ABSTRACT

Whilst the Shire does have VPO’s in Southern Peninsula townships, there use for desirable control is failing without the further ESO, or tightening and rewriting of the VPO’s. The statement within VPO1 (see attached) is to maintain a balance. There is no control mechanism within the VPO to stipulate as to how this is to be achieved or maintained, no control mechanism for weed species that are a threat to vegetation in these areas that serve important environmental functions in providing areas of habitat and habitat corridors, assist in soil stability, reduce intensity of stormwater runoff and limit the erosion.
**Introduction.**

Save Tootgarook Swamp would like to thank the Shire for undertaking this important role in facilitating and encouraging biodiversity.

Our organisation sees the Shire’s biodiversity plan as an extreme important policy instrument within our geographic region.

We feel the Conservation Plan is well put though think certain aspects within it, need to be further developed.

We understand that some might not agree with the view we put forward though believe that if certain goals are not achieved, we will inevitably see a continued decline of biodiversity and what is termed as extinction debt within areas of the Mornington Peninsula in particular townships that hold higher biodiversity values, such as areas of the Southern and Eastern townships of the Mornington Peninsula. The Southern Peninsula is probably the best example as almost the entire ecological community is within residential areas.

In our view, we are not just losing habitat to development, but to inadequacies within planning scheme policy due to lack of revision and failure to understand biodiversity.

As the Victorian Practice note on Biodiversity from 2002 (see attachments) states;

> “It is important to recognise that managing biodiversity on private land is now our greatest conservation challenge and opportunity. Approximately 60 per cent of remnant vegetation on private land is of a threatened ecological vegetation class (EVC). Dedicated reserves, such as national parks, do not capture a representative and adequate array of ecosystems. Reserves alone cannot adequately protect biodiversity from further decline or loss.”

**Our premises:**

**Title holding is not ownership nb¹**

In Australia there is no allodial land as the Crown (The Queen) is the ultimate owner, that is when you purchase land essentially you only purchase a usage and development right, to which you must seek permission from the Crown's representatives to develop or use for particular things.

The land and all its features essentially belong to the crown.

Title to land derives from Crown grant as the Crown is the source of all tenure.

Because of this there is no true ownership or ability to do with land as you please. It is essential to do due diligence and look at the restrictions of the land which could affect usage and development.

¹ This is the current the sovereign recognised by the Australian Government not necessarily the view of whom should hold sovereignty by Save Tootgarook Swamp or its members.
In basic terms; in Australia we do not own the land instead we own an indefinite usage and development right to develop or use the land, essentially, we are custodians of the land until we pass that right on, to the subsequent owner of that usage and development right.

To do certain things we need to seek permission from the Crown in the form of a permit because ultimately it is the Crowns land offered to us thru tenure. It is the Crowns instruments that say what can or cannot be done on the land or with it. Hence why we pay taxes and rates, and zones and overlays can be changed.

It is important that title holders realise that they do not own the land just a development and use right, and essentially are custodians to the vegetation and biodiversity that belong to all Victorians and all generations through the crown, hence the need for permission to modify and or remove it.

Ultimately all Australian land is held by tenure rather than absolute ownership.

We believe that the Shire needs to inform a title holder of their responsibility prior to them acquiring the title they should be aware of their inherent obligations as custodians. By knowing this we say that not only can better stewardship of the lands feature occur, but better compliance can occur in holding responsibility for damage to vegetation and biodiversity.

**Standard cultural practices.**

Inappropriate gardening techniques what we term the standard because it is performed by the ill-informed majority are a major threat. It revolves around the European concept of a manicured garden. When in areas of VPO’s (Vegetation Protection Overlay) the culture clash can be easily seen.

Ground flora, including mosses orchids scramblers herbs and grasses, are mown away and sprayed with broad-spectrum herbicides. Climbers, trees and shrubs consistently pruned and cut, lopped and removed, resulting in destruction of native vegetation, then consistently replaced with lesser or non-supporting habitat fire prone introduced vegetation.

In addition to bad industry practices, some native vegetation is still being removed for firewood in particular locations. In some cases, native vegetation is deliberately harmed, in order to facilitate development.

This is a culture promoting death by attrition for our indigenous flora and fauna and continually undermining the validity and importance of the VPOs and ESOs (Environmental Significance Overlay).
The issue of High Biodiversity townships.

In our knowledge of the Mornington Peninsula Shire planning scheme it seems that there are large gaps left out in terms of protecting the Southern Peninsula townships through the use of instruments such as the Environmental Significance Overlay (ESO).

Townships central and on the western side of the Peninsula seem to overlap ESO and VPO (Figure 3.), though there are others that are of high significance with little or no protection.
Our organisation surmises that the VPO’s were originally placed on these areas in order to protect the aesthetics and character of the natural existing vegetation, or what is now referred to as EVC’s (Ecological Vegetation Class).

We would also say that there are areas within townships such as Capel Sound that do contain significant vegetation (Coast Banksia Woodland remnants) though include no protection for vegetation at all.

Whilst the Shire does have VPO’s in Southern Peninsula townships, there use for desirable control is failing without the further ESO, or tightening and rewriting of the VPO’s. The statement within VPO1 (see attached) is to maintain a balance.

There is no control mechanism within the VPO to stipulate as to how this is to be achieved or maintained, no control mechanism for weed species that are a threat to vegetation in these areas that serve important environmental functions in providing areas of habitat and habitat corridors, assist in soil stability, reduce intensity of stormwater runoff and limit the erosion.

It could be argued that the VPO’s are made outdated with the updates that have occurred to Garden Space requirements under planning provision sections 54 and 55 (Dwelling Considerations) of the planning scheme and Native Vegetation Removal under section 52.17, and coupled with 44.06 BMO (Bushfire Management Overlay) and 53.02 (Bush Fire planning).

The statement of the VPOs are no longer able to be achieved.

It is clear that the BMO completely overrides the VPO and its effect on modifying remanent vegetation is immense, especially due to no control over what species may be reintroduced to a site and lack of enforcement on those restrictions. Some introduced vegetation is highly flammable weeds, which poses the greatest fire risk on the Southern Peninsula.

**On the matter of Fire.**

On this matter our organisation believes it would be more logical to ensure retrofitting of Bushfire Attack Level to existing homes, rather than the sporadic ill-informed inappropriate fire regimes that increase flammable weeds by residents.
Whilst the requirements of the BMO (a report by a qualified ecologist in fire along with recommendations) is needed to comply with for a planning/building permit, after it is completed highly flammable non-indigenous species can be introduced by the property owner or subsequent owners with a high fuel load. There is no avoiding the BMO legislation and it has no third-party rights appeal.

The Shire should be Encouraging retrofits for fire and promoting legislation on the state and local level to assist existing neighbourhoods-at-risk in retrofitting homes with known safety features (e.g., external sprinklers, ember-resistant vents, replacing flammable roofing and siding with fire-resistant material, etc.). It should be convincing the State government to establish a tax rebate program, similar to the one used to promote the installation of solar panels, to encourage homeowners to install such fire safety features, as well as providing incentives to roofing companies to develop and provide external sprinkler systems for homes.

New information from the United States indicates that excessive clearance distances beyond 100 feet (30 meters) of defensible space actually increases fire risk by encouraging the growth of more flammable non-native weeds and creates a “bowling alley” for embers to target homes.

Then, if there is available space, vegetation within 100 feet (30 meters) of the structure should be properly thinned (not cleared).²

There are even suggestions that the word ‘clearing’ be replaced with ‘fuel modification’ to avoid confusion.

There seems to be a big misunderstanding within the community about removal of vegetation as some of the vegetation being removed is actually less prone to fires and their disturbance and removal sees fire prone weeds invade and encouraged. Indigenous species like Bower Spinach *Tetragonia implexicoma*, and Rhagodia candolleana subsp. *Candolleana* *Seaberry Saltbush* are removed even though they are of very low fire risk and replaced by flammable weeds.

It is known that Coastal Moonah Woodland if kept free of human disturbance is a low fire occurrence vegetation type. The least disturbed and therefore oldest stands of this coastal community were usually dominated by *M. lanceolata* with extensive moss beds and low fuel loads³. Human modification to this community will increase fire likelihood.

We have found reference to Moonah not being able to carry fire from 1916:

> *The sandhills on the south of this country constitute a curious formation, which is aptly described by the local name of "Cups and Saucers," or, in short, "the Cups." This was regarded as' useless country, full of scrub and rabbits; but, following the example of a Rye farmer, Mr. Brown, whose name is often quoted in this connection, and who introduced the practice from King Island, melilotus is sown amongst the scrub, fed off lightly, or not at all,*

² [http://www.californiachaparral.org/images/From_the_House_Outward.pdf](http://www.californiachaparral.org/images/From_the_House_Outward.pdf) Protecting your home from wildfire  From the California Chaparral Institute

³ The effects of fire on calcareous dune vegetation in coastal south-eastern Australia Claire Moxham*1 and Vivienne Turner1
allowed to seed, and then the bulk of material when fired is enough to carry the fire through every thing. The melilotus is here performing its true office of providing feed where nothing else will grow, and gradually enriching the soil and fitting it for better pastures.\textsuperscript{4}

Based on this and other historic records and the community’s FFG listed status, prescriptive control should be occurring in areas of Coast Moonah Woodland within residential areas. Firstly, to reduce the likelihood of fire occurring. Secondly, to ensure the longevity of the FFG listed community and finally, because this community is essentially the character of the Southern Peninsula (Nepean Peninsula).

In light of the aforementioned premises, these factors should be of serious concern to the continued Biodiversity of the Southern Peninsula.

**Which Biodiversity is under most threat?**

We believe that the entire section Heathland and Scrub and sections of Forests and Woodland of the Southern Peninsula are under immediate and ongoing threat.

![Figure 4. Major Vegetation Types on the Mornington Peninsula (MPSC Biodiversity Plan)](image)

Within these areas' communities, such as EVC 838 Coastal Alkaline Scrub, with components listed under the Flora and Fauna Guarantee Act FFG, Coastal Moonah Woodland, as well as individual assets that are listed under the Environmental Protection Biodiversity Conservation Act (EPBC) are

being modified continually from the continued standard cultural practice creating a long-term decline in biodiversity.

Diversion away from the natural form and towards introduced plants and habitats is encouraging invasive species such as Polygala, Cotoneaster, Italian Buckthorn, and Common myna, are leading to the decline of biodiversity on the Southern Peninsula and this is without considering other feral species such as cats and dogs and human factors.

On this point of flora we find that indigenous food groups for indigenous fauna species are being removed while we introduce non-indigenous flora species with food groups that provide greater support for non-indigenous fauna.

While these introduced sources for introduced fauna species may not be available all year round, they (introduced fauna) then compete against indigenous fauna species. This introduced fauna then also heavily rely on human direct and indirect food supplementation.

Research shows, that density of introduced fauna species is greatest in human modified habitats compared to non-human modified habitat. Introduced species rely on the non-modified habitat for harbour though often they cannot survive without the adjacent human modified habitat that provides direct and indirect support for food supplement when it may be scarce.5

Ultimately to stop and reverse this decline we need to ensure that a balance is struck in these VPO areas. This could be done either by the tightening and updating of the existing VPO, or its removal and replacement with an ESO (Environmental Significance Overlay) and or both.

Overall, we find that many of the Shires VPOs as well as ESOs statements are poorly written and are no longer adequate. This has led to weak and ineffective results from the purpose of the overlays.

A good example of this the current reviews of the ESOs within the Tootgarook Swamp precinct, and the Planning Panels Victoria recommendation. The panel found to many overlays and requested there be a review as in its view ESOs are not to be placed on top of one other due to the encumbrances it causes. The panel accepted the last interim overlay ESO 30 was installed due to inadequacies of the previous overlays not fully addressing the values of the Wetland particularly fauna.

A complete review of all VPO’s and ESO’s needs to be completed throughout the entire shire with the Shires biodiversity plan forming an Incorporated Document as foundation for the VPO’s and ESO’s.

We believe that at minimum the ESO statements could be broken into the 5 Major vegetation types on the Mornington Peninsula with particular special individual ESO’s where there is a combination/complex of these vegetation types e.g. Greens Bush, Cerberus Naval Base, Hastings Coastal area, and Tootgarook Swamp.

It should be said that the Western Port side needs particular attention and protection regardless of the PAO (Public Acquisition Overlay) overlays here would help protect biodiversity assets and shape future development if any development of the PAO occurred, it would help prevent inappropriate development of this important area.

The VPO’s could be written to protect particular EVC’s including remnant patches that still occur inside townships with proscriptive vegetation planting to ensure the protection of the habitat and EVC in to the long term future.

It should be said that we view people whom live in these areas are fortunate and receive an intrinsic direct benefit from living in these localities,

We find the current (42_02s01) VPO Schedule 1 failing on almost all of the objective points.

- To protect and conserve native vegetation, including grasses and ground flora.
- To protect and conserve the habitat value of vegetation within township areas.
- To encourage strategic replanting to provide for the long-term maintenance of landscape and environmental values within townships.
- To ensure that the proposed relocation of dwellings, or other buildings, includes measures to minimise the removal of vegetation on site and from road reserves.
- To prevent the premature removal of vegetation from a site prior to consideration of design options for a proposed development.
- To ensure that subdivision and development proposals have proper regard to the landscape character of township areas.

We find the current (42_02s02) VPO Schedule 2 as inconsistent and inconsequential for the Peninsulas biodiversity and protects species that create fire risk and lead to long term declines in biodiversity.

We wonder why roadside vegetation needs such an overlay, considering all nature strips are Shire land, where 52.17 native vegetation removal already applies as well as the FFG Act.

We see that this overlay is inhibitive and contradictory for the removal of weed species considering it requires that a permit is required to remove, destroy or lop any vegetation including species that is on the Shires weed list.

With this we ask what considerations are undertaken for works for maintenance of Bushfire recommendations of powerlines and essential infrastructure along roadside reserves is planning approached via protection and favouring of native vegetation?

We see it essential that shire lists any of its native weeds (e.g. Bluebell Creeper Billardiera heterophylla, Sallow Wattle Acacia Longifolia, etc) to exempt it from excessive clauses that protect weed species in the removal of vegetation specified in the schedule to Clause 52.17.

Implementation of BSUD (Biodiversity Sensitive Urban Design).
Policy Perspective: Biodiversity Sensitive Urban Design - A framework has already been constructed by RMIT (see attachment).

We believe that the current information being held, and policy being developed by the Shire are part of what would be the founding steps for BSUD. In this Perspective, we outline the framework for incorporating BSUD into urban development decision-making.

To achieve onsite biodiversity benefits, BSUD must mitigate the detrimental impacts of urbanization, while encouraging community stewardship of biodiversity by facilitating positive human–nature interactions. We have distilled relevant ecological knowledge for addressing the impacts of urbanization into five BSUD principles:

(1) Maintain and introduce habitat.
New developments can be planned to avoid habitat loss by prioritizing development in areas of low ecological value (Bekessy et al. 2012). Retaining and protecting existing vegetation during the development process can also be beneficial for biodiversity (Hostetler 2012; Ikin et al. 2015). Habitat can be enhanced or created in existing urban areas by using native plant species and increasing vegetation complexity (Ikin et al. 2015; Threlfall et al. 2016), adding green infrastructure (Williams et al. 2014) or incorporating critical resources and habitat analogues, such as habitat walls (Figure 1C; Lundholm & Richardson 2010). Residential gardens can be significant habitat, so resident-led wildlife gardening programs can make a valuable contribution to biodiversity (Goddard et al. 2010).

