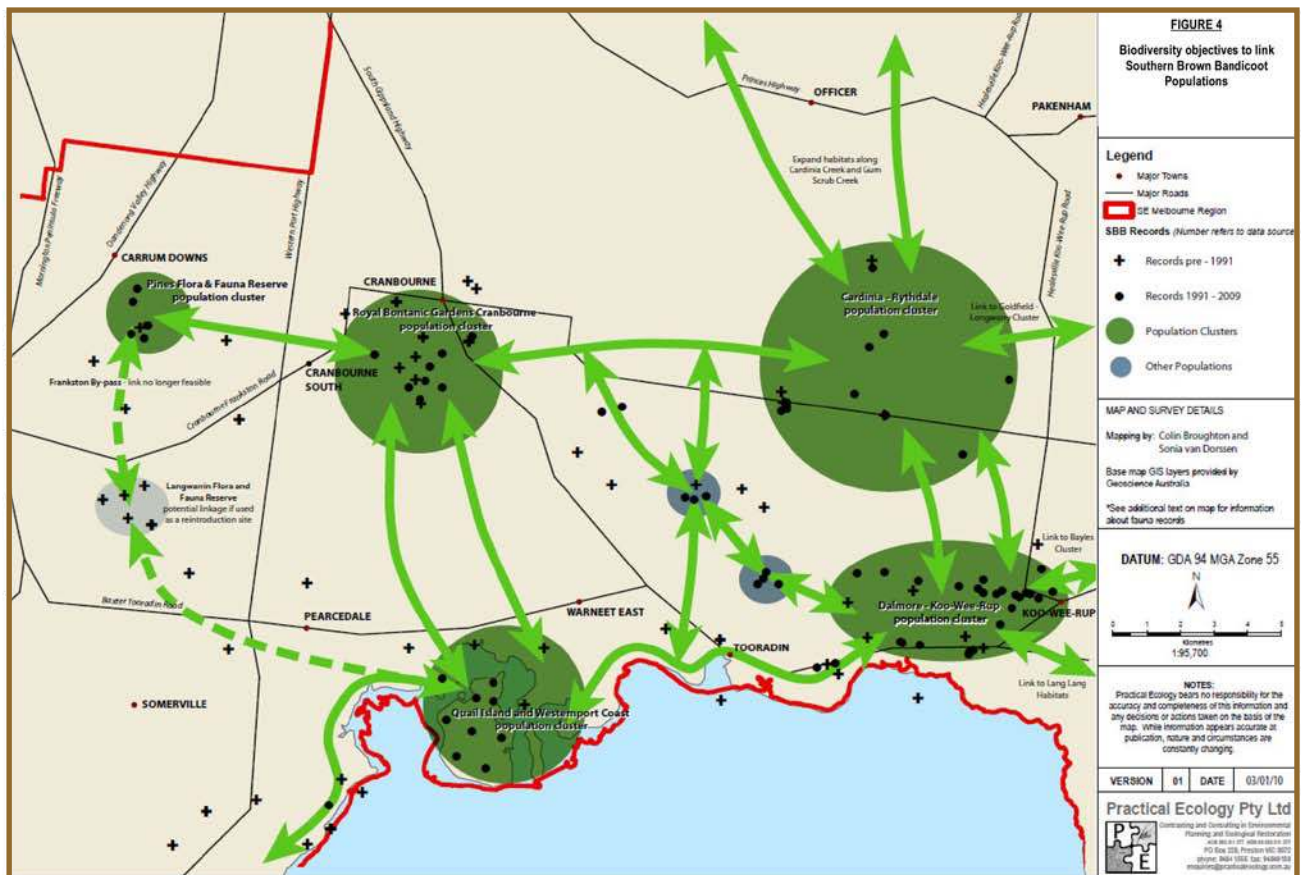


Figure 6. Strategic Biodiversity Objectives to Link Southern Brown Bandicoot Populations identified in Practical Ecology report.

Note: This diagram shows how potential biolinks might at a 'strategic level' fit together to link populations of bandicoots across the region.

