



Green Wedges Coalition
- a vision for Melbourne

Melbourne's Native Vegetation Habitats under Threat

Development Pressures and Conservation Solutions

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Executive Summary

Victoria is the most cleared state in the country, with only 5 per cent of original native vegetation left on private land. Each year the state loses more than 3000 hectares of flora. In Melbourne the loss is equally severe. More than half the city's endangered native grassland remnants have been lost during the past 20 years.

This kind of loss threatens the animals that rely on native vegetation for survival. About 44% of native plants and 30% of native animals are extinct or threatened across the state. Melbourne and its surrounds are home to 296 threatened plants and 128 threatened animals. According to RMIT Environment and Planning lecturer Dr Sarah Bekessy, if vegetation clearing continues at its current rates, Melbourne will face a mass-extinction of plants and animals within our lifetime.

This report examines 26 case studies of threatened vegetation sites around Melbourne, compiled from information from grassroots organizations, ecologists and government agencies. A 'top 10' list was chosen from these 26 sites to represent a broad range of ecosystems under threat from clearing. The top 10 sites contain a range of threatened animals and plants - once they've gone from Melbourne, they will never come back.

Threatened animals species include:

- >barking and powerful owls
- >tuan (mammal)
- >striped legless lizard
- >golden sun moth
- >fat-tailed dunnart
- > grassland earless dragon

Threatened plant species include:

- >Kilsyth South spider-orchid
- >plains rice flower
- >curly sedge
- >matted flax lily
- >leek-orchid
- > basalt podolepis

The reason for the disastrous level of vegetation destruction in Victoria is simple: a combination of poorly-planned urban sprawl, the proliferation of development, badly-designed road works and unsustainable agricultural practices.

This destruction could be significantly reduced if the State Government implemented the planning guidelines for the Native Vegetation Management Framework (NVMF), the state's policy for protecting native vegetation.

In 2002 Environment Victoria, the Victorian National Parks Association and the Green Wedges Coalition were invited to comment on the State Government's draft guidelines for the NVMF, which seek to add detail and certainty to the broad brushstrokes of the NVMF. Two years later the Government is still yet to adopt the guidelines and instead looks set to water them down in the face of strong lobbying from developers and the farming lobby.

If the Bracks Government is serious about protecting our environment, it must adopt and fully implement guidelines that are strong and effective to support the Native Vegetation Framework.

In addition to the guidelines the Government should also:

- > close loopholes in green wedge planning controls and statewide clearing controls
- > provide significant funding to help landowners protect vegetation
- > purchase vital private land that cannot otherwise be saved.

Environment groups have been waiting for the Bracks Government to act for two years while valuable areas have been decimated. Without immediate action Melbourne could lose precious native flora and fauna forever.

Melbourne's top 10 conservation areas under threat

1. Maribyrnong Valley grasslands

- Threat:** Endangered grasslands threatened by current and proposed housing developments. The area is a rare ecological transition site between plains grasslands, escarpment and river red gums.
- Threatened:** Striped legless lizard, fat-tailed dunnart (marsupial mouse) rare ecological transition site
- Location:** North Sunshine, from Maribyrnong River at Duke Street to Baldwin Avenue (Melway: 27, A3-5)

2. Merri Creek grasslands

- Threat:** Much of the native grasslands are unprotected on private land. A proposed path of the Hume growth corridor cuts through the Merri habitat link. Other important grassland buffers and links are zoned for industrial development.
On green wedge properties over-grazing, weed invasion and subdivision into hobby farms threaten important red gum grassy woodland habitat.
- Threatened:** Golden sun moth, earless dragon, curly sedge
- Location:** Along the Merri Creek (Melway pages 181, 182, 387, 367)

3. Bundanoon woodlands and grasslands

- Threat:** Site has highly significant flora and fauna including rare woodlands and grasslands; remnant flora unique to Hume; and is home to many native animals. The site may be excluded from the green wedge and could be subdivided into six hectare lots.
- Threatened:** Significant Aboriginal site, biodiversity site of regional ecological significance, home to wedge-tailed eagles
- Location:** Sunbury (Melway: 362 A6 and surrounds)

4. Greswell Hill

- Threat:** One of the best quality remnants of plains grassy woodland in the Melbourne region has been extensively bulldozed and fragmented for a luxury housing development.
- Threatened:** Barking owls, powerful owls and the swift parrot.
- Location:** Bundoora (Melway 20, A4 and Springthorpe development to SW)

5. Bittern/Crib Point remnant woodlands

- Threat:** The area has a rich diversity of remnant woodlands, a substantial proportion of which has been earmarked for residential or port-related development.
- Threatened:** Known to support a range of orchids such as the threatened donkey orchid, sun orchid and wax orchids and could potentially provide habitat for rare fauna.
- Location:** Bittern/Crib point area (Melway 164/165)