(2) Facilitate dispersal.
Dispersal can be facilitated by adding animal movement infrastructure (Taylor & Goldingay 2012), or establishing habitat connectivity corridors through private and public land (Goddard et al. 2010). Care should be taken to avoid inadvertently facilitating the spread of invasive weeds and pests.

(3) Minimize threats and anthropogenic disturbances.
The impact of weeds and exotic predators can be reduced by landscaping with indigenous plants and establishing pet containment programs (Ikin et al. 2015). Increased runoff and nutrient loads can be mitigated by vegetated swales and rain gardens, which also deliver biodiversity benefits. The impact of noise and light pollution can be mitigated by sound barriers (although take care that this does not affect dispersal), temporary road closures and dimming or reconfiguring street lights (Gaston et al. 2012).

(4) Facilitate natural ecological processes.
The disruptive effects of urbanization on natural cycles, ecological processes and disturbance regimes (Grimm et al. 2008) can be mitigated by providing adequate resources for target species, protecting and enhancing pollinator habitat, and planning to safely enable natural disturbance events such as fire and flooding.

(5) Improve potential for positive human–nature interactions.
Cities are human environments and public engagement is key to successful conservation (Cooper et al. 2007). Urban design can help facilitate local stewardship of biodiversity by providing “cues to care” (Nassauer 1995), creating opportunities for positive interactions with nature, and addressing conflicts between biodiversity and safety objectives (Ikin et al. 2015) or potential ecosystem disservices.

Conclusions.
Without action, our biodiversity is going to continue to decline. Drastic measures are needed to combat the current cultures, lack of knowledge and awareness of the Peninsulas biodiversity within the greater community.
Much of this change will need to come from policy and instruments, incentives and disincentives to drive the change, much as the same as how policy direction is encouraged for other sectors.

We submit some articles to Shire based on some global studies6 to consider as part of our submission.

The first one is titled “The small patch of bush over your back fence might be key to a species’ survival” a small extract;

6 Global synthesis of conservation studies reveals the importance of small habitat patches for biodiversity; Brendan A. Wintle, Heini Kujala, Amy Whitehead, Alison Cameron, Sam Velo, Aija Kukkala, Atte Moilanen, Ascelin Gordon, Pia E. Lentini, Natasha C. R. Cadenhead, and Sarah A. Bekessy PNAS January 15, 2019
https://www.pnas.org/content/116/3/909
“Our newly published global study of the conservation value of landscapes in 27 countries across four continents has found these small patches of habitat are critical to the long-term survival of many rare and endangered species.

In Australia, our cities are home to, on average, three times as many threatened species per unit area as rural environments. This means urbanisation is one of the most destructive processes for biodiversity.

It tends to be the smaller patches of vegetation that go first, making way for a housing development, a freeway extension, or power lines. Despite government commitments to enhance the vegetation cover of urban areas and halt species extinctions, the loss of vegetation in Australian cities continues.

Mostly, policymakers and scientists do not consider these losses to be, on their own, a fatal blow to the biodiversity of a region or country. Small, often isolated patches of vegetation are considered expendable, tradeable, of limited ecological value due to their small size and relatively large amount of “edgy” habitat. Wrong.”

The second is titled “Here’s how to design cities where people and nature can both flourish” a small extract.

“Urban nature has a critical role to play in the future liveability of cities. An emerging body of research reveals that bringing nature back into our cities can deliver a truly impressive array of benefits, ranging from health and well-being to climate change adaptation and mitigation. Aside from benefits for people, cities are often hotspots for threatened species and are justifiable locations for serious investment in nature conservation for its own sake.

Australian cities are home to, on average, three times as many threatened species per unit area as rural environments. Yet this also means urbanisation remains one of the most destructive processes for biodiversity.

An impression of biodiversity sensitive urban design (BSUD) developed by the authors in collaboration with Mauro Baracco, Jonathan Ware and Catherine Horwill of RMIT’s School of Architecture and Design. Author provided

Here’s how to design cities where people and nature can both flourish

Despite government commitments to green urban areas, vegetation cover in cities continues to decline. A recent report found that greening efforts of most of our metropolitan local governments are actually going backwards.

Current urban planning approaches typically consider biodiversity a constraint – a “problem” to be dealt with. At best, biodiversity in urban areas is “offset”, often far from the site of impact.

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7 The small patch of bush over your back fence might be key to a species’ survival; Authors Brendan Wintle Professor Conservation Ecology, University of Melbourne, Sarah Bekessy Professor, RMIT University. Contributors; Heini Kujala Senior Research Fellow, University of Melbourne Natasha Cadenhead Research Assistant, University of Melbourne. December 13, 2018
http://theconversation.com/the-small-patch-of-bush-over-your-back-fence-might-be-key-to-a-species-survival-108672?fbclid=IwAR2s-YvBEpcTJ2goAtzmSNXiEWGWywBPDADdozBOLYljq5OPBacVQTcN4Alg
This is a poor solution because it fails to provide nature in the places where people can benefit most from interacting with it. It also delivers questionable ecological outcomes."

We also provide an example of what we believe is a better written VPO from the city of Knox than Shires VPO’s which we believe are not prescriptive or descriptive enough. The practice notes from the Victorian Government on Vegetation Protection in Urban Areas VPP as well as Biodiversity VPP which show the level to which overlays can be written. We believe many of the Shires VPO’s and ESO’s are not strong or reflective enough of the areas values that they seek to protect and guide any appropriate development for.

**Recommendations for Mornington Peninsula Shire.**

- Implementation of BSUD (Biodiversity Sensitive Urban Design) concepts.

- Any land under VPO should be sold with a 173 agreement or tighten the VPO to include:
  
  - The Vegetation Protection Overlay - needs to prescribe vegetation planting as per the EVC of district.
  
  - Section 173 agreements to ensure fire plans for developments are continuous with the land title.
  
  - Section 173 agreements need to list significant vegetation recorded on the property to hold land owners to account and promote stewardship of it.
  
  - In some areas the VPO or 173 agreement should only allow for indigenous vegetation to be provided for greater support for biodiversity, and other a listed variable balance percentage.

- The listed balance of vegetation between native, introduced and between built form needs to be tangible and enforceable.

- Promote a greater understanding about how native vegetation also provides erosion stability and decreases fire risk.

- Creation of local laws prohibiting problem weeds from the Shire, so that easy enforcement can occur on the land and commence with local magistrates.

- Relentless pursuit protection of indigenous nature strip and roadside vegetation. It very may well be the only remaining indigenous vegetation for supporting greater biodiversity in the

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**Here’s how to design cities where people and nature can both flourish;**  
Authors  
Georgia Garrard  Senior Research Fellow, Interdisciplinary Conservation Science Research Group, RMIT University, Nicholas Williams Associate Professor in Urban Ecology and Urban Horticulture, University of Melbourne, Sarah Bekessy Professor, RMIT University.  
**October 24, 2018**  
area. Should this be considered as weight in enforcement proceedings?

- Ensure Shire contractors are using acceptable practices for weeding (such as roadside crews and parks and gardens crews).
  That is always using selective herbicides, before broad-spectrum herbicides, and that plant identification skills are of a sufficient level.

- Consider special charge schemes for those whom properties gain direct financial gain/benefit from the exclusiveness of the Shires adjacent biodiverse areas (e.g. residences surrounded by Trust for Nature covenanted reserves, e.g. Peninsula Sands, Sandstone Island near Warringine Park) offer discounts to those whom join Friends groups of these reserves or ensure that their gardens either provide additional habitat or compliments surrounding covenanted area.

- Review of all existing VPOs and ESOs within the Mornington Peninsula Shire to tie in with the Shires Biodiversity Plan. Breaking them up into Major vegetation types, or further to EVCs.

- Easy reporting and compliance methods for dealing with free ranging cats and dogs.

- An ongoing education to ensure title holders understand their obligations when it comes to our biodiversity and promote stewardship of being part of this biodiversity.
Kind Regards,

Cameron Brown
President

Maayan Rousso
Vice President

0409 936 577

[Image]

www.savetootgarookswamp.org

Are you a defender of biodiversity?

Could you please help by kindly donating?

Account Name: Save Tootgarook Swamp
Financial Institution: Commonwealth Bank of Australia
BSB: 06 3540
Account Number: 1058 2313
Vegetation protection objective to be achieved

- To recognise areas where substantial vegetation cover is the dominant visual and environmental feature.
- To ensure that subdivision and development proposals have proper regard to the landscape character of township areas.
- To ensure that new development has proper regard for the established landscape, streetscape and development pattern in terms of being consistent with the existing balance between vegetation and building form in the local area and contributing to the landscape character of the area.
- To ensure that any removal of natural vegetation and works associated with development in environmentally sensitive areas, including streamlining areas, is carried out with proper regard to the physical characteristics of each site and the local area.
- To avoid gouging on the steeper slopes of Arthur's Seat.
- To ensure that any removal of natural vegetation in proximity to the Port Nepean National Park or other public land has proper regard to the impact on these areas.
- To protect and conserve native vegetation, including grasses and ground flora.
- To protect and conserve the habitat value of vegetation within township areas.
- To encourage strategic replanting to provide for the long term maintenance of landscape and environmental values within townships.
- To ensure that the proposed relocation of dwellings, or other buildings, includes measures to minimise the removal of vegetation on site and from road reserves.
- To prevent the premature removal of vegetation from a site prior to consideration of design options for a proposed development.
3.0 Permit requirement

A permit is required to remove, destroy or lop any vegetation, except for:

- The removal of vegetation which is to be carried out in conjunction with a development approved under a planning permit and in accordance with an endorsed plan.
- The removal of vegetation necessary for the construction of a dwelling, dwelling extension or outbuilding where no planning permit is required and provided that:
  - A building permit has been granted for the proposed development.
  - Vegetation is only removed from the building footprint or within 2 metres of the proposed building.
  - No tree with a trunk circumference greater than 0.35 metres is removed within 6 metres of a road frontage.
- The removal of vegetation, not within a road reserve, to enable the formation of a single crossing and access driveway with a maximum width of 3.7 metres.
- The removal of vegetation which presents an immediate risk of personal injury or damage to property including the cutting of single trees located within 3 metres of a dwelling or outbuilding, or which overhangs a boundary line.
- The removal of any dead timber or branch which has occurred through natural circumstances, fire or the spread of noxious weeds.
- The removal of any tree or branch of a tree which impairs the access of motor vehicles along any existing or approved access track, provided that such access track has a width no greater than 3.7 metres.
- The maintenance of landscaping, including pruning, which does not effect the stability, general form and viability of the vegetation.
- The removal of vegetation that has been established for less than 10 years and which is not required as landscaping under a planning approval.
- The removal of vegetation specified in the schedule to Clause 52.17.

An application for permit must be accompanied by a vegetation management plan clearly indicating:

- All existing vegetation on the site, the extent and purpose of proposed vegetation removal and the species, density and location of trees and other vegetation to be planted.
- The location of any watercourse on the property, and, if relevant, the location of areas where the ground slope exceeds 20 percent.

Where it is proposed to relocate a building, the application must specify the intended access route and provide an assessment of the vegetation impact, both on the site and on road reserves, including any proposed replanting.

4.0 Decision guidelines

Before deciding on an application, the responsible authority must consider, as appropriate:

- The vegetation protection objectives of this schedule.
- The value of the native vegetation to be removed in terms of its habitat, landscape and environmental values, age, physical condition, rarity or variety.
The need for a report, by a properly qualified person and to the satisfaction of the responsible authority, on the vegetation and habitat significance of the vegetation to be removed.

Whether there is any reasonable alternative means of siting buildings and works in order to conserve the native vegetation of the area.

The extent of the proposed vegetation removal and its likely effect on the stability of the site, particularly along streamlines or in erosion prone areas.

The extent to which the removal of vegetation is necessary to achieve proper fire management.

The benefit of conditions providing for the relocation of significant species prior to development of a site, having particular regard to the occurrence of native orchids.

The benefit of conditions requiring planting, replanting and other treatment of the land, having regard to the relationship between buildings and the landscape and the maintenance, where possible, of shared view lines.

The need for replacement vegetation to be of an appropriate species and to exclude environmental weeds.

The need for a condition requiring the payment of a bond as part of a development approval to ensure that no unauthorised removal of vegetation occurs.

The comments of any relevant coastal management, fire prevention, land management or soil conservation authority.
SCHEDULE 2 TO THE VEGETATION PROTECTION OVERLAY

Shown on the planning scheme map as VPO2.

Significant Treelines

1.0

Statement of nature and significance of vegetation to be protected

Treelines within roadside reserves, along streamlines and within properties form important habitat and landscape elements on the Mornington Peninsula. Treelines often act as habitat corridors linking other, more substantial, areas of remnant vegetation. These factors are emphasised in the State’s Road Side Management Strategy. Many treelines, including those composed of non-indigenous trees, such as Monterey or Radiata Pines, are culturally significant elements of the Peninsula landscape.

2.0

Vegetation protection objective to be achieved

- To protect and conserve native vegetation and habitat areas, including those of rare, threatened and endangered flora and fauna species, along roadsides, streamlines, linear reserves and other treelines.
- To maintain the high landscape quality of roadsides and other areas.
- To maintain and enhance the habitat value and corridor function of treelines.
- To ensure consideration of the cultural and landscape significance of all treelines, including those composed of introduced vegetation species, such as Monterey or Radiata Pines.
- To ensure that proposals for replacement planting have regard to both environmental and cultural landscape values.
- To encourage strategic replanting programs, using suitable species, to provide for the long term maintenance of landscape values.

3.0

Permit requirement

A permit is required to remove, destroy or lop any vegetation, except for:

- The removal of vegetation which is to be carried out in conjunction with a development approved under a planning permit and in accordance with an endorsed plan.
- The removal of vegetation necessary for the construction of a dwelling, dwelling extension or outbuilding where no planning permit is required and provided that:
  - A building permit has been granted for the proposed development.
  - Vegetation is only removed from the building footprint or within 2 metres of the proposed building.
  - No tree with a trunk circumference greater than 0.35 metres is removed within 6 metres of a road frontage.
- The removal of vegetation, not within a road reserve, to enable the formation of a single crossing and access driveway with a maximum width of 3.7 metres.
- The removal of vegetation which presents an immediate risk of personal injury or damage to property including the felling of single trees located within 3 metres of a dwelling or outbuilding, or which overhangs a boundary line.
The removal of any dead timber or branch which has occurred through natural circumstances, fire or the spread of noxious weeds.

The removal of any tree or branch of a tree which impairs the access of motor vehicles along any existing or approved access track, provided that such access track has a width no greater than 3.7 metres.

The removal of vegetation specified in the schedule to Clause 52.17.

An application to remove vegetation must indicate:

- The total extent of vegetation on the property and the extent of proposed clearing.
- The location of any watercourse on the property, and, if relevant, the location of areas where the ground slope exceeds 20 percent.
- The purpose of the proposed clearing and any proposals for revegetation, including proposed species, and ground stabilisation.