*Strategy will be developed by the Department of Sustainability and Environment in consultation with the Growth Areas Authority [GAA] and relevant municipalities to the satisfaction of the Commonwealth."*

The plan for these biolinks recognises that the RBGC is a significant node of biodiversity within the region that acts as a stepping stone connecting nodes in the Frankston/Langwarrin region and other key nodes around Western Port, Casey and Cardinia. Two 200m wide biolinks are proposed running through the proposed Botanic Ridge Urban Development Area Stages 2 & 3. One link extends east towards green wedge areas of Cardinia, and the other south-easterly towards Western Port (see Figure 6).

The City of Casey Council supported the proposed biolinks east and south-east through Botanic Ridge Precincts at its meeting on 21 December 2010. The council resolved that:

- Council's CEO write to relevant government stakeholders requesting a written commitment of financial support towards the purchase, establishment and maintenance of the biolinks;

- Council advocate for two designated biolinks within the Botanic Ridge PSP, and direct officers to continue negotiations with relevant stakeholders.

– City of Casey, Council Minutes, Tuesday 7 December and 21 December 2010

Biolinks are important. The two described above will allow the significant population of Southern Brown Bandicoots (and possibly of other species) found in the RBGC to move into the broader environment and green wedges. This will benefit the bandicoots in several ways. It will:

- help increase population sizes, so reducing the risk of local extinction
- allow species to move in response to fire or flood events
- increase gene flows between populations, reducing the risk of inbreeding
- provide additional habitat
- offer refuge from predators such as domestic pets and foxes