6. Kilsyth South spider-orchid site

- Threat:** Only remaining known site of orchid is on privately owned site with no legal protection. The surrounding area has been subdivided into low density residential lots of about 2ha with vegetation under threat from land clearing and inappropriate grazing.
- Threatened:** Only known habitat of critically endangered Kilsyth South spider-orchid
- Location:** Kilsyth South

7. Warrandyte North, Nillumbik foothills

- Threat:** Nillumbik foothills still retain a substantial proportion of their original forest cover. Area has been partially cleared for farming and more recently for residential development, but still has opportunity to maintain and restore large viable areas of habitat.
- Threatened:** Tuan (brushtailed phascogale) powerful owl and, in some parts of the foothills, the Eltham copper butterfly

8. Boggy Creek grassy wetland

- Threat:** One of the best remaining patches of endangered herb-rich plains grassy wetland has just been destroyed in place of the intended intersection of the Eastlink and Mornington Peninsula Freeways.
- Threatened:** Herb-rich grassy wetlands area
- Location:** Seaford (Melway 100 A12)

9. Laverton RAAF air base grasslands

- Threat:** The area is proposed for a major commercial / residential complex or business park. The Minister for Planning has received an application for rezoning the land which provides State Government with an opportunity to effectively apply the Native Vegetation Framework to protect the grassland.
- Threatened:** One of the best examples of endangered Basalt Plains Grassland in the Port Phillip Region if not the state. It has a rich diversity of rare and threatened species such as basalt podolepis and large-fruited groundsel.
- Location:** Melways page 203, H10 and surrounds

10. Koonung-Mullum Forestway

- Threat:** Much of this area lies on surplus freeway easement that could be sold for housing development by VicRoads.
- Threatened:** Habitat corridor for koalas, kangaroos and other wildlife. Largest remnant of endangered eastern suburbs valley heathy forest.
- Location:** Donvale/Ringwood (Melway 49C6)

Development pressures and conservation solutions

1. Endangered grassland remnants of Melbourne's western plains

Conservation values:

Only a tiny percentage remains of the grasslands which once covered Victoria's volcanic plains from Melbourne to near the South Australian border. This vegetation type once consisted of tussocks of species such as kangaroo and wallaby grass, interspersed with a diverse array of herbs, orchids and other small plants which produce impressive wildflower displays in spring. Animals such as bandicoots, kangaroos, dunnarts and lizards were common.

Some of the best quality remnants of endangered basalt plains grassland have survived around the western and northern edge of Melbourne as well as regional towns. They occur in areas zoned for industrial or residential development or in the

path of urban growth corridors. These remnants support a range of rare and endangered species such as the plains rice flower, small scurf pea, orchids and the striped legless lizard.

A relatively large band of grassland, including high quality remnants, occurs in the green wedge areas of Melton and Wyndham. This provides the basis for a regional conservation reserve to ensure the long-term survival of basalt plains grassland as an ecosystem.

Development pressures and other threats:

At least half of the remnant grassland around the western edge of Melbourne has been lost over the last 20 years due to urban development and weed invasion¹.

Of the remaining good quality grassland, much has been zoned for industrial or residential development and large areas potentially lie in the path of the urban growth corridors. Some recent development permits in western Melbourne have given little weight to the Native Vegetation Framework and its emphasis on avoiding clearing, whilst some grassland is under imminent threat of destruction as development plans and /or subdivision permits have already been granted. Some grassland remnants are subdivided into small lots.

Planning solutions and other conservation measures

- Ensure that the Smart Growth process protects grassland remnants as part of a viable reserve network, incorporating large buffers and links, and does not zone significant grassland for urban development;
- Identify suitable areas of grassland and grassy woodland to provide a Comprehensive, Adequate and Representative Reserve system and to meet National Objectives and Targets for Biodiversity Conservation (2001- 2005);
- Apply the Native Vegetation Framework and Operational Guidelines to ensure that development permits and rezonings protect the majority of remnant grassland on industrial and residential land, particularly high quality remnants of viable size;
- Negotiate land swaps and transferable development rights, and small lot consolidation with developers and landowners, where effective on existing urban land;
- Provide funds for targeted public purchase of the best quality remnants under imminent threat of development and for establishing new reserves;
- Provide resources to councils for on-going management of grassland remnants, as part of developer contributions and conservation offsets, and from State Government funds;
- Resource community education and resource centres to engage local residents in grassland conservation.

Examples: remnants needing protection

Ex 1. Laverton RAAF airbase grassland.