4.0 Decision guidelines

Before deciding on an application, the responsible authority must consider, as appropriate:

- The vegetation protection objectives of this schedule.
- Any relevant regional catchment strategy or regional vegetation plan.
- The need for a report, by a properly qualified person and to the satisfaction of the responsible authority, on the vegetation and habitat significance of the vegetation to be removed.
- The cultural landscape value and visual prominence of the treeline, including the extent to which it remains intact and the condition and health of the trees.
- The botanical and environmental value of the treeline, including the age and condition of the trees and the extent to which the treeline forms part of a habitat area or habitat corridor.
- The need to maintain the connectivity of habitat corridors.
- The extent of the proposed vegetation removal and its likely effect on the stability of the site, particularly along streamlines or in erosion prone areas.
- The effect of retaining the treeline on agricultural pursuits and whether there is any reasonable alternative means of managing the land or siting buildings and works in order to conserve the vegetation of the area and better meet the objectives of this schedule.
- The extent to which the removal of vegetation is necessary to achieve proper fire management.
- The benefit of conditions requiring replanting.
- The need for replacement vegetation to be of an appropriate species, having regard to the link between the species and the cultural landscape values of the treeline, the need to exclude environmental weeds and the proximity of the site to bushland areas, where a treeline is near to bushland areas it is necessary to consider the potential for invasion of bushland by introduced species and the possibility of replacing introduced species with native species of a similar form.
- The comments of any relevant coastal management, fire prevention, catchment protection, land management or soil conservation authority.
BUSHFIRE MANAGEMENT OVERLAY

Shown on the planning scheme map as BMO with a number (if shown).

Purpose

To implement the Municipal Planning Strategy and the Planning Policy Framework.

To ensure that the development of land prioritises the protection of human life and strengthening community resilience to bushfire.

To identify areas where the bushfire hazard warrants bushfire protection measures to be implemented.

To ensure development is only permitted where the risk to life and property from bushfire can be reduced to an acceptable level.

Bushfire management objectives and application of schedules

A schedule to this overlay must contain a statement of the bushfire management objectives to be achieved for the area affected by the schedule and when the requirements within it apply.

Permit requirement

Subdivision

A permit is required to subdivide land. This does not apply if a schedule to this overlay specifically states that a permit is not required.

Buildings and works

A permit is required to construct a building or construct or carry out works associated with the following uses:

- Accommodation (including a Dependent person’s unit)
- Child care centre
- Education centre
- Hospital
- Industry
- Leisure and Recreation
- Office
- Place of assembly
- Retail premises
- Service station
- Timber production
- Warehouse

This does not apply to any of the following:

- If a schedule to this overlay specifically states that a permit is not required.
- A building or works consistent with an agreement under Section 173 of the Act prepared in accordance with a condition of permit issued under the requirements of Clause 44.06-3.
- An alteration or extension to an existing building used for a dwelling or a dependent person’s unit that is less than 50 percent of the gross floor area of the existing building.
• An alteration or extension to an existing building (excluding a dwelling and a dependent person’s unit) that is less than 10 percent of the gross floor area of the existing building

• A building or works with a floor area of less than 100 square metres not used for accommodation and ancillary to a dwelling

• A building or works associated with Timber production provided the buildings or works are not within 150 metres of Accommodation or land zoned for residential or rural residential purposes.

**Application requirements**

Unless a schedule to this overlay specifies different requirements, an application must be accompanied by:

• A bushfire hazard site assessment including a plan that describes the bushfire hazard within 150 metres of the proposed development. The description of the hazard must be prepared in accordance with Sections 2.2.3 to 2.2.5 of AS3959:2009 Construction of buildings in bushfire prone areas (Standards Australia) excluding paragraph (a) of section 2.2.3.2. Photographs or other techniques may be used to assist in describing the bushfire hazard.

• A bushfire hazard landscape assessment including a plan that describes the bushfire hazard of the general locality more than 150 metres from the site. Photographs or other techniques may be used to assist in describing the bushfire hazard. This requirement does not apply to a dwelling that includes all of the approved measures specified in Clause 53.02.3.

• A bushfire management statement describing how the proposed development responds to the requirements in this clause and Clause 44.06. If the application proposes an alternative measure, the bushfire management statement must explain how the alternative measure meets the relevant objective.

If in the opinion of the responsible authority any part of these requirements is not relevant to the assessment of an application, the responsible authority may waive, vary or reduce the requirement.

**Requirements of Clause 53.02**

An application must meet the requirements of Clause 53.02 unless the application meets all of the requirements specified in a schedule to this overlay.

A schedule to this overlay may specify substitute approved measures, additional alternative measures and additional or substitute decision guidelines for the purposes of Clause 53.02.

**Mandatory condition**

Subdivision

A permit which creates a lot for a single dwelling on land zoned for residential or rural residential purposes must include the following condition:

"Before the statement of compliance is issued under the Subdivision Act 1998 the owner must enter into an agreement with the responsible authority under Section 173 of the Planning and Environment Act 1987. The agreement must:

• State that it has been prepared for the purpose of an exemption from a planning permit under Clause 44.06-2 of the [*insert name of applicable planning scheme] Planning Scheme.

• Incorporate the plan prepared in accordance with Clause 53.02-4.4 of this planning scheme and approved under this permit.

• State that if a dwelling is constructed on the land without a planning permit that the bushfire protection measures set out in the plan incorporated into the agreement must be implemented and maintained to the satisfaction of the responsible authority on a continuing basis."
The land owner must pay the reasonable costs of the preparation, execution and registration of the Section 173 Agreement.

This does not apply:
- If a schedule to this overlay specifies that a Section 173 Agreement is not required.
- Where the relevant fire authority states in writing the preparation of an agreement under Section 173 of the Act is not required for the subdivision.
- For the subdivision of the land into lots each containing an existing dwelling or car parking space.

A permit to subdivide land must include any condition specified in a schedule to this overlay.

Buildings and works
A permit to construct a building or construct or carry out works must include the following condition:

"The bushfire protection measures forming part of this permit or shown on the endorsed plans, including those relating to construction standards, defendable space, water supply and access, must be maintained to the satisfaction of the responsible authority on a continuing basis. This condition continues to have force and effect after the development authorized by this permit has been completed."

A permit allowing a dwelling to be constructed to the next lower bushfire attack level in accordance with AM1.2 in Clause 53.02-3 must include the following condition:

"Before the development starts, the owner must enter into an agreement with the responsible authority under section 173 of the Planning and Environment Act 1987 to provide for the following:

- A dwelling constructed in accordance with planning permit [insert planning permit reference] must not be occupied until a private bushfire shelter (a Class 10c building within the meaning of the Building Regulations 2006) is:
  - Constructed on the same land as the dwelling.
  - Available for use by the occupants of the dwelling at all times.
  - Maintained in accordance with the requirements of the building permit issued for that private bushfire shelter.

The land owner must pay the reasonable costs of the preparation, execution and registration of the Section 173 Agreement."

A permit to construct a building or construct or carry out works must include any condition specified in a schedule to this overlay.

Relevant applications
An application must be referred under Section 55 of the Act to the person or body specified as the referral authority in Clause 60.03, unless a schedule to this overlay specifies otherwise.

Notice and review
An application is exempt from the notice requirements of section 52(1)(a), (b) and (d), the decision requirements of section 64(1), (2) and (3) and the review rights of section 82(1) of the Act, unless a schedule to this overlay specifies otherwise.

A schedule to this overlay may specify that notice be given to any person or body in accordance with section 52(1)(c) of the Act.
Decision guidelines

Before deciding on an application, in addition to the decision guidelines in Clause 53.02 and Clause 65, the responsible authority must consider, as appropriate:

- Any other matters specified in a schedule to this overlay.

Transitional arrangements

The requirements of Clause 44.06 Bushfire Management Overlay do not apply to a single dwelling, or a dependent person’s unit, when a permit under the Building Act 1993 was issued before the commencement of Amendment GC13, if:

- vegetation is managed to accord with the bushfire attack level assessment undertaken at the time the building permit was issued; and
- a static water supply of:
  - 2500 litres on lots of 500 square metres or less
  - 5000 litres on lots of more than 500 square metres, is provided to the satisfaction of the responsible authority.

- no permit was required for such development under Clause 44.06 before the commencement of Amendment GC13.
SCHEDULE 1 TO CLAUSE 44.06 BUSHFIRE MANAGEMENT OVERLAY

Shown on the planning scheme map as BMO1.

MORNINGTON PENINSULA BAL-29 AREAS

1.0 Statement of the bushfire management objectives to be achieved

To specify bushfire protection measures to construct or extend one dwelling on a lot.
To specify referral requirements for applications to construct or extend one dwelling on a lot.

Application

The application to construct or extend one dwelling on a lot must include all the requirements set out in this schedule.
Clause 52.47 applies in all other circumstances.

2.0 Permit requirement

None specified.

3.0 Application requirements

An application must be accompanied by a bushfire management plan that:
- Shows all of the required bushfire protection measures specified in this schedule,
- Includes written conditions that implement the required bushfire protection measures,
- Identifies water supply including the location of any fire hydrant within 120 metres of the rear of the building, and
- Details vehicle access.

4.0 Requirements to be met

The following requirements apply to an application to construct a single dwelling on a lot:
- The dwelling must be constructed to BAL-29
- Defensible space is to be provided for a distance of 30 metres around the dwelling or the property boundary, whichever is the lesser and maintained in accordance with the vegetation management requirements of Clause 52.47 with the following variation:
  - The canopy of trees must be separated by at least 2 metres.
- A single water supply must be provided in accordance with Clause 52.47, and
- Vehicle access must be provided in accordance with Clause 52.47.

If these requirements are not met, the requirements of Clause 52.47 apply.

5.0 Substitute approved measures for Clause 52.47

None specified.

6.0 Additional alternative measures for Clause 52.47

None specified.
Mandatory Condition

An application must include the mandatory conditions as specified in Clause 44.06-4.

Referral of application not required

An application for a single dwelling on a lot meeting all of the required bushfire protection measures is not required to be referred under Section 55 of the Act to the person or body specified as the referral authority in Clause 66.03.

Notice and review

None specified.

Decision guidelines

Before deciding on an application, in addition to the decision guidelines in Clause 65, the responsible authority must consider whether all of the bushfire protection measures in this schedule have been met.
SCHEDULE 2 TO CLAUSE 44.06 BUSHFIRE MANAGEMENT OVERLAY

Shown on the planning scheme map as BMO2.

MORNINGTON PENINSULA BAL 12.5 AREAS

1.0 Statement of the bushfire management objectives to be achieved

To specify bushfire protection measures to construct or extend one dwelling on a lot.

To specify referral requirements for applications to construct or extend one dwelling on a lot.

Application

The application to construct or extend one dwelling on a lot must include all the requirements set out in this schedule.

Clause 52.47 applies in all other circumstances.

2.0 Permit requirement

None specified.

3.0 Application requirements

An application must be accompanied by a bushfire management plan that:

- Shows all of the required bushfire protection measures specified in this schedule,
- Includes written conditions that implement the required bushfire protection measures,
- Identifies water supply including the location of any fire hydrant within 120 metres of the rear of the building, and
- Details vehicle access.

4.0 Requirements to be met

The following requirements apply to an application to construct a single dwelling on a lot:

- The dwelling must be constructed to BAL-12.5
- Defensible space is to be provided for a distance of 30 metres around the dwelling or to the property boundary, whichever is the lesser and maintained in accordance with the vegetation management requirements of Clause 52.47 with the following variation:
  - The canopy of trees must be separated by at least 2 metres.
- A static water supply must be provided in accordance with Clause 52.47, and
- Vehicle access must be provided in accordance with Clause 52.47.

If these requirements are not met, the requirements of Clause 52.47 apply.

5.0 Substitute approved measures for Clause 52.47

None specified.

6.0 Additional alternative measures for Clause 52.47

None specified.
7.0 Mandatory Condition

An application must include the mandatory conditions as specified in Clause 44.06-4.

8.0 Referral of application not required

An application for a single dwelling on a lot meeting all of the required bushfire protection measures is not required to be referred under Section 55 of the Act to the person or body specified as the referral authority in Clause 66.03.

9.0 Notice and review

None specified.

10.0 Decision guidelines

Before deciding on an application, in addition to the decision guidelines in Clause 65, the responsible authority must consider whether all of the bushfire protection measures in this schedule have been met.
53.02  
BUSHFIRE PLANNING

Purpose
To implement the Municipal Planning Strategy and the Planning Policy Framework.
To ensure that the development of land prioritises the protection of human life and strengthens community resilience to bushfire.
To ensure that the location, design and construction of development appropriately responds to the bushfire hazard.
To ensure development is only permitted where the risk to life, property and community infrastructure from bushfire can be reduced to an acceptable level.
To specify location, design and construction measures for a single dwelling that reduces the bushfire risk to life and property to an acceptable level.

53.02-1  
Application
This clause applies to an application under Clause 44.06 - Bushfire Management Overlay, unless the application meets all of the requirements specified in a schedule to Clause 44.06.
Clause 53.02-3 applies to an application to construct a single dwelling or construct or carry out works associated with a single dwelling if all of the following requirements are met:
- The land is zoned Neighbourhood Residential Zone, General Residential Zone, Residential Growth Zone, Urban Growth Zone, Low Density Residential Zone, Township Zone or Rural Living Zone;
- There is only one dwelling on the lot;
- The application meets all of the approved measures contained in Clause 53.02-3.
Clause 53.02-4 applies to all other applications.

53.02-2  
Operation
The provisions of this clause contain:
- Objectives. An objective describes the outcome that must be achieved in a completed development.
- Approved measures (AM). An approved measure meets the objective.
- Alternative measures (AltM). An alternative measure may be considered where the responsible authority is satisfied that the objective can be met. The responsible authority may consider other unspecified alternative measures.
- Decision guidelines. The decision guidelines set out the matters that the responsible authority must consider before deciding on an application, including whether any proposed alternative measure is appropriate.
A schedule to Clause 44.06 may specify substitute approved measures, additional alternative measures and additional or substitute decision guidelines.
A substitute approved measure specified in a schedule to Clause 44.06 substitutes the applicable approved measure contained in this clause.

53.02-3  
Dwellings in existing settlements – Bushfire protection objective
To specify bushfire design and construction measures for a single dwelling or alteration and extension to an existing dwelling that reduces the risk to life and property to an acceptable level.
52.17

NATIVE VEGETATION

Purpose
To ensure that there is no net loss to biodiversity as a result of the removal, destruction or lopping of native vegetation. This is achieved by applying the following three step approach in accordance with the Guidelines for the removal, destruction or lopping of native vegetation (Department of Environment, Land, Water and Planning, 2017) (the Guidelines):

1. Avoid the removal, destruction or lopping of native vegetation.
2. Minimise impacts from the removal, destruction or lopping of native vegetation that cannot be avoided.
3. Provide an offset to compensate for the biodiversity impact if a permit is granted to remove, destroy or lop native vegetation.

To manage the removal, destruction or lopping of native vegetation to minimise land and water degradation.