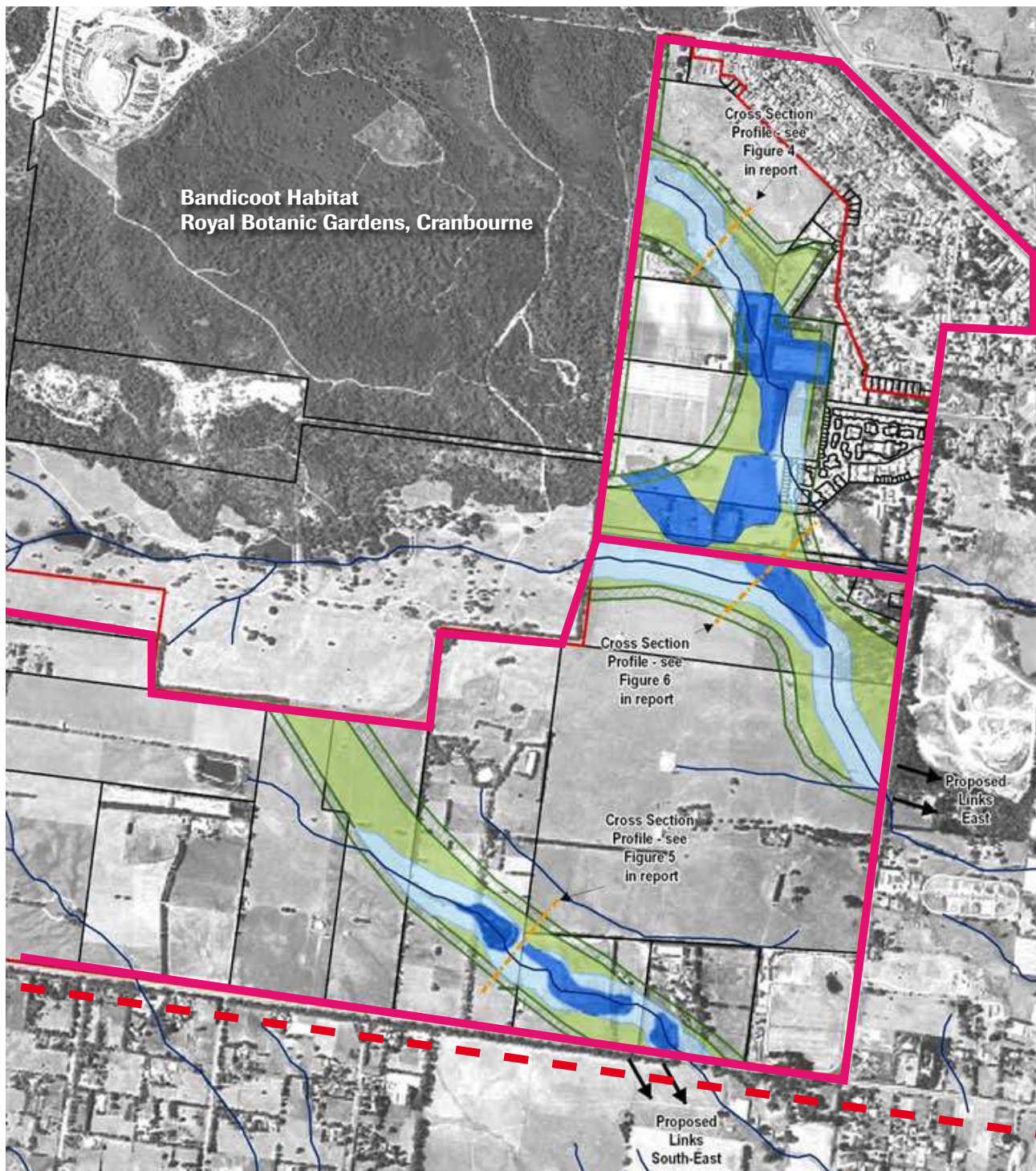


Figure 7. Modelled habitat and biolinks for the Southern Brown Bandicoot.

Source: Practical Ecology 2010

- Botanic Ridge Urban Development Area Stages 2 & 3 (approximate boundaries) Future houses.
- Current Urban Growth Boundary (approximate).
- Proposed biolinks – bandicoot wildlife corridors.