¹ N Williams et al, Landscape and Urban Planning 71 (2005), pp 35 - 49

One of the best surviving remnants of basalt plains grassland – about 100 ha in total area – was sold by the Federal Government in the late 1990s for development as an industrial business park. It is rich in rare and threatened plant species such as large-fruited groundsel, and basalt podolepis. Under the approved development plan and Comprehensive Development Zone only a fraction of the grassland is reserved. However, the developer now seeks a planning scheme amendment to allow commercial and residential development. This provides an opportunity for State Government to effectively implement the Native Vegetation Framework and protect most of this key grassland site.

Ex 2. *Clarke Road grassland, Caroline Springs.*

Lying just to the west of Caroline Springs, Melton, this large privately owned remnant is a priority for basalt plains grassland conservation and incorporating into a regional park. It includes about 300 ha of very high quality grassland, including nationally threatened species such as small golden-moth orchid. Although currently zoned green wedge, it lies in the path of the Melton-Caroline Springs growth corridor.

The Clarke Road grassland is adjacent to large interconnected grassland remnants, many of high quality, occurring on green wedge land around Mt Cottrell, and on industrial and green wedge land near the Deer Park bypass. Together these remnants should be secured, on both public and private land, to form a regional conservation reserve, and to ensure long-term survival of basalt plains grassland as an ecosystem.

Ex 3. *Altona grasslands, (centred on Burns Road and Kayes Drain in the industrial Special Use Zone)*

This is a large remnant (over 100 ha) of basalt plains grassland of high and very high conservation significance on mostly undeveloped industrial land. It supports significant populations of the nationally endangered plains rice flower and striped-legless lizard. Over half of it has already been subdivided, and will require measures such as land swaps, lot consolidation and compensation to achieve partial protection. About 50 ha of high quality grassland still occurs on large lots. The majority of this warrants protection by effectively applying the Native Vegetation Framework to development permits.

Ex 4. *Maribyrnong Valley Escarpment and Solomon Heights grassland, North Sunshine, from the Maribyrnong at Duke St to Baldwin Avenue*

Over 30 ha of state significant grassland, including several endangered plant species and a rare habitat link with escarpment shrubland and river red gum woodland, occurs next to the Maribyrnong River in the middle of Melbourne's western suburbs. About 16ha is owned by a housing development company, but most of this could be protected by applying the Framework to any rezoning for residential use, and to subdivision permits on existing residential land. The remaining 15ha + of grassland – known as Solomon Heights - will require a combination of lot consolidation and some public purchase to protect it, as it is located on subdivided industrial land with many different owners.

2. Grasslands and woodlands of the northern plains and deep river valleys

Conservation values:

Basalt plains grassland reaches its most easterly limit on Melbourne's rolling northern plains. Large grassland remnants still occur along the Merri Creek supporting a diverse range of native plants and vulnerable and endangered species such as the curly sedge, lined earless dragon and golden sun moth. Whilst some important reserves have been created, much remains unprotected on private land, including remnants close to urban areas and substantial stands further north in the green wedge. The Merri Creek valley provides a good opportunity to link grassland remnants into a large viable reserve of national significance.

Nearby, on the northern plains occur some of the best remnants of Victoria's park-like plains grassy woodlands – which were once widespread across farming areas but are now endangered. They comprise of large ancient red gums, with patches of native grasses and herbs in the ground layer. The trees' hollow-bearing branches and nectar provide habitat for a diverse range of woodland birds and bats, such as the endangered² masked owl and the barking owl. Patches of native grasses supports rare species like the red-chested button quail, fat-tailed dunnart and numerous reptiles.

These grassy woodland remnants provide important habitat links between the Merri Creek grasslands, the neighbouring Plenty Valley and the ranges. Most of them occur on green wedge farms and hobby farms.

On the steep slopes of some river valleys, including the Plenty and tributaries of the Maribyrnong, survive unusual pockets of dry, rocky eucalypt woodlands and escarpment shrublands.

Development pressures and other threats

Residential and industrial development is occurring rapidly on the northern fringe of Melbourne. Development projects within the urban growth boundary risk cutting across the Merri Creek grasslands and important grassy woodland and red gum habitat links. Examples include major industrial and commercial development proposed in the grassland link between Cooper Street and Craigieburn reserves, and new suburbs at Epping North, Mernda and Doreen. Some of the land is already zoned for industrial or residential development, whilst other land is soon to be rezoned for this purpose. A proposed new suburb in the green wedge at Donnybrook, could potentially impact on the Merri Creek grasslands and waterway habitat link.

In the green wedges, grassland and grassy woodland is threatened by rural lifestyle subdivisions which intensify grazing and other land uses which can eliminate native ground cover³. Incremental clearing occurs for the construction of buildings, roadways and firebreaks. On larger traditional green wedge farms, rotation of grazing and spelling of paddocks has helped to maintain the native grassland and grassy woodland. However, weed invasion, gradual tree decline and lack of regeneration is a serious problem. Fencing off areas to allow regeneration and replanting patches of understorey shrubs is essential. Expansion of quarries is also a potential threat to some key grassland sites.