52.17-1

Permit requirement
A permit is required to remove, destroy or lop native vegetation, including dead native vegetation. This does not apply:

- If the table to Clause 52.17-7 specifically states that a permit is not required.
- If a native vegetation precinct plan corresponding to the land is incorporated into this scheme and listed in the schedule to Clause 52.16.
- To the removal, destruction or lopping of native vegetation specified in the schedule to this clause.

52.17-2

Application requirements
An application to remove, destroy or lop native vegetation must comply with the application requirements specified in the Guidelines.

52.17-3

Property vegetation plans
A permit granted to remove, destroy or lop native vegetation in accordance with a property vegetation plan must include the following condition:

“This permit will expire if one of the following circumstances applies:

- The removal, destruction or lopping of native vegetation does not start within two years of the date of this permit.
- The removal, destruction or lopping of native vegetation is not completed within ten years of the date of this permit.”

52.17-4

Decision guidelines
Before deciding on an application, in addition to the decision guidelines in Clause 65, the responsible authority must consider the decision guidelines specified in the Guidelines as appropriate.

52.17-6

Offset requirements
If a permit is required to remove, destroy or lop native vegetation, the biodiversity impacts from the removal, destruction or lopping of native vegetation must be offset, in accordance with the Guidelines. The conditions on the permit for the removal, destruction or lopping of native vegetation must specify the offset requirement and the timing to secure the offset.
Transitional provisions
The requirements of this clause in force immediately before the commencement of Amendment VC138 continue to apply to an application for:

- A permit lodged before that date.
- An amendment to a permit if:
  - the original permit application was lodged before that date; or
  - the original permit application was one that benefited from the following transitional provision.
- A permit lodged within 12 months after that date, if the Secretary to the Department of Environment, Land, Water and Planning (as constituted under Part 2 of the Conservation, Forests and Lands Act 1987) has stated in writing that a report about the proposed removal, destruction or lopping of native vegetation has been generated by the Department of Environment, Land, Water and Planning's native vegetation information systems within 12 months before that date.

Table of exemptions

<table>
<thead>
<tr>
<th>The requirement to obtain a permit does not apply to:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Conservation work</td>
<td>Native vegetation that is to be removed, destroyed or lopped to the minimum extent necessary to enable the carrying out of conservation work:</td>
</tr>
<tr>
<td></td>
<td>- which provides an overall improvement for biodiversity; and</td>
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<td></td>
<td>- with written agreement of the Secretary to the Department of Environment, Land, Water and Planning (as constituted under Part 2 of the Conservation, Forests and Lands Act 1987).</td>
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<tr>
<td>Crown land</td>
<td>Native vegetation that is to be removed, destroyed or lopped to the minimum extent necessary to manage Crown land:</td>
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<tr>
<td></td>
<td>- by or on behalf of the Secretary to the Department of Environment, Land, Water and Planning (as constituted under Part 2 of the Conservation, Forests and Lands Act 1987), or Parks Victoria, and in accordance with the Procedure for the removal, destruction or lopping of native vegetation on Crown land; or</td>
</tr>
<tr>
<td></td>
<td>- with written permission from the Secretary to the Department of Environment, Land, Water and Planning (as constituted under Part 2 of the Conservation, Forests and Lands Act 1987).</td>
</tr>
<tr>
<td>Dead native vegetation</td>
<td>Native vegetation that is dead.</td>
</tr>
<tr>
<td>This exemption does not apply to a standing dead tree with a trunk diameter of 40 centimetres or more at a height of 1.3 metres above ground level.</td>
<td></td>
</tr>
<tr>
<td>Emergency works</td>
<td>Native vegetation that is to be removed, destroyed, or lopped:</td>
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<td></td>
<td>- in an emergency by, or on behalf of, a public authority or municipal council to create an emergency access associated with emergency works; or</td>
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<td></td>
<td>- where it presents an immediate risk of personal injury or damage to property. Only that part of the vegetation that presents the immediate risk may be removed, destroyed or lopped under this exemption.</td>
</tr>
</tbody>
</table>
The requirement to obtain a permit does not apply to:

### Existing buildings
Native vegetation that is to be removed, destroyed, or lopped to the minimum extent necessary to enable the use or maintenance of a building constructed in accordance with a planning or building permit issued before 15 September 2003.

This exemption does not apply to:
- the operation or maintenance of a fence; or
- native vegetation located more than 10 metres measured from the outermost point of the building.

### Existing buildings and works in the Farming Zone and Rural Activity Zone
Native vegetation that is to be removed, destroyed, or lopped to the minimum extent necessary to enable the use or maintenance of an existing building or works used for agricultural production, including a dam, utility service, bore, horticultural trellising and access road in the Farming Zone or the Rural Activity Zone.

This exemption does not apply to:
- the use or maintenance of a Dwelling; or
- the operation or maintenance of a fence; or
- native vegetation located more than 10 metres measured from the outermost point of the building or works.

### Fences
Native vegetation that is to be removed, destroyed, or lopped to the minimum extent necessary to enable:
- the operation or maintenance of an existing fence; or
- the construction of a boundary fence between properties in different ownership.

The clearing along both sides of the fence when combined must not exceed 4 metres in width, except where land has already been cleared 4 metres or more along one side of the fence, then up to 1 metre can be cleared along the other side of the fence.

### Fire protection
Native vegetation that is to be removed, destroyed or lopped to the minimum extent necessary to carry out any of the following fire protection activities:
- fire fighting;
- planned burning;
- making or maintenance of a fuelbreak or firefighting access track (or any combination thereof) that does not exceed a combined width of 6 metres;
- making a strategic fuelbreak up to 40 metres wide by, or on behalf of, a public authority in accordance with a strategic fuelbreak plan approved by the Secretary to the Department of Environment, Land, Water and Planning (as constituted under Part 2 of the Conservation, Forests and Lands Act 1987);
- in accordance with a fire prevention notice issued under either:
  - Section 65 of the Forests Act 1958; or
  - Section 41 of the Country Fire Authority Act 1958;
- keeping native vegetation clear of, or minimising the risk of bushfire ignition from, an electric line in accordance with a code of practice prepared under Part 8 of the Electricity Safety Act 1998;
The requirement to obtain a permit does not apply to:

- minimising the risk to life and property from bushfires on a roadside of a public road managed by the relevant responsible road authority, and carried out by or on behalf of that authority, in accordance with the written agreement of the Secretary to the Department of Environment, Land, Water and Planning (as constituted under Part 2 of the Conservation, Forests and Lands Act 1987). In this exemption, roadside, public road and responsible road authority have the same meanings as in section 3 of the Road Management Act 2004.

Note: Additional permit exemptions for bushfire protection are provided in Clause 52.12.

| Geothermal energy exploration and extraction | Native vegetation that is to be removed, destroyed or lopped to the minimum extent necessary in accordance with an operation plan approved under the Geothermal Energy Resources Act 2005. |
| Grasses | Native grass that is to be mowed or slashed for maintenance only, provided that the grass is: |
| | - located within a lawn, garden or other landscaped area; or |
| | - maintained at a height of at least 10 centimetres above ground level. |
| Grazing | Native vegetation that is to be removed, destroyed or lopped by domestic stock grazing on: |
| | - permanent land; or |
| | - Crown land in accordance with a license, permit or lease granted under applicable legislation. |
| Greenhouse gas sequestration and exploration | Native vegetation that is to be removed, destroyed or lopped to the minimum extent necessary in accordance with an operation plan approved under the Greenhouse Gas Geothermal Sequestration Act 2008. |
| Harvesting for timber production – naturally established native vegetation | Naturally established native vegetation that is to be removed, destroyed or lopped to enable timber harvesting operations and associated activities that are in accordance with the Code of Practice for Timber Production 2014 and are: |
| | - undertaken on public land under a licence or permit issued under section 52 of the Forests Act 1959; or |
| Land management or directions notice | Native vegetation that is to be removed, destroyed or lopped to the minimum extent necessary to comply with a land management notice or directions notice served under the Catchment and Land Protection Act 1994. |
| Land use conditions | Native vegetation that is to be removed, destroyed or lopped to the minimum extent necessary to comply with a land use condition served under the Catchment and Land Protection Act 1994. |
| Lopping and pruning for maintenance | Lopping or pruning native vegetation, for maintenance only, provided no more than 1/3 of the foliage of each individual plant is lopped or pruned. |
| | This exemption does not apply to: |
| | - the pruning or lopping of the trunk of a native tree; or |
| | - native vegetation on a roadsides or railway reservation. |
The requirement to obtain a permit does not apply to:

| Mineral exploration and extraction | Native vegetation that is to be removed, destroyed or lopped to the minimum extent necessary by the holder of an exploration, mining, prospecting, or retention license issued under the *Mineral Resources (Sustainable Development) Act 1990*:
|                               | - that is low impact exploration within the meaning of Schedule 4A of the *Mineral Resources (Sustainable Development) Act 1990*; or  
|                               | - in accordance with a work plan approved under Part 3 of the *Mineral Resources (Sustainable Development) Act 1990*. Note: Schedule 4A of the *Mineral Resources (Sustainable Development) Act 1990* specifies limits on the extent of native vegetation that may be removed as part of low impact exploration. |
| New buildings and works in the Farming Zone and Rural Activity Zone | Native vegetation that is to be removed, destroyed or lopped to the minimum extent necessary to enable the construction of a building or works used for agricultural production, including a dam, utility service, bore and accessway, in the Farming Zone or the Rural Activity Zone. The maximum extent of native vegetation that may be removed, destroyed or lopped under this exemption on contiguous land in the same ownership in a five year period must not exceed any of the following:
|                               | - 1 hectare of native vegetation which does not include a tree.  
|                               | - 15 native trees with a trunk diameter of less than 40 centimetres at a height of 1.3 metres above ground level.  
|                               | - 5 native trees with a trunk diameter of 40 centimetres or more at a height of 1.3 metres above ground level.  
|                               | This exemption does not apply to the construction or operation of a pivot irrigation system or horticultural trellising. |
| New dwellings in the Farming Zone and Rural Activity Zone | Native vegetation that is to be removed, destroyed or lopped to the minimum extent necessary to enable the construction of a dwelling in the Farming Zone or Rural Activity Zone. The maximum extent of native vegetation removed, destroyed or lopped under this exemption on contiguous land in the same ownership in a five year period must not exceed any of the following:
|                               | - 308 square metres of native vegetation which does not include a tree.  
|                               | - 5 native trees with a trunk diameter of less than 40 centimetres at a height of 1.3 metres above ground level.  
|                               | - 1 native tree with a trunk diameter of 40 centimetres or more at a height of 1.3 metres above ground level.  
|                               | This exemption does not apply native vegetation removed, destroyed or lopped to enable the construction of a swimming pool, tennis court or horse stable. |
| Personal use | Native vegetation that is to be removed, destroyed or lopped to the minimum extent necessary to obtain reasonable amounts of wood for personal use by the owner or lawful occupier of the land. For the purpose of this exemption personal use means uses such as heating and cooking, building and fence construction on land, and hobbies such as arts and craft. This exemption does not apply to:
|                               | - contiguous land in one ownership that has an area of less than 10 hectares; |
The requirement to obtain a permit does not apply to:

- the removal, destruction or lopping of native vegetation by means other than cutting or chopping; or
- a standing native tree (including a dead tree) with a trunk diameter of 40 centimetres or more at a height of 1.3 metres above ground level.

<table>
<thead>
<tr>
<th>Pest animal burrows</th>
<th>Native vegetation that is to be removed, destroyed or lopped to the minimum extent necessary to enable the removal of pest animal burrows in the Farming Zone or the Rural Activity Zone:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>in accordance with written agreement of an officer of the department responsible for administering the Flora and Fauna Guarantee Act 1968; or</td>
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<tr>
<td></td>
<td>provided the maximum extent of native vegetation removed, destroyed or lopped on contiguous land in the same ownership in a five year period does not exceed any of the following:</td>
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<tr>
<td></td>
<td>- 1 hectare of native vegetation which does not include a tree; or</td>
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<tr>
<td></td>
<td>- 15 native trees with a trunk diameter of less than 20 centimetres at a height of 1.3 metres above ground level.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Planted vegetation</th>
<th>Native vegetation that is to be removed, destroyed or lopped that was either planted or grown as a result of direct seeding.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>This exemption does not apply to native vegetation planted or managed with public funding for the purpose of land protection or enhancing biodiversity unless the removal, destruction or lopping of the native vegetation is in accordance with written permission of the agency (or its successor) that provided the funding.</td>
</tr>
</tbody>
</table>

| Railways           | Native vegetation that is to be removed, destroyed or lopped to the minimum extent necessary to maintain the safe and efficient function of an existing railway, or railway access road, in accordance with the written agreement of the Secretary to the Department of Environment, Land, Water and Planning (as constituted under Part 2 of the Conservation, Forests and Lands Act 1987). |

<table>
<thead>
<tr>
<th>Regrowth</th>
<th>Native vegetation that is to be removed, destroyed or lopped that has naturally established or regenerated on land lawfully cleared of naturally established native vegetation, and is</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- less than 15 years old; or</td>
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<td></td>
<td>- bracken (Pteridium esculentum); or</td>
</tr>
<tr>
<td></td>
<td>- within the boundary of a timber production plantation, as indicated on a Plantation Development Notice or other documented record, and has established after the plantation; or</td>
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<tr>
<td></td>
<td>- less than ten years old at the time of a property vegetation plan being signed by the Secretary to the Department of Environment, Land, Water and Planning (as constituted under Part 2 of the Conservation, Forests and Lands Act 1987), and is:</td>
</tr>
<tr>
<td></td>
<td>- shown on that plan as being ‘certified regrowth’; and</td>
</tr>
<tr>
<td></td>
<td>- on land that is to be used or maintained for cultivation or pasture during the term of that plan.</td>
</tr>
</tbody>
</table>

This exemption does not apply to land where native vegetation has been destroyed or otherwise damaged as a result of flood, fire or other natural disaster.
The requirement to obtain a permit does not apply to:

| Road safety | Native vegetation that is to be removed, destroyed or lopped to the minimum extent necessary by, and on behalf of, a public authority or municipal council to maintain the safe and efficient function of an existing road in accordance with the written agreement of the Secretary to the Department of Environment, Land, Water and Planning (as constituted under Part 2 of the Conservation, Forests and Lands Act 1987). |
| Site area | Native vegetation that is to be removed, destroyed or lopped on land, together with all contiguous land in one ownership, which has an area of less than 0.4 hectares. This exemption does not apply to native vegetation on a roadside or rail reservation. |
| Stock movements on roads | Native vegetation that is to be removed, or destroyed by stock being moved along a road. This exemption does not apply to grazing as a result of holding stock in a temporary fence (including an electric fence) on a roadside for the purpose of feeding. |
| Stone exploration | Native vegetation that is to be removed, destroyed or lopped to the minimum extent necessary to enable the carrying out of stone exploration. The maximum extent of native vegetation that may be removed, destroyed or lopped under this exemption on contiguous land in the same ownership in a five year period must not exceed any of the following:
  - 1 hectare of native vegetation which does not include a tree.
  - 15 native trees with a trunk diameter of less than 40 centimetres at a height of 1.3 metres above ground level.
  - 5 native trees with a trunk diameter of 40 centimetres or more at a height of 1.3 metres above ground level. This exemption does not apply to cased steering and bulk sampling activities. |
| Stone extraction | Native vegetation that is to be removed, destroyed or lopped to the minimum extent necessary to enable the carrying out of stone extraction in accordance with a work plan approved under the Mineral Resources (Sustainable Development) Act 1990 and authorised by a work authority under that Act. |
| Surveying | Native vegetation that is to be removed, destroyed or lopped to the minimum extent necessary by, or on behalf of, a licensed surveyor (within the meaning of section 3 of the Surveying Act 2004) using hand-held tools to establish a baseline for the measurement of land. |
| Traditional owners | Native vegetation that is to be removed, destroyed or lopped by a person acting under, and in accordance with:
  - a natural resource agreement under Part 6 of the Traditional Owner Settlement Act 2010; or
  - an authorisation order made under sections 52 or 54 of the Traditional Owner Settlement Act 2010 as those sections were in force immediately before the commencement of section 24 of the Traditional Owner Settlement Amendment Act in 2016 (1 May 2017). |
| Utility installations | Native vegetation that is to be removed, destroyed or lopped to the minimum extent necessary:
  - to maintain the safe and efficient function or a minor utility installation; or
The requirement to obtain a permit does not apply to:

- by or on behalf of a utility service provider to maintain or construct a utility installation in accordance with the written agreement of the Secretary to the Department of Environment, Land, Water and Planning (as constituted under Part 2 of the Conservation, Forests and Lands Act 1987).