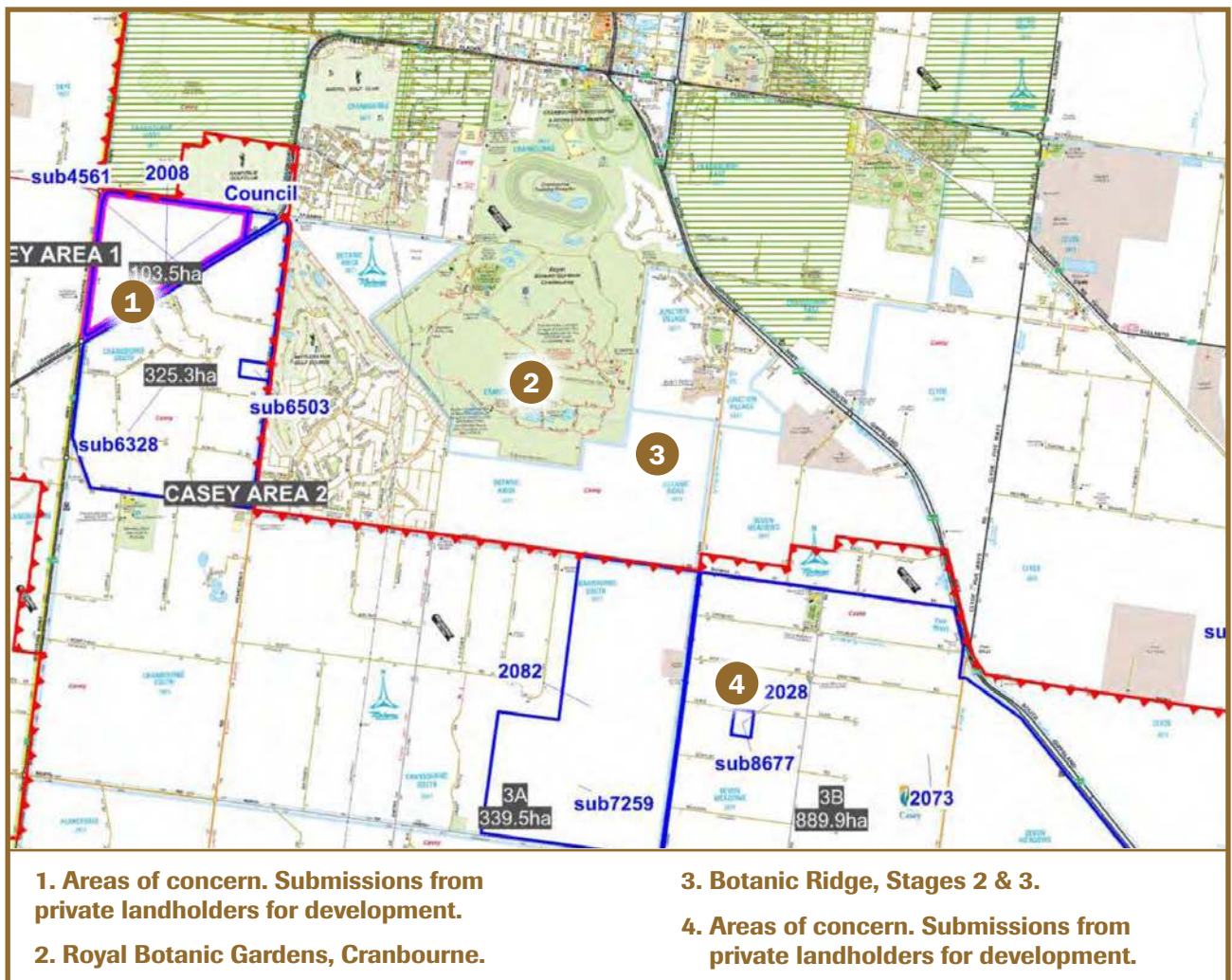


Figure 8. Growth Area Logical Inclusions Review Process 2011 – Areas of Concern.

Source: Growth Areas Authority, 2011

- lower the incidence of disease and improve the chance of recovery from it.

It is likely that the bandicoot biolinks would be a unique feature for residents of the new suburb. Specific innovative urban design features incorporating predator-proof fencing, on-going pest animal control and revegetation and fire breaks would be needed, but recreational facilities could easily be incorporated into the overall design. And for many residents, the presence of a cute threatened species in the back yard or on the doorstep would be a sufficient reward.

In May this year the Victorian Government introduced a new planning process to help address shortages of land for housing supply and employment purposes in metropolitan Melbourne. This 'Growth Areas Local Inclusions Review' looks at possible urban growth boundary inclusions stemming from a review of 2009 boundary changes. Strict criteria apply for land to be considered as a 'logical inclusion', and it must

meet particular standards. Submissions are referred to a new independent Logical Inclusions Advisory Committee for final determination, and advice is then given to the Minister (GAA, 2011).

The main area of concern here is that habitat links for the Southern Brown Bandicoot will not be maintained. If these areas are developed for residential purposes (as proposed) the inclusions will block and isolate significant populations of bandicoots at the Cranbourne Botanic Ridge. In the Preliminary Assessment Report for South East Region: Cardinia & Casey, the GAA does not recommend the inclusion of Casey Area 3A and 3B (Figure 7). Precinct Structure Plans are under preparation for both areas 3A and 3B, and the GAA has noted that both general areas should be subject to the proposed Biennial Review. These still need to be considered by the Logical Inclusions Advisory Committee; our recommendations are detailed below.



## 3.0 KEY ISSUES & RECOMMENDATIONS

### 3.1 Bandicoot recovery

The Western Port Biosphere Reserve's research committee, formed in 2002, has established a Southern Brown Bandicoot Recovery Program in collaboration with other organisations. The foundation held a public meeting in 2006 to enable researchers, land managers and locals to exchange knowledge and determine how best to conserve this species (MPWPBRF 2008).

A recovery plan based on the Draft National Recovery Plan for the Southern Brown Bandicoot (Brown 2004) was developed specifically for the Mornington Peninsula and Western Port Region. This plan highlighted the need for immediate on-ground actions and identified the need for further inventory and survey work on bandicoots in the region, as well as protection of additional habitat and connections across the landscape. See [www.biosphere.org.au/](http://www.biosphere.org.au/)

### 3.2 Community support for bandicoot biolinks

At a public meeting on 23 June 2011, convened by Western Port Biosphere Reserve, community groups passed a resolution in support of the formation of corridors linking the RBGC with the other key Southern Brown Bandicoot habitats within the expanded Western Port Biosphere Reserve. The resolution requests that:

- the Minister for Planning and the Minister for the Environment for the State of Victoria act immediately to create and protect areas for wildlife corridors inside and outside the Urban Growth Boundary in line with ecological reports and studies for the south-east Growth Area and as advocated by the City of Casey and other municipalities; and
- the Minister for Planning instruct the Growth Area Authority to implement this decision immediately. <http://www.biosphere.org.au/>

This resolution supported, and built on, the position of the City of Casey outlined in December 2010.