Planning solutions and other conservation measures

² Endangered in Victoria

³ C.Beardsell, Sites of Faunal Significance in Northeast Melbourne, 1997

- Ensure that planning for the Hume, Whittlesea and Plenty growth corridors avoids zoning ecologically valuable grassland and grassy woodland remnants, and mature red gum habitat for urban use.
- Identify suitable areas of grassland and grassy woodland to provide a Comprehensive, Adequate and Representative Reserve system and to meet National Objectives and Targets for Biodiversity Conservation (2001- 2005)
- Progressively purchase remnant grassland along the Merri Creek, and buffers and links between the remnants, to create a nationally significant grassland reserve stretching from Fawkner to Bald Hill in the green wedge. Extend the park to protect grassy wetlands and link up grassland and grassy woodland along tributaries, including Malcolm Creek to Mt Ridley and Curly Sedge and Kalkallo Creek.
- Apply the Operational Guidelines to subdivision and development permits to protect the majority of grassland and grassy woodland on residential and industrial zoned land.
- Apply the Operational Guidelines to ensure that rural lifestyle subdivision does not result in fragmentation and loss of remnant vegetation, for example the dry woodlands near Sunbury.
- Apply to Operational Guidelines to proposed expansion of quarry operations that could impact on remnant vegetation.
- Provide incentives, assistance and education programs to green wedge landholders, to enable them to manage remnant vegetation for conservation purposes.
- Adequately resource the management of reserves to achieve conservation outcomes.

Examples: remnants needing protection

Ex 5. *Amaroo Road grassy woodland, Craigieburn between the new freeway Craigieburn bypass and the Merri Creek.*

This high quality remnant of grassy woodland supports large ancient red gums and endangered species including Golden Sun Moths and Growling Grass Frogs. It forms an important habitat link in the Merri Creek grassland chain, located just inside the urban growth boundary. Whilst currently zoned rural, the land is intended for future industrial use. Fortunately much of the area preferred by industry is weed infested with few native species. The Framework should be effectively applied at the rezoning stage to restrict development to such areas, whilst protecting the intact grassy woodland and ecologically viable habitat links in an appropriate conservation zone.

Ex 6. *Bald Hill grassland, straddling Merri Creek east of the Melbourne-Sydney railway line and north of Donnybrook Road, Donnybrook*

This area (600ha approximately) is of national significance for fauna and state significance for flora. In addition to plains grassland, it includes escarpment shrubland, Red gum woodland, stony knolls and grassy wetlands. 141 species of native fauna have been recorded there. The site links important habitats to the north, south and southeast. There is currently no protection of the site, which is owned by an extractive industry that intends to extract stone from extensive areas of the property. The site could

also be affected by a possible new suburb based on Donnybrook, as part of the Hume growth corridor.

Ex 7. *Craigieburn grasslands - Cooper Street Grasslands Link, along the Merri Creek between the two grassland reserves.*

This important habitat link is part of the Merri Creek grasslands listing on the Register of the National Estate. It includes a grassy wetland (a rare ecological community) with the threatened growling grass frog, significant stony knolls with shrub and ground layer plants that are not in the reserves, a section of Curly Sedge Creek with the threatened curly sedge, and large old red gums. Most of the land is privately owned and conservation values are threatened by industrial development and extractive industries. It is vital a reserve be created along the Creek corridor that is wide enough to maintain the ecological communities as well as a proposed walking /bike path.

Ex 8. *The Sanctuary/Bundanoon, immediately north of Sunbury.*

This 320 ha property supports highly significant dry woodland habitat and native grasslands, with at least five different Ecological Vegetation Classes and a diverse range of trees and tall shrubs such as long-leaved box, yellow gum, red ironbark and silver wattle. A wide variety of native fauna occur here including koalas, eastern grey kangaroos, swamp wallabies, tree goannas, wedge-tailed eagles, and the nationally threatened barking owl. Unfortunately the owner has a rural living zoning, even though the land is in the green wedge, which allows subdivision down to 6ha lots. This threatens the remnant habitat and sensitive soils through incremental clearing and intensified land use.

Parks Victoria rejected purchase of the land on the basis that Hume Council would be able to protect it. Instead, Council is examining whether the land should be rezoned for residential use, whilst the owner is proposing 300 residential lots on just over half of the land leaving the rest for public open space and conservation. This property is a priority for purchase as part of a regional park. Otherwise Hume Council should attempt to rezone it (e.g. to Rural Conservation Zone) to achieve large minimum lot sizes (e.g. 40ha +) and apply the Native Vegetation Framework to ensure any subdivision protects the remnant habitat.