<table>
<thead>
<tr>
<th>Vehicle access from public roads</th>
<th>Native vegetation that is to be removed, destroyed, or lopped to the minimum extent necessary to enable the construction or maintenance of a vehicle access across a road reserve from a property boundary to a public road.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>This exemption only applies to properties which share a common boundary with the road reserve, and the total width of clearing must not exceed 8 metres.</td>
</tr>
<tr>
<td></td>
<td>This exemption does not apply where there is a practical opportunity to site the accessway to avoid the removal, destruction or lopping of native vegetation.</td>
</tr>
<tr>
<td></td>
<td>In this exemption, roadside and public road have the same meanings as in section 3 of the Road Management Act 2004.</td>
</tr>
<tr>
<td></td>
<td>Note: Under the Road Management Act 2004 the written consent of the coordinating road authority is required to conduct any works, including removing a tree or other vegetation, on, on, under or over a road.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weeds</th>
<th>Native vegetation that is to be removed, destroyed or lopped to the minimum extent necessary to enable the removal or destruction of a weed listed in the schedule to Clause 52.17.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The maximum extent of native vegetation that may be removed, destroyed or lopped under this exemption on contiguous land in the same ownership in a five year period must not exceed any of the following:</td>
</tr>
<tr>
<td></td>
<td>- 1 hectare of native vegetation which does not include a tree.</td>
</tr>
<tr>
<td></td>
<td>- 15 native trees with a trunk diameter of less than 20 centimetres at a height of 1.3 metres above ground level.</td>
</tr>
</tbody>
</table>
Biodiversity Sensitive Urban Design

Creating urban environments that are good for people and good for nature
Biodiversity Sensitive Urban Design

What is it?
Biodiversity Sensitive Urban Design (BSUD) is a protocol for urban design that aims to create suburbs that are a net benefit to native species and ecosystems through the provision of essential habitat and food resources.

It represents a new approach to urban biodiversity conservation by seeking to achieve biodiversity benefits on site, in contrast to the standard offsetting approach, which reduces the opportunity for urban residents to engage with nature and, at the same time, delivers questionable ecological outcomes.

What are the benefits?
BSUD aims to protect native species and ecosystems in the places where people live and work. Urban greening associated with BSUD also provides a range of proven benefits to individuals, communities and cities, including:
- Cooling of urban areas
- Air and water purification
- A range of human health and wellbeing benefits in areas such as mental health, cardiovascular health, social cohesion and cognitive ability.
- Increased workplace productivity

How can I implement BSUD?
BSUD can be implemented at a range of scales, and by a range of people, from individual home owners wanting to reduce their impact on nature, through to local and regional authorities responsible for the planning and development of major towns and cities.

BSUD proceeds in 6 steps, including an optional step allowing quantitative assessment of the contribution of the built environment to biodiversity.
1. Identify and map ecological values

- Determine which native species and ecosystems are present in or utilise the area, paying particular attention to any that are threatened.
- Document the landscape context of the area, including geology, hydrology and any natural features of the landscape. Consider the role of the area for overall connectivity in the landscape.
- Where the landscape is heavily modified, seek information from historical records about species and ecosystems that once existed there. This will provide information about which species may exist there again.

Spatial planning tools can be used to identify areas of value for biodiversity (blue) and development (red), shown here for Wyndham in Melbourne’s west. (Adapted from Belsey et al. 2012)

2. Define ecological objectives, such as:

- Maintain viability of threatened species and ecosystems
- Protect and restore habitat quality
- Opportunities for rewilding

Maintaining or improving the viability of threatened species, such as the striped legless lizard, is a key environmental objective for 2020.

3. Identify development objectives, including:

- Population and dwelling targets
- Housing type and diversity
- Liveability targets
- Commercial and educational requirements
- Infrastructure requirements

Buildings

<table>
<thead>
<tr>
<th>Buildings</th>
<th>Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time to Park</td>
<td></td>
</tr>
<tr>
<td>0-5 minutes Walk</td>
<td></td>
</tr>
<tr>
<td>1-2 minutes Walk</td>
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<tr>
<td>2-3 minutes Walk</td>
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<tr>
<td>3-4 minutes Walk</td>
<td></td>
</tr>
<tr>
<td>4-5 minutes Walk</td>
<td></td>
</tr>
</tbody>
</table>

Access to open space is important for creating liveable neighbourhoods. Residents of buildings shaded in green are less than 2 minutes walk from open space.
4. Identify actions required to achieve objectives, considering the five principles of BSUD:

1. Maintain or create habitat for target species (feeding, nesting and protection; minimum patch sizes; landscape connectivity)
2. Facilitate dispersal of species
3. Minimise disturbance
4. Facilitate natural processes, considering the management requirements of target species and ecosystems (burning, weed control, mowing, etc.)
5. Facilitate positive human-nature interactions and engage the local community (creating “Cues-to-Care”; promoting active stewardship)

A reduced building footprint allows for more vegetated space, providing habitat and lessening barriers to animal movement.

Thoughtful creation of habitats offers many benefits. For example, creating habitat for the blue-banded bee will not only benefit native Dianella species, which depend on them for pollination, it will also help you by pollinating your tomato plants.

Different types of habitats (eg. a mix of tall trees, shrubs and small plants) cater for a range of native species.

Domestic cats are a major threat to native animals like the striped legless lizard and should be contained at all times.

Thoughtful design that engages the local community promotes active stewardship of nature in public places.
5. Quantitative assessment of contribution to biodiversity

This step will help to answer questions such as: “If I do this, this and this, how much will it benefit native species and ecosystems?” To arrive at an answer, you will need to assess the probability that the species or ecosystem can persist in the landscape. This can be measured using multiple methods, including, in increasing order of technical complexity:

- Literature review
- Expert elicitation
- Formal population viability analysis.

Step 5 is optional, but has the added benefit of enabling the actions or suite of actions that provide most cost-effective biodiversity benefit (the most bang for your buck) in Step 6.

6. Identify the BSUD actions that best meet ecological objectives (Step 2), while also accommodating development objectives (Step 3) for the area.

<table>
<thead>
<tr>
<th>BSUD Action - Native Grasslands</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Design</strong></td>
</tr>
<tr>
<td>Appropriate adjacent land use</td>
</tr>
<tr>
<td>Effective buffers</td>
</tr>
<tr>
<td>Dispersal corridors, connecting habitat</td>
</tr>
<tr>
<td>Fire-retardant design</td>
</tr>
<tr>
<td>Sensitive landscaping - public</td>
</tr>
<tr>
<td>Sensitive landscaping - private</td>
</tr>
<tr>
<td>Enhance habitat</td>
</tr>
<tr>
<td><strong>Construction</strong></td>
</tr>
<tr>
<td>Early protection</td>
</tr>
<tr>
<td>Clean construction</td>
</tr>
<tr>
<td>Appropriate transitional management</td>
</tr>
</tbody>
</table>
BSUD Case Study 1: Native Grasslands in Melbourne’s Urban Fringe

The native temperate grasslands of the Victorian Volcanic Plain are amongst the most endangered ecosystems in Australia. More than 99% of the original extent has been cleared or converted to agriculture, and less than 0.1% remains in good condition. Much of the remaining grassland exists in areas designated as growth corridors for Melbourne, and thus, these grasslands and the species that inhabit them are threatened by urban development.

In this case study, our ecological objective was to maximise the likelihood of grasslands and a protected striped legless lizard persisting in new suburbs after development had occurred. We aimed to show how BSUD could improve the likelihood that native grasslands and the striped legless lizard, *Delma impar* would persist in new suburbs. We assessed the extent to which BSUD could contribute to persistence using expert opinion (native grasslands) and population viability analysis (striped legless lizard). We did not have specific development targets.

The BSUD actions examined were those that addressed major threats posed to native grasslands (loss and fragmentation of habitat, loss of species diversity caused by lack of burning and invasion by weeds, and poor public perception) and striped legless lizards (predation by cats, loss of habitat quality and quantity, and barriers to dispersal) in urban environments.
Outcomes
We identified aspects of BSUD that could improve prospects for native grasslands and striped legless lizards in all phases of development.

BSUD was estimated to more than double the probability of persistence of native grasslands in urban landscapes and the legless lizard was thought to stand little chance of persisting without it. BSUD during construction was thought to confer the greatest potential to improve persistence of native grasslands in urban environments, while design elements aimed at reducing predation by cats during the inhabitation phase were most effective for the striped legless lizard.

<table>
<thead>
<tr>
<th>BSUD Action</th>
<th>Native Grasslands</th>
<th>Striped Legless Lizard</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Design</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appropriate adjacent land use</td>
<td>0.02</td>
<td></td>
</tr>
<tr>
<td>Effective buffers</td>
<td>0.03</td>
<td></td>
</tr>
<tr>
<td>Dispersal corridors, connecting habitat</td>
<td>&lt;0.01</td>
<td></td>
</tr>
<tr>
<td>Fire-retardant design</td>
<td>&lt;0.01</td>
<td></td>
</tr>
<tr>
<td>Sensitive landscaping - public</td>
<td>&lt;0.01</td>
<td></td>
</tr>
<tr>
<td>Sensitive landscaping - private</td>
<td>&lt;0.01</td>
<td></td>
</tr>
<tr>
<td>Enhance habitat</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td><strong>Construction</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Early protection</td>
<td>0.08</td>
<td></td>
</tr>
<tr>
<td>Clean construction</td>
<td>0.02</td>
<td></td>
</tr>
<tr>
<td>Appropriate transitional management</td>
<td>0.08</td>
<td></td>
</tr>
<tr>
<td><strong>Inhabitation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cues to care</td>
<td>0.02</td>
<td></td>
</tr>
<tr>
<td>Community education</td>
<td>0.02</td>
<td></td>
</tr>
<tr>
<td>Active stewardship</td>
<td>0.03</td>
<td></td>
</tr>
<tr>
<td>No cats outside</td>
<td>0.93</td>
<td></td>
</tr>
<tr>
<td><strong>Total contribution to persistence</strong></td>
<td><strong>0.31</strong></td>
<td><strong>0.94</strong></td>
</tr>
</tbody>
</table>
BSUD Case Study 2: Biodiverse Mid-rise for Fishermans Bend

Fishermans Bend is a heavily modified location, with little in the way of existing ecological values. Of exceptional ecological value is Westgate Park on the western edge of the site, which provides habitat for a significant number of native plant, bird, insect and amphibian species. Fishermans Bend is notable for its potential to provide improved ecological connectivity in the landscape. The site could become an important corridor for connecting existing biodiversity values, including the Yarra and Maribyrnong Rivers, Moonee Ponds and Stony Creeks, Westgate Park and a patch of remnant mangroves at the mouth of the Stony Creek.

Because of the heavily modified nature of the site, ecological objectives focus on rewinding; creating the habitat and resource availability to attract native biodiversity to the area. We focused on five native species including birds (brolga & spotted pardalote), a butterfly (dainty swallowtail), a frog (growling grass frog) and a micro-bat (striped free-tailed bat). These species were chosen for their charismatic characteristics (eg. Brolgas are large, spectacular water birds), potential co-benefits (eg. Bats and frogs are insectivorous and therefore help control pests like mosquitoes, and butterflies provide residents with restorative psychological benefits), and feasibility of their ecological requirements (eg. Spotted pardalote are already resident in nearby Westgate Park, and the Dainty swallowtail has a preference for domestic nature such as citrus trees as well as native vegetation). We identified the habitat and resource requirements for these species, and incorporated them into the built environment through habitat walls, semi-private and public open space.

The Fishermans Bend strengthens a unique opportunity to connect existing biodiversity values.
Development objectives reflected ambitions to create a more liveable and resilient urban environment than that provided by proposed development for the area, which features the podium-tower style construction of similar developments such as Southbank and Docklands.

Development objectives included:
- Height limits of 4-7 storeys to improve accessibility and connectedness to nature and streets.
- Active streetscapes to improve safety and strengthen community.
- Diversity of building typologies to ensure dwellings for a range of urban residents.
- Incorporating Melbourne’s unique city block and laneway features.
- High quality living spaces, with average apartment size of 100 m².

**Outcomes**

Our biodiverse mid-rise model achieves housing densities that are comparable to those identified for brownfield development sites in Plan Melbourne. However, when compared to the proposed high-rise development for Fishermans Bend, the sustainable mid-rise model will provide better urban design and human health and well-being outcomes, including better access to open space and improved streetscapes, a reduction in the urban heat island effect, a reduction in household energy use, and improved workplace productivity and childhood cognitive development. In addition, the wetlands required by some species provide additional water purification and flood mitigation services in a flood-prone landscape like Fishermans Bend.
November 2015

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For further information, please contact Georgia Garrard or Sarah Bekessy at RMIT University’s Interdisciplinary Conservation Science Research Group (www.icsrg.info).

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Urban design and and video fly-through for Fishermans Bend were completed by Simon van Wijnen. Graphic representations of individual scenes in Fishermans Bend were produced in consultation with Mauro Baracco, Catherine Horwill and Jonathan Ware (RMIT School of Architecture and Design).
**POLICY PERSPECTIVE**

**Biodiversity Sensitive Urban Design**

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1 Interdisciplinary Conservation Science Research Group, School of Global, Urban and Social Studies, RMIT University, Australia
2 School of Ecosystem and Forest Sciences, The University of Melbourne, Australia

Keywords: Biodiversity rating scheme; conservation planning; grasslands; landscape design; nature in cities; urban biodiversity; population viability; sustainable urban development.