### 3.3 Botanic Ridge development plan

This plan identifies the three stages of development in Botanic Ridge. Stage 1 covers an area of 282ha which has been rezoned for residential development and is currently under construction (Baggio, 2005). Stages 2 and 3 still require review and administration by the GAA. Provided that the recommended biolink designs proposed by Practical Ecology (2010) are implemented,

habitat connectivity and sustainable biodiversity should be protected. However, these plans need to be secured or designated early in the planning process as part of the precinct structure plans, informed by legally enforceable Sub-Regional Biodiversity Conservation Plans.

### 3.4 State & Commonwealth government approach

The agreement between the State and Commonwealth governments to undertake a Strategic Assessment of this issue of national environmental significance is still in place. However, the Baillieu Government has yet to outline its complete vision for Melbourne's green wedges and its approach to protection of grasslands, grassy woodlands and nationally significant species such as the Southern Brown Bandicoot.

During the 2010 Victorian election campaign, the Coalition told environment groups that *"The Coalition agreed to recent planning changes that protected 15,000 hectares of native grasslands"* and informed the Green Wedges Coalition that *"The Coalition....will work with relevant municipalities to protect any land with the Urban Growth Boundary that is of environmental significance and should thus be protected"*.

The current Strategic Impact Assessment (October 2009) prescription clearly identifies the importance of the Southern Brown Bandicoot population at the RBGC in highlighting the need to "retain, upgrade and connect existing habitats within proposed precincts and outside the Urban Growth Boundary, including the important population at the Royal Botanic Gardens Cranbourne". However, detailed implementation is dependent on the release of the Sub-Regional Biodiversity Conservation Strategy, which will inform detailed planning on the ground. The strategic assessment clearly notes that *"...retained habitat areas and linkages to the east, south and west (including between Botanic Ridge Precinct and the Quarry to the south west of the South-East Investigation Area (DSE 2009)"* should be considered in the sub-regional strategies.

The sub-regional strategies were supposed to be released in May 2011 but are now months behind schedule. The VNPA and local community groups are concerned that the biolinks for the bandicoot are being put under pressure for further urban development - and worse, may be lost for ever.

### 3.5 Recommendations:

The Federal Environment Minister ensure that obligations under national environmental laws and the proposed conditions/prescriptions in the Strategic Impact Assessment (2009) to retain habitat areas and links are delivered in legally enforceable sub-regional conservation strategies.

The Growth **Areas Authority (GAA) and Logical Inclusion Advisory Committee** should:

- recommend that the submission for additional land included in the growth area west and south-east of the Royal Botanic Gardens at Cranbourne be retained in the Green Wedge, and put in place an appropriate plan to establish regional and subregional biolinks for the Southern Brown Bandicoot.

**The State Government, Planning Minister and Environment Minister** should jointly:

- publicly support the establishment of bandicoot biolinks between the RBGC (through Botanic Ridge) to the green wedges and beyond
- establish plans to continue biolinks to the west (to The Pines Flora and Fauna Reserve) and south of RBGC.
- immediately release for public consultation the proposed (sub-regional) Strategies for the Southern Brown Bandicoot and any associated research
- develop a region-wide network of biolinks for the Southern Brown Bandicoot and fund the Western Port Biosphere Reserve to develop a Southern Brown Bandicoot Regional Recovery Group and Regional Recovery Plan, and their implementation
- investigate the viability of Environmental Significance Overlays to further protect flora and fauna species in the area

#### **Bandicoot Biolink Design:**

- Provide a number (at least two) larger scale biolinks, in order to mitigate the risk of failure of single corridors due to fire, predation or lack of management – multiple smaller links are less effective, so it is recommended that a couple of large-scale biolinks should be established.
- Long term planning and or planning controls be put in place on areas adjacent to Botanic Ridge to ensure they remain as rural as possible so that the functions of the biolinks are not compromised.
- A minimum habitat patch size is recommended to be at least 25ha, or (preferred) 50ha, to support forest/woodland interior birds. Tree cover should meet a threshold of 30%, although. All three proposed Botanic Ridge biolinks should meet minimum size thresholds.
- Total biolink corridor widths should be a minimum of 250 meters wide with a minimum core area of at least 50 meters wide, buffers and fire/ public open space links.
- Open space areas should be sympathetically designed.

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The Victorian National Parks Association is dedicated to the protection of Victoria's unique natural environment and its biodiversity.