Ex 9. *Fenwick estate and surrounds, Barbers and Darebin Creeks, Whittlesea*

One of the best surviving examples of red gum grassy woodland in Victoria, and a key habitat link between the Plenty Valley and Merri Creek, occurs on the large grazing properties in this area. The big old trees – up to 500 years old – provide habitat for a diverse bird and bat fauna, including rare and threatened species like the masked owl, barking owl, and eastern free-tail bat. Incentives should be provided to encourage the landholders to maintain traditional grazing practices and native ground cover, and to fence off old trees to enable their regeneration. Strict environmental safeguards should be placed on any subdivision.

Ex 10. *Greswell Hill grassy woodlands, Springthorpe housing development near Latrobe University*

One of the best quality remnants of grassy woodland habitat in Greater Melbourne has been extensively bulldozed and fragmented for a luxury housing development. The area provided a rich and unique urban habitat,

including rare barking and powerful owls, sugar gliders, and the nationally threatened matted flax-lily. Many mature habitat trees and flax-lilies, along with over 10 ha of key habitat links have been destroyed, whilst the remaining reserves have become fragmented and subject to offsite impacts. The local council granted subdivision permits under the Springthorpe development plan which ignored the Native Vegetation Framework and undermined previous State and Federal commitments to protect the area. A key habitat link on a large lot can still be protected, and publicly acquired, by effectively applying the Native Vegetation Framework before subdivision is approved.

3. Remnant woodlands and forests of Mornington Peninsula

Conservation values

The Mornington Peninsula is unique in the Greater Melbourne region. Woodlands and forests once covered the Peninsula stretching as far north as Frankston and Cranbourne, whilst the variation in soil types and topography allowed for an extraordinary range of ecosystems, such as the FFG listed Moonah Woodlands of Point Nepean.

Whilst most of the region has been cleared for agriculture and housing, scattered remnants of these vegetation types survive, including some larger patches (> 10ha) and habitat links. They support the Peninsula's native wildlife, including species such as the white-footed dunnart, koalas, a rich diversity of birds, and potentially the endangered southern brown bandicoot and new holland mouse. Species which were once common like the eastern grey kangaroo and echidna are becoming rare. Native vegetation conservation is also essential for protecting the internationally significant Westernport Bay, yet hardly any native vegetation remains at all in landscapes of the lower Westernport catchment to the north and east of the Peninsula.

Heathy woodlands and endangered grassy woodland, characteristic of the Peninsula's north and east, survive mostly as small remnants or scattered trees concentrated around the edge of urban areas. The former comprises low growing eucalypts over a thick shrub layer on sandy soils, whilst grassy eucalypt and casuarina woodlands occur on more fertile soils. The few medium sized (e.g. 10ha) remnants of heathy woodland, and habitat links, are especially important for native wildlife.

In the central and southern parts of the Peninsula, some larger patches of the original forest types remain, typically with messmate and peppermint eucalypts growing over a diverse understorey of shrubs and / or grass, bracken and herbs. There are opportunities to revegetate links between these patches to provide an ecologically robust network of forest habitats.

Development pressures and other threats

A substantial proportion of remnant heathy woodland and grassy woodland has been zoned for urban and residential development. This includes high quality woodland and important habitat links, whilst some of the region's largest patches of heathy woodland occur in the Westernport industrial zone. Subdivision and urban development threaten to progressively clear and fragment these remnants.

On existing subdivisions, native vegetation has been lost over time as individual lots are developed. In addition, important habitat links lie on the easement of the proposed Mornington Peninsula Freeway.

Even in green wedge areas woodland remnants are under threat. They are at risk from high density rural lifestyle development, in areas such as Langwarrin and Cranbourne South where small lot sizes are permitted. Some owners of existing green wedge properties have little awareness or interest in native vegetation conservation. Widespread unnecessary clearing is resulting from poor planning and siting of houses, outbuildings and firebreaks. Much of this clearing is illegal, yet local government does not have the capacity to monitor it or undertake effective enforcement action.

Large areas of remnant habitat near Langwarrin are threatened by potential expansion of sand mining whilst the proposed sale of public land around Devilbend Reservoir could jeopardise the opportunity to revegetate one of the largest forest habitats on the Peninsula.

Planning solutions and other conservation measures

- Apply the Operational Guidelines to permits for residential subdivisions, to protect the majority of remnant woodland in a viable reserve.
- Apply the Operational Guidelines to permits for rural lifestyle subdivisions to restrict development to already cleared land and retain habitat links;
- Use planning permits on residential properties to ensure that buildings and works minimise native vegetation loss through sensitive siting and design.
- Use planning permits on green wedge properties to ensure that buildings and works and new land uses avoid clearing and protect remnant vegetation as part of a whole property plan.
- Apply to Operational Guidelines to proposed expansion of quarry operations that could impact on remnant vegetation.
- Provide incentives and support programs to enable landholders to manage remnant vegetation for conservation purposes.
- Undertake strategic high profile enforcement action and community education to deal with widespread illegal clearing;
- Avoid major further expansion of the Port of Hastings, given the valuable remnant vegetation that could be affected and the environmental sensitivity of Westernport;
- Provide funding for public purchase of strategically important remnants, e.g. grassy woodland adjacent to Mt Eliza regional park;
- Review the need for new freeways in the light of the impending oil scarcity and ensure that any new freeways are appropriately aligned or use tunnels to avoid native vegetation loss.
- Retain remnant vegetation and strategic habitat links and buffers on publicly owned land, such as reservoir land and surplus freeway easements, for conservation purposes – do not sell such land for development.