**Abstract**

Cities are increasingly considered important places for biodiversity conservation because they can harbor threatened species and because conservation in cities represents an opportunity to reconnect people with nature and the range of health and well-being benefits it provides. However, urbanization can be catastrophic for native species, and is a well-known threat to biodiversity worldwide. Urbanization impacts can be mitigated by urban design and development improvements, but take-up of these practices has been slow. There is an urgent need to incorporate existing ecological knowledge into a framework that can be used by planners and developers to ensure that biodiversity conservation is considered in decision-making processes. Here, we distill the urban biodiversity literature into five principles for biodiversity sensitive urban design (BSUDs), ranging from creating habitat and promoting dispersal to facilitating community stewardship. We then present a framework for implementing BSUD aimed at delivering onsite benefits to biodiversity, and that is applicable across a range of urban development types and densities. We illustrate the application of the BSUD framework in two case studies focusing on the: (1) protection of an endangered vegetation remnant in a new low-density subdivision; and (2) persistence of an endangered reptile in an established suburban environment.

**Introduction**

Cities are increasingly recognized as important places for biodiversity conservation, and can harbor a diversity of plant and animal species, including threatened species (Ives et al. 2016). They are also important places for conservation from a human perspective. Exposure to nature in cities delivers a remarkable range of health and well-being benefits, including stress reduction, reduced mortality, and improved cognitive development in children (Shanahan et al. 2015). Intriguingly, biodiverse green spaces may deliver greater benefits than less diverse spaces (Fuller et al. 2007; Pett et al. 2016). Biodiversity conservation in cities therefore presents a unique opportunity to reconnect urban residents with nature and its associated benefits.

However, urbanization has myriad impacts on biodiversity, including habitat loss and fragmentation; changes to resource availability; introduction of exotic species; alteration of local climates via the urban heat island; modification of natural disturbance regimes; and increased levels of chemical, light and noise pollution (Grimm et al. 2008). These changes lead to reduced species and genetic diversity, biotic homogenization (McKinney 2006), and loss of ecological function and ecosystem services (Radford & James 2015). Numerous emerging threats, such as those associated with the uptake of LED lighting and energy-efficient (but cavity-free) homes, are likely to have further impacts (Stanley et al. 2015). These impacts are long-lasting with little option for reversal, making urbanization one of the greatest drivers of biodiversity loss (McKinney 2006).

Fortunately, some of the negative impacts of urbanization can be mitigated by improvements to the design and construction of new developments, or through retrofitting existing development (Figure 1). Numerous examples of urban design with positive biodiversity outcomes exist (e.g., Hoerner 2012; Berndt et al. 2015; Ilkin et al. 2015, and Table S1 online). However, uptake has been slow when compared to other environmentally
focused design protocols. In the absence of a practical framework for incorporating existing urban ecological knowledge into urban design and development, planners and developers have little guidance about which design elements to implement, or how to balance biodiversity with other objectives. There is now an urgent need for an evidential urban design protocol that links urban design to biodiversity outcomes.

We propose a framework for incorporating ecological knowledge into urban planning, design and development to achieve onsite biodiversity benefits. This necessitates a fundamental shift in thinking from current practice, where biodiversity losses are “offset” somewhere else. Biodiversity offsetting delivers questionable ecological outcomes because retained patches face ongoing threats from the surrounding environment (Dettoll et al. 2013), and the offset is unlikely to ever adequately compensate for the losses incurred (Bokesey et al. 2010). Furthermore, offsetting ignores the place-based value of nature, and results in an unmitigated loss of nature in the places where urban residents live, work, and play.

In this Perspective, we outline five principles for biodiversity sensitive urban design (BSUD), and describe a framework for incorporating BSUD into urban development decision-making. Using two case studies, we demonstrate the application of BSUD to greenfield and existing urban environments.
A framework for BSUD

To achieve onsite biodiversity benefits, BSUD must mitigate the detrimental impacts of urbanization, while encouraging community stewardship of biodiversity by facilitating positive human-nature interactions. We have distilled relevant ecological knowledge for addressing the impacts of urbanization into five BSUD principles:

1. **Maintain and introduce habitat:** New developments can be planned to avoid habitat loss by prioritizing development in areas of low ecological value (Bekeisy et al. 2012). Retaining and protecting existing vegetation during the development process can also be beneficial for biodiversity (Hostetler et al. 2012; Kim et al. 2015). Habitat can be enhanced or created in existing urban areas by using native plant species and increasing vegetation complexity (Kim et al. 2015; Threlfall et al, 2016), adding green infrastructure (Williams et al. 2015) or incorporating critical resources and habitat analogues, such as habitat walls (Figure 1C; Lundholm & Richardson 2010). Residential gardens can be significant habitats; so resident-led wildlife gardening programs can make a valuable contribution to biodiversity (Goddard et al. 2010).

2. **Facilitate dispersal:** Dispersal can be facilitated by adding animal movement infrastructure (Taylor & Goldingay 2012), or establishing habitat connectivity corridors through private and public land (Goddard et al. 2010). Care should be taken to avoid inadvertently facilitating the spread of invasive weeds and pests.

3. **Minimize threats and anthropogenic disturbances:** The impact of weeds and exotic predators can be reduced by landscaping with indigenous plants and establishing pet containment programs (Kim et al. 2015). Increased runoff and nutrient loads can be mitigated by vegetated swales and rain gardens, which also deliver biodiversity benefits. The impact of noise and light pollution can be mitigated by sound barriers (although care should be taken that this does not affect dispersal), temporary road closures and dimming or reconfiguring street lights (Gaston et al. 2012).

4. **Facilitate natural ecological processes:** The disruptive effects of urbanization on natural cycles, ecological processes and disturbance regimes (Grimm et al. 2008) can be mitigated by providing adequate resources for target species, protecting and enhancing pollinator habitat, and planning to safely enable natural disturbance events such as fire and flooding.
(5) Improve potential for positive human-nature interactions. Cities are human environments and public engagement is key to successful conservation (Cooper et al. 2007). Urban design can help facilitate local stewardship of biodiversity by providing “cues to care” (Nassauer 1995), creating opportunities for positive interactions with nature, and addressing conflicts between biodiversity and safety objectives (Shim et al. 2015) or potential ecosystem services.

A key challenge for BSUD is providing a framework that is flexible enough to achieve biodiversity and urban development objectives, which are often competing. In this section, we provide some guidance for the implementation of BSUD, drawing on objectives-based decision-making processes (Keeney 1994; Figure 2).

Using this approach, the user first documents existing ecological values, and identifies biodiversity objectives for their site, considering both site and landscape contexts. Examples of biodiversity objectives include increasing the likelihood that threatened species will persist or re-introducing viable populations of native species that are locally extinct. At this stage, development objectives for the site should also be identified, including dwelling targets, infrastructure requirements, and other environmental objectives (e.g. energy consumption or water-quality standards). Next, potential BSUD actions are identified, based on the five principles discussed above, and assessed for their capacity to meet all specified objectives. Because it is driven by objectives, and not existing approaches, this process encourages creativity in the identification of potential actions (Keeney 1994), thereby facilitating innovation. Furthermore, because individual BSUD actions are evaluated for their potential to meet ecological and other objectives, this process provides a mechanism for users, including developers and planners, to resolve trade-offs between competing objectives.

To assess the capacity for BSUD to meet biodiversity objectives, those objectives must be measurable. Numerous metrics have been used to assess the impact of urban forms on biodiversity, including vegetation cover and proportions of native and non-native species (Lenth et al. 2006). These measures are simple to obtain, but are proxies for the amount of “nature” in an area and don’t directly measure biodiversity outcomes. We propose viability, or the probability that target species and ecosystems can persist once development occurs, as a more direct and meaningful measure. This can be assessed using multiple methods, including, in increasing order of complexity:

(1) Literature review – existing information may be sufficient to develop conceptual models capable of predicting whether an individual action will improve or worsen persistence probability (see Mata et al. 2016);

(2) Expert elicitation – where insufficient or lacking, information can be elicited from experts (Jurem et al. 2011), as demonstrated in Case Study 1; and

(3) Population viability analysis (PVA) – PVAs provide the most transparent framework for exploring how species persistence is linked to urban design, but require detailed data and can be troubled by uncertainty in estimates of the absolute risk of decline. Nevertheless, they are reliable tools for assessing relative risk (McCarthy et al. 2003), and can be legitimately used to compare alternative BSUD actions, as demonstrated in Case Study 2 (see Wriple et al. [2005] for another example of PVA to assess scenarios).

Although challenging, this step enables users to choose the action or actions that best meet biodiversity and other objectives in the final step of the framework. Trade-offs may be necessary; for example, if there are conflicts between biodiversity and other environmental or development objectives, if biodiversity leads to disservices (Kyrtölä and Sjöblad 2009) or if an action benefits one species, but is detrimental to another. Tools are available to assist with trade-offs (Joseph et al. 2009; Bekessy et al. 2012), however, transparent trade-offs are only possible where the biodiversity benefits of individual BSUD actions can be compared using a common metric.

Case Study 1: BSUD to protect native grasslands in greenfield development

We consider the hypothetical (but realistic) development of a 35 ha site in an urban fringe setting typical of those in northern and western Melbourne, Australia. The site, historically grazed by horses, is bounded on two sides by residential and industrial land uses, and by undeveloped agricultural land interspersed with native grassland remnants on its remaining boundaries.

Biodiversity values

A 5 ha remnant patch of critically endangered grassland exists within the site along one boundary. It is of significant ecological value and legislation will require that it is retained and protected. Because the remnant partially adjoins other remnant grasslands in adjacent properties, it additionally makes a contribution to landscape connectivity.

Biodiversity objectives

The primary ecological objective is to improve the viability of the native grassland remnant. The metric used
to measure viability is the probability that the grassland persists in the same or better condition for 25 years.

**Development objectives**

The site is to be developed as a typical low-density residential greenfield development, and will be subject to minimum housing densities and green space provisions specified by local planning policy.

**BSUD Actions**

Potential BSUD actions were identified in the design, construction and inhabitation phases of development, and primarily address key threats to native grassland viability associated with disruption to fire disturbance regimes, introduction of invasive weeds and changes to algalic conditions (Table 1).

**Assessing BSUD**

Estimates of the overall contribution of BSUD and partial contribution of individual BSUD actions to the grassland persistence were elicited in a workshop with five grassland experts, using a modified Delphi technique (Bugman et al. 2011). The elicitation process and expanded results are detailed in the supplementary material.

While there was variation between experts, all experts agreed that, if the grassland was in good condition, BSUD would contribute to a 0.31 increase in the probability of the grassland persisting without deteriorating when compared to a non-BSUD development (Figure 3). The majority of this increase was attributable to BSUD actions undertaken to protect and manage the grassland during the construction phase of development. This effect was likely to be smaller for a grassland initially in poor condition. (Note that urban development contributed to a marginal increase in the persistence of the native grassland, even without BSUD. This reflects expert pessimism about the capacity for grassland condition to be maintained in the absence of any weed or biomass management.)

**Decide**

All BSUD actions were considered to contribute to an improvement in the viability of the grassland remnant, so the final decision about which actions to take requires a trade-off between the biodiversity benefits provided and the costs of implementation (which may include financial costs and conflicts with other social and environmental objectives). It is impossible to compensate for losses associated during construction via any other means, so protection and management during this stage should be
prioritized to ensure an improvement in the long-term viability of the grassland. Planning for appropriate buffers and adjacent land uses, and seeking to promote active stewardship through thoughtful design are also recommended to achieve biodiversity objectives in this case.

**Case Study 2. BSUD for a threatened reptile in an established urban environment**

We consider here a hypothetical situation in which managers are considering options for retrospectively applying BSUD principles to an existing urban environment to improve the viability of the striped legless lizard, Delma impar. In this simulated example, a lizard meta-population exists across four small grassland patches of 0.5, 1, 1.5, and 3 ha, embedded in a suburban matrix and separated by distances of 200 to 450 m. The size and distribution of patches reflects those of grassland remnants within the western suburbs of Melbourne, Australia.

**Biodiversity values**

The striped legless lizard is a grassland endemic, listed as nationally vulnerable due to historical and current habitat clearance. Limited dispersal ability and habitat requirements mean this species is sensitive to urban development. This species is present at low densities (6 individuals/ha) at three of the four sites, but the long-term survival of the meta-population is thought to be threatened by poor dispersal and ongoing threats from the urban matrix, including predation by cats and decline in habitat quality. Additional values include the native grassland remnants, which are nationally endangered and provide important refuge for other native grassland species.

**Biodiversity objectives**

The primary biodiversity objective is to improve the viability of the striped legless lizard. This will be assessed over a 25-year time horizon using three metrics:
probability of persistence, population size, and probability of occupancy.

**Development objectives**

Potential BSUD actions should reflect the established nature of the surrounding suburban environment and community.

**BSUD actions**

Three potential BSUD actions were identified in discussion with two species experts: (1) creation of habitat corridors to facilitate dispersal; (2) improving habitat quality in existing patches; and (3) restricting domestic cats to indoors or confined outdoor runs.

**Assessing BSUD**

A formal PVA was used to assess the contribution of BSUD to lizard viability, and implemented in RAMAS Landscape (2003 v 3.0). BSUD actions were simulated by: (1) allowing dispersal between patches, which occurs with decreasing probability as the distance between patches increases up to a maximum of 400 m; (2) increasing the carrying capacity of individual patches; and (3) reducing the proportion of individuals lost to predation from 0.50 to 0.25. The modelling process and results are provided in detail in the supplementary material.

**Decide**

When considering BSUD actions in isolation, decreasing predation through cat containment delivered the biggest benefit to the legless lizard, regardless of which evaluation metric was used (Figure 4). This action alone increased the probability of persistence from 0.06 to 0.88 (Figure 4a). The largest benefits were gained when all three BSUD actions were applied, although habitat improvement and the creation of habitat corridors contributed to substantial increases in meta-population
abundance and occupancy, respectively, when considered separately in combination with cat containment (Figures 4B, C).

The creation of corridors is likely to pose significant challenges in an established suburban environment where private land ownership is the dominant tenure. These results suggest that cat containment combined with habitat improvement in remnant patches can deliver remarkably good outcomes when evaluated using probability of persistence and abundance, however this comes at the expense of patch occupancy.

Discussion

We have presented a framework for incorporating ecological knowledge into the planning, design and development of urban environments. This framework makes three important advances in the field of urban conservation planning. First, it seeks to achieve onsite biodiversity gains, which will be necessary for reversing biodiversity decline, and further, is important for reconnecting urban residents with nature and exposing them to the benefits it provides (Soga & Gaston 2016). Second, by seeking to achieve biodiversity benefits in any development, BSUD rises above the dominant land sparing/sharing debate relating urban development patterns to biodiversity outcomes (Lun & Fuller 2013), which is scale-dependent and can be difficult to apply in practice because development patterns typically lie somewhere between sparing and sharing. Third, because it explicitly links urban design to measurable biodiversity outcomes, BSUD provides a flexible framework for developers and planners to make transparent trade-offs between biodiversity and other socioeconomic objectives.

However, BSUD alone is insufficient to conserve biodiversity in cities while they continue to densify and expand. Land sparing is important for protecting remnant habitat and maintaining some ecosystem services (Stoett et al. 2015). Furthermore, many species will require large, well-connected habitat patches to survive (Beninde et al. 2015). To maximize urban biodiversity conservation outcomes, BSUD should be implemented alongside strategic land planning (e.g., Ickes et al. 2012), including specification for housing densities that minimize the urban footprint. Research investigating the effectiveness of BSUD at different scales and housing densities will make a valuable contribution to current understanding.