Examples: threatened remnants needing protection

Ex 11. *Burdett's Quarry Land, Pott's Road, Langwarrin.*

This large, 100 ha site includes about 40 ha of state significant remnant vegetation, including damp sands herb-rich woodland, swampy riparian complex and valley heathy forest. It connects with other woodland remnants in the Langwarrin district, and provides important habitat for species such as Swamp Wallabies. Unfortunately, the land is threatened by as-of-right quarry expansion and a proposed housing development. The quarry owner wants to build houses in the central half of the property, fragmenting and clearing some of the woodland, and undermining the green wedge. The Planning Minister is considering a compromise to allow some low-density development. A rare opportunity to conserve and restore a viable area of woodland habitat and to allow for revegetation of habitat links can still be achieved. The Framework should be effectively applied to protect the existing woodland habitat. .

Ex 12. *Devilbend Reservoir, important Grassy Forest and Swamp Scrub habitat, central Mornington Peninsula.*

Some of the largest, high quality patches of remnant grassy forest and swamp scrub on the Peninsula occur around the reservoir. They provide habitat for a diverse native fauna, including species which are becoming uncommon across the Peninsula such as the eastern grey kangaroo, echidna, lace monitor, and possibly rare species like the white-footed dunnart, feather-tailed glider and long-nosed bandicoot. This is an opportunity to provide a large interconnected area of habitat, for the long-term survival of the Peninsula's fauna, by revegetating the intervening public land. This opportunity is likely to be lost, and the remnants will become fragmented, if Melbourne Water proceeds with its proposed sale of the land for hobby farms.

Ex 13. *Wooralla Drive grassy woodland, Mt Eliza.*

The largest, most intact remnant of the Mt Eliza escarpment, incorporating endangered grassy woodland, swampy woodland and swamp scrub, is located on a green wedge property adjacent to residential areas, and owned by a consortium of developers. This remnant is potentially at risk should a large house and other buildings be constructed on the property, and currently it is being degraded by recreational 4WD use. Being adjacent to the Mt Eliza Regional Park it is a priority for permanent protection, through public purchase or through a revolving fund and conservation covenant.

Ex 14. *Crib Point – Bittern remnant woodlands, centred on Disney St, Bittern.*

A diverse range of remnant woodlands occur on private and public land zoned for low-density residential development and port related infrastructure in the Crib-Point – Bittern district. They have a diverse native ground flora, rich in orchids, and provide habitat for fauna that is becoming uncommon on the Peninsula such as eastern grey kangaroos and echidnas. They connect with large remnants of swamp scrub and other habitat types on HMAS Cerberus naval base and potentially could provide habitat for rare fauna. It is important that the Native Vegetation Framework is effectively applied to any further development at Crib Point and Bittern to ensure that it protects this valuable remnant vegetation. In particular, undeveloped lots north of Disney St, owned by the Department of Treasury and Finance, should be retained in public ownership for conservation purposes.

Examples: clearing due to inappropriate development

Ex 15. *Sweet Wattle Drive subdivision, Cranbourne South.*

This recent rural lifestyle subdivision has occurred in the largest remnant of heathy woodland south of Cranbourne. Intended to attract environmentally conscious buyers, it has instead resulted in incremental clearing and fragmentation of the remnant due to building of houses, gardens and firebreaks.

4. Swamps, heaths and woodlands of Melbourne's southeast plains

Conservation values

Only a few small remnants survive of the original vegetation types of Melbourne's southeast plains. Hence all remnant vegetation in this landscape is now important for biodiversity conservation. The plains were once covered by extensive swamps and wetlands, heaths, and heathy and grassy woodlands.

Whilst some remnant vegetation, especially wetlands, has been incorporated into reserves like Braeside Park and Edithvale and Seaford reserves, a substantial proportion occurs on privately owned urban land or on freeway easements. This includes endangered vegetation types such as Plains Grassy Woodland, Swamp Scrub and Herb-rich Grassy Wetland. The latter in particular is under threat. It contains rich diversity of grasses, sedges and small flowering plants, yet has been reduced to a few tiny patches around the southeast of Melbourne and South Gippsland. The extensive "sand belt" golf courses also support small remnants, especially of sand heath.