Critical next steps for BSUD include establishing regulations for minimum standards, and identifying responsible authorities, appropriate bridging organizations and project champions to help build cross-sectoral relationships and a trusted body of science. Incorporating BSUD into holistic performance tools, such as the Green Building Council of Australia’s Green Star Communities and US Green Building Council’s Leadership in Energy and Environmental Design, is a further opportunity.

Many questions remain. For example, what are appropriate targets for BSUD, and with whom will the responsibility for implementation lie? We believe it is reasonable to expect the proponent or developer to accept procedural and financial responsibility for implementing BSUD, as is the case for similar urban design schemes. Proposals could demonstrate adherence to biodiversity targets as part of the development approval process, with assessments undertaken independently by ecological consultants; however, metrics such as abundance or probability of occupancy may suffice where data availability or technical expertise precludes viability assessment.

Science can provide information about the biodiversity benefits of BSUD, but decisions about performance targets, including which species and ecosystems to target and what minimum standards apply, are subjective and must be made by a regulatory authority on behalf of society. These targets would likely be guided by sociocological criteria, and BSUD offers a flexible framework in which biodiversity benefits can be transparently traded-off against other environmental, social and economic goals. Regardless of the potential to shape a new conception of urban landscapes, where species can thrive and residents reap the remarkable range of benefits that biodiversity can deliver.

Acknowledgments

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elicitation workshop was granted by RMIT University's Human Research Ethics Committee (Project number CHEAN A 0000016851-0714).

Supporting Information
Additional Supporting Information may be found in the online version of this article at the publisher’s web site:
Table S1. Key Biodiversity Sensitive Urban Design elements in different phases of urban development.
Biodiversity sensitive urban design for native grasslands using expert elicitation.
Biodiversity sensitive urban design for the striped legless lizard using population viability analysis

References


The small patch of bush over your back fence might be key to a species’ survival

December 13, 2018 6.12am AEDT

A kangaroo finds refuge in a small patch of vegetation surrounded by a new housing estate. Georgia Gannard, Author provided

It may not look like a pristine expanse of Amazon rainforest or an African savannah, but the patch of bush at the end of the street could be one of the only places on the planet that harbour a particular species of endangered animal or plant.

Our newly published global study of the conservation value of landscapes in 27 countries across four continents has found these small patches of habitat are critical to the long-term survival of many rare and endangered species.

In Australia, our cities are home to, on average, three times as many threatened species per unit area as rural environments. This means urbanisation is one of the most destructive processes for biodiversity.

It tends to be the smaller patches of vegetation that go first, making way for a housing development, a freeway extension, or power lines. Despite government commitments to enhance the vegetation cover of urban areas and halt species extinctions, the loss of vegetation in Australian cities continues.

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Read more: We’re investing heavily in urban greening, so how are our cities doing?

This story plays out all over the world day after day. Of course, it’s not just an urban story. Patches of rural vegetation are continually making way for, say, a new pivot irrigation system or a new mine to provide local jobs.

Mostly, policymakers and scientists do not consider these losses to be, on their own, a fatal blow to the biodiversity of a region or country. Small, often isolated patches of vegetation are considered expendable, tradeable, of limited ecological value due to their small size and relatively large amount of “edgy” habitat. Wrong.

Research forces a rethink

Our study analysed the relationship between conservation value of vegetation patches and their size and isolation in landscapes across Europe, Australia, North America and Africa. The findings prompt a rethink of long-held views about the relative importance of small, isolated habitat patches for
biodiversity conservation. We show that these patches often have unique ecological and environmental characteristics.

That’s because they are the last patches left over from extensive clearing of flat, fertile land for agriculture or urban growth close to rivers and bays. They often contain habitats for rare or endangered species that have disappeared from the rest of the landscape. This makes these small, isolated patches of habitat disproportionately important for the survival of many species.

Our study calls for a rethink of urban planning and vegetation management regulations and policies that allow small patches of vegetation to be destroyed with lower (and often zero) scrutiny. We argue that the environment is suffering a death by a thousand cuts. The existence of large conservation reserves doesn’t compensate for the small patches of habitat being destroyed or degraded because those reserves tend to contain different species to the ones being lost.

The combined impact of the loss of many small patches is massive. It’s a significant contributor to our current extinction crisis.

Read more: Let’s get this straight, habitat loss is the number-one threat to Australia’s species

Why are small patches seen as dispensable?

A key variable used in decisions on vegetation-clearing applications is the size of patch being destroyed. Authorities that regulate vegetation management and approve applications are more permissive of destruction of small patches of vegetation.

This is partly due to a large body of ecological theory known as island biogeography theory and subordinate theories from metapopulation ecology and landscape ecology. These theories suggest that species richness and individual species’ population sizes depend on the degree of isolation of the patch, its size and the quality of the habitat it contains.

While it is crucial that we conserve large, intact landscapes and wilderness, the problem with conserving only large and well-connected patches of high-quality vegetation is that not all species will be conserved. This is because some species exist only in small, isolated and partially degraded habitats, such as those characteristic of urban bushlands or remnant bush in agricultural areas.

For this reason, we highlight the importance of protecting and restoring habitats in these small isolated patches. And these areas do tend to be
more vulnerable to invasion by weeds or feral animals. If the impacts of invasive species are not managed, they will eventually lead to the destruction of the habitat values and the loss of the species those habitats support.

Small and isolated patches of vegetation on the urban fringe are under enormous pressure from human use, pets, escaped seed of Agapanthus and the many other invasive species we plant in our gardens. These plants spread into local bushland, where they outcompete the native plants.

Communities can make a difference

As well as these perils, being on the urban fringe also brings opportunity. If a remnant patch of vegetation at the end of the street is seen to be of national environmental importance, that presents a great opportunity to channel the energies of community groups into conserving and restoring these patches.

A patch that is actively cared for by the community will provide better habitat for species. It’s also less likely to fall foul of development aspirations or infrastructure projects. The vicious cycle of degradation and neglect of small patches of habitat can be converted into a virtuous cycle when their value is communicated and local communities get behind preserving and managing them.
Urban planners and developers can get on board too. Rather than policies that enable the loss of vegetation in urban areas, we should be looking at restoring habitats in places that have lost or are losing them. This is key to designing healthy, liveable cities as well as protecting threatened species.

**Biodiversity-sensitive urban design** makes more of local vegetation by complementing the natural remnant patches with similar habitat features in the built environment, while delivering health and well-being benefits to residents. Urban development should be seen as an opportunity to enhance biodiversity through restoration, instead of an inevitable driver of species loss.

*Read more: Here’s how to design cities where people and nature can both flourish*

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Here’s how to design cities where people and nature can both flourish

October 24, 2019 10:36am AEDT

An impression of biodiversity sensitive urban design (BSUD) developed by the authors in collaboration with Mauro Baracero, Jonathan Wars and Catherine Harries of RMIT’s School of Architecture and Design. Author provided

Here’s how to design cities where people and nature can both flourish

Urban nature has a critical role to play in the future liveability of cities. An emerging body of research reveals that bringing nature back into our cities can deliver a truly impressive array of benefits, ranging from health and well-being to climate change adaptation and mitigation. Aside from benefits for people, cities are often hotspots for threatened species and are justifiable locations for serious investment in nature conservation for its own sake.

Australian cities are home to, on average, three times as many threatened species per unit area as rural environments. Yet this also means urbanisation remains one of the most destructive processes for biodiversity.

Read more: Higher-density cities need greening to stay healthy and liveable

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Despite government commitments to green urban areas, vegetation cover in cities continues to decline. A recent report found that greening efforts of most of our metropolitan local governments are actually going backwards.

Current urban planning approaches typically consider biodiversity a constraint – a “problem” to be dealt with. At best, biodiversity in urban areas is “offset”, often far from the site of impact.

This is a poor solution because it fails to provide nature in the places where people can benefit most from interacting with it. It also delivers questionable ecological outcomes.

Read more: EcoCheck: Victoria’s flower-stream western plains could be swamped by development

Building nature into the urban fabric

A new approach to urban design is needed. This would treat biodiversity as an opportunity and a valued resource to be preserved and maximised at all stages of planning and design.

In contrast to traditional approaches to conserving urban biodiversity, biodiversity-sensitive urban design (BSUD) aims to create urban environments that make a positive onsite contribution to biodiversity. This involves careful planning and innovative design and architecture. BSUD seeks to build nature into the urban fabric by linking urban planning and design to the basic needs and survival of native plants and animals.

BSUD draws on ecological theory and understanding to apply five simple principles to urban design:

1. protect and create habitat
2. help species disperse
3. minimise anthropogenic threats
4. promote ecological processes
5. encourage positive human-nature interactions.

These principles are designed to address the biggest impacts of urbanisation on biodiversity. They can be applied at any scale, from individual houses (see Figure 2) to precinct-scale developments.
BSUD progresses in a series of steps (see Figure 1), that urban planners and developers can use to achieve a net positive outcome for biodiversity from any development.

BSUD encourages biodiversity goals to be set early in the planning process, alongside social and economic targets, before stepping users through a transparent process for achieving those goals. By explicitly stating biodiversity goals (eg, enhancing the survival of species X) and how they will be measured (eg, probability of persistence), BSUD enables decision makers to make transparent decisions about alternative, testable urban designs, justified by sound science.

For example, in a hypothetical development example in western Melbourne, we were able to demonstrate that cat containment regulations were irreplaceable when designing an urban environment that would ensure the persistence of the nationally threatened striped legless lizard (Figure 3).
What does a BSUD city look, feel and sound like?

Biodiversity-sensitive urban design represents a fundamentally different approach to conserving urban biodiversity. This is because it seeks to incorporate biodiversity into the built form, rather than restricting it to fragmented remnant habitats. In this way, it can deliver biodiversity benefits in environments not traditionally considered to be of ecological value.

It will also deliver significant co-benefits for cities and their residents. Two-thirds of Australians now live in our capital cities. BSUD can add value to the remarkable range of benefits urban greening provides and help to deliver greener, cleaner and cooler cities, in which residents live longer and are less stressed and more productive.

Read more: Why a walk in the woods really does help your body and your soul

BSUD promotes human-nature interactions and nature stewardship among city residents. It does this through human-scale urban design such as mid-rise, courtyard-focused buildings and wide boulevard streetscapes. When compared to high-rise apartments or urban sprawl, this scale of development has been shown to deliver better livability outcomes such as active, walkable streetscapes.
Mid-rise, courtyard-focused buildings and wide boulevard streetscapes created through a biodiversity sensitive urban design approach. Graphical representation developed by authors in collaboration with M. Barzouo, C. Honell and J. Nara. RMIT School of Architecture and Design. Author provided.

By recognising and enhancing Australia's unique biodiversity and enriching residents' experiences with nature, we think BSUD will be important for creating a sense of place and care for Australia's cities. BSUD can also connect urban residents with Indigenous history and culture by engaging Indigenous Australians in the planning, design, implementation and governance of urban rejuvenating.

Read more: Why 'green cities' need to become a deeply lived experience

What needs to change to achieve this vision?

While the motivations for embracing this approach are compelling, the pathways to achieving this vision are not always straightforward.

Without careful protection of remaining natural assets, from remnant patches of vegetation to single trees, vegetation in cities can easily suffer “death by 1,000 cuts”. Planning reform is required to move away from offsetting and remove obstacles to innovation in on-site biodiversity protection and enhancement.

In addition, real or perceived conflicts between biodiversity and other socio-ecological concerns, such as bushfire and safety, must be carefully managed. Industry-based schemes such as the Green Building Council of Australia’s Green Star system could add incentive for developers through BSUD certification.

Importantly, while BSUD is generating much interest, working examples are urgently required to build an evidence base for the benefits of this new approach.
SCHEDULE 3 TO CLAUSE 42.01 ENVIRONMENTAL SIGNIFICANCE OVERLAY

Show on the planning scheme map as ES03.

DANDEMONG RANGES BUFFER

Statement of environmental significance

The area covered by this schedule is identified in "Nuts of Biological Significance in Knox - 2nd Edition", 2010. The protection and appropriate management of this area is of particular importance as it forms a buffer to the Dandenong Ranges National Park and other identified sites of biological significance, both at its edge and within the area.

Many residential lots within this area, in part due to their lot size and site coverage have been able to retain indigenous trees and intact understorey. The canopy often includes higher numbers of large old indigenous trees than elsewhere in Knox. These trees are irreplaceable in terms of the lifetimes of current residents and their children. They are often critical for habitat, particularly for species like the Powerful Owl and bats.

In this schedule, the term "indigenous" refers to species that are native to Knox.

The indigenous vegetation is at risk from incremental losses due to intensification of land use and development. The accumulation of small-scale decisions to clear has caused significant impacts.

Attributes of this area include:

- Its role as an ecological buffer zone, and for providing ecosystem services.
- A higher density of large old indigenous (including remnant) trees than the rest of Knox, which cannot be replaced in the short to medium term.
- Other remnant indigenous trees.
- Its role in extensive dispersal of native birds, insects, pollen and seeds through the area which is important for landscape-scale maintenance of biodiversity.
- A number of uncommon, rare or threatened species of wildlife that live or travel through the area.
- Stream ecosystems including tree canopy, shrubs and lower plants that occur along the many waterways that flow through the area which maintain plant and animal habitat and water quality.
- Remnant vegetation that mostly belongs to, or is derived from, Ecological Vegetation Classes (EVCs) that are regionally endangered or vulnerable.
- Its role in providing people in the area with a distinctive bushy environment and contact with nature and its contribution to local amenity, health and wellbeing.

Environmental objective to be achieved

To protect or improve the condition and viability of remnant indigenous vegetation and aquatic systems.

To protect indigenous vegetation and its functions by minimising further fragmentation, avoiding the accumulation of incremental losses through small scale approvals to clear, and preventing interruptions to connectivity between areas of indigenous vegetation.

To achieve a net increase in the extent of habitat and improve its ecological condition.

To avoid any buildings, works or subdivisions that are likely to compromise:

- The long-term conservation of biologically significant areas.
- The movement of native fauna, indigenous plant species pollen or plant propagules out of, or between, biologically significant areas.
KNOX PLANNING SCHEME

- Remnant patches of regionally threatened ecological vegetation classes or communities.
- The security of species of flora or fauna that are threatened in Knox or more widely.
- Opportunities for future environmental restoration, such as identified offset sites that may strengthen wildlife corridors or the ecological buffering capacity of the area.
- The amenity of the natural landscape.
- The benefits that the natural environment provides for community health and wellbeing.

To provide for adequate bushfire protection measures that minimise adverse environmental impacts.

To protect indigenous vegetation that stabilises land vulnerable to erosion or landslide.

To maximise the continuity of indigenous vegetation used by native fauna as habitat or for passage, particularly between identified sites of biological significance, through protection from:

- Removal of indigenous understorey and overstorey vegetation.
- Fragmentation of habitat and the accumulation of incremental losses.
- Displacement of indigenous flora or fauna by environmental weeds.
- Alteration to the natural flow and temperature regimes of streams and wetlands.
- Degradation and interruption to continuity of indigenous riparian vegetation.
- Input of sediments, nutrients and other pollutants into streams and water bodies.
- Changes in topography that impact negatively on indigenous vegetation or cause erosion or landslide.