Development pressures and other threats

One of the best quality remnants of Herb-rich Grassy Wetland has recently been destroyed by the intersection of the Eastlink and Mornington Peninsula Freeways, whilst over half of the largest remnant of this community is on land zoned for residential development. The proposed Dingley Freeway easement also supports a remnant of Herb-rich Grassy Wetland as well as Swamp Scrub. Industrial and residential zoned land supports small remnants of Gippsland Plains Grassy Woodland some of which have been partially cleared through recent development permits, whilst others have been retained.

Planning solutions and other conservation measures

- Review the need for new freeways in the light of the impending oil scarcity, and ensure that any new freeways are appropriately aligned or use tunnels to avoid native vegetation loss.
- Retain remnant vegetation on freeway easements and other publicly owned land for conservation purposes – do not sell such land for development.
- Apply the Operational Guidelines to permits for subdivision and residential and industrial development to ensure that the majority of remnant vegetation is protected in a contiguous reserve
- Negotiate landswaps / transferable development rights where possible, to provide alternative cleared sites for development whilst the developer forgoes development expectations in environmentally sensitive areas
- Provide funding for public purchase of priority remnants on privately owned land.

Examples: remnants needing protection

Ex 16. Boggy Ck grassy wetland, Seaford.

One of the best remaining patches of Herb-rich plains Grassy Wetland (about 10ha in extent) has just been destroyed by the construction of the Eastlink - Mornington Freeway interchange. The wetland and fringing habitat types supported state significant plant species, like Pale Swamp Everlasting, and Gilgai blown Grass, along with populations of the rare Jacky Dragon, Lowland Copperhead, and Glossy Grass Skink. The freeway intersection could have been realigned to go through cleared paddocks, but instead has been placed through the middle of this remnant, destroying it directly and by altering the local hydrology. The translocation of plants and topsoil from the site will do little to perpetuate this remnant ecosystem.

Ex 17. Barnbam Swamp grassy wetland, Lynbrook, near Cranbourne. This is the largest remnant of Herb-rich Plains Grassy Wetland in the Port Phillip region – about 40ha surviving from the original 500 ha of Barnbam Swamp. Whilst the northern part has been reserved, over half, together with a patch of endangered Swamp Scrub and Deep Marsh, is located on land zoned for residential development. DSE and council are currently negotiating a development plan with the owner. It is imperative that Barnbam Swamp be permanently protected, preferably through public purchase, as an offset for destructive of Boggy Creek wetland..

Ex 18. Dingley grassy wetland and swamp scrub, on proposed Dingley Freeway easement at intersection with Westall Road extension.

About 3-4ha of Herb-rich Plains Grassy Wetland and a similar area of Swamp Scrub occurs on the easement north of Dingley.

Ex 19. Chicquita Park, Kingston.

This 1.5 ha remnant of heathy woodland and sand heathland was sold for residential development by the Federal Government in 2001. Kingston Council has recently supported a planning scheme amendment that will allow medium density housing over more than half of the land. Whilst most of the trees are to be retained, the development will effectively destroy the potential to conserve and regenerate this remnant, including the soil seed bank. State Government and Council would need to contribute financially to acquire the whole park for public open space.

5. Open eucalypt forests of the eastern-suburbs*Conservation values*

Like Melbourne's southeast plains, the low rolling hills of the eastern suburbs retain very little of their original vegetation cover: mainly open eucalypt forests interspersed with swampy woodlands along creeklines and floodplains. Valley heathy forest, which has national significance, was characteristic of this landscape. All remnant patches are now important for conserving these regionally endangered vegetation types. Along the Mullum-Mullum Creek Valley they are still inter-connected into an important habitat link. Many of these eastern suburb remnants support a rich diversity of native plants, including an orchid at Kilsyth South found nowhere else in the world. Even in residential areas, small remnants and scattered canopy trees in gardens provide habitat for a range of native birds and other fauna.

Development pressures and other threats

A substantial number of the larger and more intact remnants lie in the path of proposed freeways, or on surplus freeway easements which are at risk of being sold for development. The latter could apply in part to remnant forest along the Mullum Mullum – see below.

Small remnants and scattered canopy trees in residential areas continue to be cleared as larger lots are subdivided and by owners extending their houses and exotic gardens. Whilst there have been some good recent planning decisions requiring environmentally sensitive residential design, other planning permits have approved high impact developments with excessive tree clearing. One of the most ecologically valuable patches of remnant forest and wetland in the eastern suburbs is at risk through inappropriate development of residential bush-blocks.

At least one important wetland remnant lies on undeveloped industrial land.

Planning solutions and other conservation measures

- Review the need for new freeways in the light of the impending oil scarcity, alternatively and ensure that any new freeways are appropriately aligned or use tunnels to avoid native vegetation loss. Retain remnant vegetation on surplus freeway easements in public ownership.
- Apply the Native Vegetation Framework and Operational Guidelines to ensure that new subdivision and development is sensitively designed to protect the majority of remnant vegetation in a contiguous reserve
- Minimise loss of remnant canopy and understorey on existing residential lots, by requiring environmentally sensitive site design through the application of planning scheme overlays and community education
- Purchase the lots supporting the Kilsyth South spider orchid

Examples: remnants needing protection

Ex 20. Only known habitat of endangered Kilsyth South Spider Orchid

State significant remnant forest of silver-leaf stringybark and swamp gum with an orchid found nowhere else in the world, has been subdivided into low density residential lots of about 2ha in size. The orchid and other rare plant species, along with rich bird habitat, are now under grave threat from clearing activities by landowners and inappropriate livestock grazing. The orchid properties in particular are a priority to purchase and add to the adjacent reserve.

Ex 21. Mullum-Mullum Forestway, Mullum Mullum valley near Ringwood, Koonung valley near Nunawading.

The valley of Mullum Mullum Creek supports an important habitat corridor for koalas, kangaroos and other wildlife, and is one of the largest remnants of endangered eastern suburbs valley heathy forest. Yet much of this lies on surplus freeway easement which could be sold for housing development by VicRoads. Similarly parts of the freeway easement in the neighbouring

Koonung Valley support forest remnants and potential habitat links, yet they too could be sold for development

Ex 22. Bayswater North Herb-rich Grassy Wetland, easement of proposed Healesville Freeway.near Dorset Rd

An irreplaceable 7ha remnant of endangered herb-rich plains grassy wetland occurs on the easement and is under threat should a freeway be built. Only a few small patches of this ecosystem remain, most of them scattered about the southeastern suburbs of Melbourne and in South Gippsland. This important outlier supports a number of rare plants species including swamp everlasting, listed under the Flora and Fauna Guarantee Act.

Ex 23. Wantirna Valley Heathy Forest, next to Eastlink Freeway on the easement of the proposed Healesville Freeway

A remnant of valley heathy Forest – about 10ha – of very high conservation significance occurs on freeway easement land in Wantirna. It has been used as a source of seed for revegetation projects in the eastern suburbs, yet is under threat by the proposed freeway.

Examples: good planning decisions that avoid clearing

Ex 24. Remnant forest of the Benedictine Monastery, Webster Avenue, Croydon.

Over 1 ha of high and very high significance valley heathy forest, including a rare westerly occurrence of white stringybark eucalypts, is zoned for residential development on previous monastery land near Croydon. The owners applied to build a medium-density housing development that would have cleared most of the remnant. However on appeal VCAT refused the permit on the grounds that it did not achieve an appropriate balance between native vegetation conservation and residential development.

6. Nillumbik foothill forests and Yarra habitat link

Conservation values

Unlike Melbourne's other landscapes, the Nillumbik foothills still retain a substantial proportion of their original forest cover. This includes a diverse range of grassy and drier forest types on the slopes and ridges, with box, ironbark and peppermint eucalypts, and tall red gum and manna gum habitat along the creeks. Fauna inhabiting these forests include the threatened brush-tailed phascogale, swift parrot, Eltham copper butterfly, and a diverse range of orchids occur in the ground layer.

Whilst these forests have been partially cleared and fragmented for farming, and more recently for residential and rural-living development, there is still the opportunity to maintain and restore large viable areas of habitat. In particular local Landcare groups are working to restore a habitat link stretching from the Yarra River near Eltham right up to Kinglake National Park.

Development pressures and other threats

Large areas of the forest habitat link have been zoned for low density residential development around Warrandyte North, and parts of Eltham, Diamond Creek and Plenty. The understorey and the canopy cover are progressively fragmented and cleared, as houses are constructed on individual lots, with associated gardens, sheds, fire-breaks etc, and as new small lots are created through subdivision. This process has already removed most of the original forest in Eltham. On green wedge land forest cover is also being cleared and fragmented through, rural lifestyle subdivisions, and excessive clearing for houses, views etc on existing lots.

Planning solutions and other conservation measures

- Maintain the Urban-Growth Boundary to ensure that no additional areas of remnant forest are zoned for residential development;
- Apply the Operational Guidelines to subdivision permits, and increase minimum lot sizes in the green wedge to ensure that rural lifestyle subdivision does not cause clearing or fragmentation of remnant forest
- Apply the Operational Guidelines to subdivision permits in residential and low-density residential zones, to ensure that subdivision is sensitively designed to retain the majority of remnant forest.
- Apply the Operational Guidelines to permits for development of individual lots to ensure that development is sensitively located and designed to avoid and minimise clearing;
- Apply tenement controls/ restructure overlays to restrict the development of multiple under-size lots in one ownership, where this will cause loss of remnant forest.