To ensure offsets are located as close as practicable to the local catchment and plant/animal population areas impacted by vegetation loss. Preference is to be given to any reasonable option to locate offsets within Knox.

To reduce the threat of local extinction to flora and fauna species in Knox.

To maintain the role that nature plays in Knox's livability and the health and wellbeing of the community.

To provide appropriate fencing (temporary or permanent) to protect retained vegetation or aquatic environments from movements of machinery, vehicles or heavy foot traffic.

3.0 Permit requirement

Buildings and works

A permit is not required:

- To construct a building or construct or carry out works, including that associated with:
  - Roadworks;
  - a Dependent persons unit;
  - a domestic swimming pool or spa and associated mechanical and safety equipment;
  - a pergola, verandah or deck;
  - provided the location of the building and/or works:
    - is located at least 10 metres from a watercourse (whether perennial, seasonal or intermittent); or
    - is located at least 10 metres from a water body; or
    - will not result in excavation or filling within the Tree Protection Zone (TPZ) of any indigenous vegetation (other than grass) that would
otherwise require a permit for its removal, destruction or lopping under this overlay. The radius of the TPZ is calculated for each tree by multiplying its trunk diameter by 12. The measurement of the trunk diameter is at 1.4 metres above ground.

- To carry out works necessary for normal maintenance of artificial stormwater treatment ponds (except where works and/or associated vegetation removal exceed one hectare in area, or where machinery access would result in damage to remnant indigenous vegetation).
- To undertake development or works carried out as part of a management plan approved by the responsible authority specifically to enhance the site's biologically significant attributes.

Subdivision

A permit is not required to subdivide land where the lot to be subdivided is at least 30 metres from any of the following:

- A watercourse (whether perennial, seasonal or intermittent).
- A water body.
- Any indigenous vegetation (other than grass) that would require a permit for its removal, destruction or lopping.

Vegetation

A permit is not required to remove, destroy or lop vegetation that is:

- Not indigenous within Knox (e.g. Victorian species of Boronia or Grevillea).
- Dead. This exemption does not apply to standing dead trees with a trunk diameter of 40 centimetres or more at a height of 1.3 metres above ground level.
- A tree within two metres of the main roof structure of an existing building used for accommodation (excluding a fence).
- A tree overhanging the roof of a building used for Accommodation, exclusive of buildings and works normal to a dwelling. This exemption only allows the removal, destruction or lopping of that part of the tree which is overhanging the building consistent with Australian Standard AS 4973 - 2007, ‘Pruning of amenity trees’.
- Grass within a lawn, garden or other planted area and is to be mowed or slashed for maintenance only.
- Grass within existing pasture and is to be cut or grazed.
- The minimum amount necessary to maintain a Minnie utility installation in accordance with a current signed Memorandum of Understanding between Knox City Council and the relevant service provider.
- Required to be removed for normal maintenance of artificial stormwater treatment ponds (except where the vegetation removal and/or associated works exceed one hectare in area, or where machinery access would result in damage to remnant native vegetation).
- Seedlings or regrowth less than three years old and the land is being maintained for established pasture, crops or gardens.
- Woody plants on an existing dam wall.
- For maintenance pruning only and no more than 1/3 of the foliage of any branch is removed from any individual plant. This exemption does not apply to:
  - Pruning or lopping of the trunk of a tree or shrub.
  - Vegetation within a road or railway reservation.
Application requirements

Where the responsible authority considers the proposal may impact the environmental objectives of this schedule an application should be accompanied by a report covering the following information to the satisfaction of the responsible authority:

(a) A site plan (drawn to scale and dimensioned) showing:
   - Property boundaries.
   - The nearest roads.
   - Existing and any proposed fences.
   - Existing and proposed buildings and works, including any proposed subdivision boundaries.
   - The location, species, extent and type of all existing indigenous vegetation, habitat, threatened communities and threatened EVCs on the site, including dead or fallen vegetation.
   - The location, species and extent of all indigenous vegetation to be removed, destroyed or lopped, including trunk girth, height and condition of trees.
   - A Tree Protection Zone (TPZ) around existing trees. The radius of the TPZ is calculated for each tree by multiplying its trunk diameter by 12.
   - The measurement of the trunk diameter in at 1.4 metres above ground.
   - The location of all watercourses, water bodies, hydrology or other features of environmental significance.

(b) State the population sizes of any indigenous plant species affected by the proposal that are vulnerable, endangered or critically endangered in Knox or more widely.

(c) The habitat value of any affected indigenous vegetation to fauna.

(d) Any additional flora and/or fauna surveys and assessments undertaken.

(e) An assessment of the proposal’s potential impact on the natural environment, local amenity, health and wellbeing, including an indication of measures adopted to avoid or minimise the potential impact and where any adverse impacts cannot be avoided, an explanation why.

(f) Where adverse impacts cannot be avoided any proposed offsets to be provided.

(g) Any bushfire protection measures to be provided, including defendable space.

(h) The impact of the proposal on the environmental values of the site and surrounds over a ten year period.

(i) An arborist’s assessment of any trees which are proposed to be removed for safety reasons.

4.0 Decision guidelines

Before deciding on an application, the responsible authority must consider as appropriate:

- Whether the proposal will have an adverse impact on the site or on the environmental significance of the Dandenong Ranges National Park or other adjoining sites.
- The type, extent, quality and conservation significance of any indigenous vegetation.
- Whether the proposal adopts appropriate siting, design and management measures to avoid, or at least minimise, any adverse impacts on indigenous vegetation, habitat values, hydrology and land stability.
- The results of any survey/assessment of the biological values (flora or fauna), taking into consideration when the survey/assessment was undertaken, seasonal conditions and whether it was undertaken by a suitably qualified person.
The conservation requirements of any threatened species, ecological community or LVCs on the site.

Whether the loss of indigenous vegetation will be offset and whether such an offset can be provided within Knox. In addition, whether any long term protection measures will be provided for the offsets.

Whether the proposal contributes to the ecological restoration or enhancement of the site, including the practicality of measures proposed to collect seeds and/or propagules or to translocate individual plants and any actions required to re-establish these species in a more secure location.

Whether development has been designed to avoid locating buildings or services within the Tree Protection Zone (TPZ) of retained large trees. The radius of the TPZ is calculated for each tree by multiplying its trunk diameter by 1.2. The measurement of the trunk diameter is at 1.4 metres above ground.

The value of the vegetation to local amenity, health and wellbeing.

**Bushfire protection**

Whether any bushfire protection measures are required.

Whether the proposal will result in an increase in bushfire risk to life and property and if so, whether there are more suitable alternatives.

Whether the proposal has been appropriately sited so as to reduce the bushfire risk.

Whether the bushfire protection measures are designed so as to minimise ecological damage while still achieving the fire safety objective.

Whether the development and/or vegetation outcomes on the site are compatible with the ongoing bushfire protection management measures.

**Subdivision**

For subdivision applications, the need to specifically address or vary:

- lot sizes;
- lot boundary alignment and layout;
- road network and driveway access;
- open space;
- building envelope or building exclusion areas;
- drainage or effluent disposal sites,

to better protect the significant biological values of the site.

**Reference documents**

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"Advisory List of Threatened Invertebrate Fauna in Victoria – 2009" and its successors, Department of Sustainability and Environment, 2009


Schedules 2 and 3 to the Flora and Fauna Guarantee Act 1988
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Australian Standard® AS 4373 – 2007, 'Pruning of amenity trees'
This VPP Practice Note provides guidance on how to assess the significance of vegetation in urban areas and how to protect significant vegetation through the planning scheme. Vegetation can make an important contribution to the urban environment. It may be of botanical or scientific significance or have environmental, historical, aesthetic or cultural value. Vegetation may also be important to the community in defining and contributing to the character of a city, suburb or township. Often vegetation is removed or incrementally depleted if sites are redeveloped or through general maintenance of a property. These incremental changes can have an impact on the appearance of an area and result in the loss of significant vegetation. Various measures can be used to protect vegetation in urban areas. The planning scheme is one way that significant or important vegetation can be identified and protected.

This practice note:
- identifies issues associated with protection of vegetation in urban areas
- outlines techniques for the assessment of the significance of vegetation
- provides guidance on developing local objectives and strategies for protecting vegetation through a local vegetation protection strategy and the planning scheme
- provides suggestions for using tools in the Victoria Planning Provisions (VPP) and other measures to implement local vegetation protection strategies
- provides guidance on enforcement and monitoring of policy performance.

**Vegetation defined**
Vegetation is defined as plants collectively, the plant life of a particular region considered as a whole (Meadow, Dictionary, Third Edition). Vegetation includes trees, shrubs, plants, grasses and wetland vegetation and their habitats. It includes native and exotic vegetation.

**What are the key issues?**
The key issues are to:
- identify the value of vegetation to the community and the factors that contribute to its value
- establish a reliable and consistent methodology to evaluate vegetation
- identify criteria for assessing vegetation for its natural and cultural value
- protect vegetation for its contribution to the character of an area
- identify the best methods of protecting vegetation
- balance the protection of vegetation with the practical considerations of vegetation management and safety
- manage change in the urban environment where increases in development densities result in the cumulative loss of vegetation
- control vegetation removal before development approval is granted.

**Developing a strategy for vegetation protection**
A local strategy for vegetation protection should identify vegetation issues at the local level and formulate objectives and strategies for vegetation protection and enhancement. Suggested steps for preparing and implementing a local vegetation protection strategy are:
1. Undertake a vegetation survey
2. Determine vegetation significance
3. Prepare a local policy (MSS and local policy)
4. Apply overlay provisions, where appropriate
5. Enforce the planning scheme where necessary

If the planning scheme is to be used to protect vegetation, a vegetation survey or study must be undertaken. The survey can be a component of, or contribute to, urban character or heritage studies. If the principal objective is to identify and protect vegetation for its aesthetic value or its contribution to the character of an area, this may be achieved as part of an urban character study.
What is significant vegetation?

Types of significance
Vegetation in urban areas can play an important role by:
- maintaining biodiversity (community, species or genetic diversity) often in small remnants of habitat
- containing complete communities (or ecosystems) of indigenous species. Some may contain rare or endangered species or may be important for interaction between species (for example, the rare Eltham copper butterfly) dependent on Sweeney Bursaria (Bursaria spinosa) for its survival
- providing valuable habitat for wildlife and wildlife corridors
- halting or stabilising environmental-degradation processes such as soil erosion, salinity, changes in the depth of the watertable or climate modification
- providing useful seed sources from remnant vegetation for local regeneration projects
- its cultural associations (including social, spiritual, aesthetic and historical)
- its contribution to the character of the area. Vegetation may be the main feature defining the character of an urban area (for example, Blackburn Lake area, City of Whittlesea).

How can you assess significance?
Significance may be determined based on:
- objective assessment of scientific information and research, considered on merit rather than community opinion
- subjective assessment of aesthetic aspects, requiring a variety of community opinion or a combination of the two.

The steps in determining significance are:
1. Gathering information
2. Assessing against criteria
3. Comparative analysis (establishing comparative significance ratings)
4. Preparing statements of significance.

1. Gathering information
- Undertake a broad survey to identify areas likely to contain important or significant vegetation. A number of information sources are available to assist in this process (see references)
- Check if any vegetation is formally recognised on the Register of the National Estate, National Trust Register or listed under the Flora and Fauna Guarantee Act 1988
- Focus on specific areas or sites of interest
- Undertake a vegetation survey of specific areas or sites. Vegetation surveys must be undertaken by suitably qualified arboricultural consultants, botanists, landscape architects or other experienced environmental scientists
- Involve the public in the survey and assessment process, whether the assessment method has an objective (scientific) or subjective (aesthetic) basis.

Many community and environmental groups can make a significant contribution to the technical aspects of a vegetation study based on local knowledge. This is particularly important when considering local significance and particular qualities that contribute to the sense of place and identity or define its character.

Surveys provide a valuable ‘snapshot’ of vegetation at a point in time and are valuable for monitoring planning policy and the effect of planning scheme requirements. As vegetation changes over time, vegetation surveys should be periodically reviewed.

2. Assessing against criteria
Assessment methods must be rigorous as they provide strategic justification for protection through the planning scheme and will be the basis of decisions.

Recognised assessment criteria should be used. Of the many sets of criteria that have been developed, the eight broad assessment criteria of the Australian Heritage Commission’s (AHC) criteria for assessing places for listing on the Register of the National Estate have the benefit of encompassing natural and cultural significance, including Aboriginal significance, and are recommended.

Under the AHC criteria, vegetation may be significant or of other special value because of its:

A. Importance in the course, or pattern, of Australia’s natural or cultural history
B. Possession of uncommon, rare or endangered aspects of Australia’s natural or cultural history
C. Potential to yield information that will contribute to an understanding of Australia’s natural or cultural history
D. Importance in demonstrating the principal characteristics of a class of Australia’s natural or cultural places or environments
E. Importance in exhibiting particular aesthetic characteristics valued by a community or cultural group
F. Importance in exhibiting a high degree of creative or technical achievement at a particular period (relevant to cultural heritage places rather than vegetation)
G. Strong or special associations with a particular community or cultural group for social, cultural or spiritual reasons
H. Special association with the life or works of a person, or group of persons, of importance in Australia’s natural or cultural history

(Note: also see more specific sub-criteria for each of the eight criteria adopted by the AHC – see References for AHC contact details.)
Other useful criteria include:
- National Trust (Victoria), Register of Significant Trees of Victoria criteria. This has been developed to be applied to trees or a group of trees.
- Australian Natural Heritage Charter (Australian Committee for IUCN 1997). This contains standards and principles for the conservation of places of natural heritage significance.
- Other criteria have been developed for individual studies, for example, the NEROC study (see references) and may be acceptable.
These criteria may also provide a framework to assess the aesthetic or cultural value of vegetation.

3. Comparative analysis
Measures to protect vegetation should be justified based on the identification of the comparative importance of vegetation. This may include the degree of representation and integrity. Comparison of one place with another of similar features and values allows the level of significance to be determined, ranging from national to State, to regional or local significance. Comparisons can be made within each level, or across levels. Rather than counts individually undertaking vegetation studies, there is value in undertaking vegetation surveys on a regional level. The NEROC study of north-east Melbourne involved four councils.
Where vegetation of local significance is to be protected under the planning scheme, this should be similarly assessed and documented to substantiate its natural or cultural importance.
If surveys reveal new sites of national or State significance, these should be referred to Heritage Victoria (for trees, gardens, and other places of cultural significance), the Department of Natural Resources and Environment (Plants and Fauna Guarantee Act 1995) or Aboriginal Affairs Victoria (sites of Aboriginal significance). Recognition by these organisations may support protection under the planning scheme.

4. Statements of significance
A statement of significance is a succinct statement expressing what vegetation is significant or important and why. It should be written with reference to the assessment criteria and based on the survey results and, if relevant, reliable secondary data. It should not restate the survey or documentary evidence but be cross-referenced to it. The level of significance will enable the development of appropriate policies.
Statements of significance may be prepared for individual items of local significance or vegetation areas.

An example of a statement of significance

**Federal Oak**
Parliament House Gardens
Spring Street
Melbourne

The first plantings in the Parliament House Gardens took place in 1856. In 1885, land was purchased at the north-east of the Parliamentary Reserve from St Peter’s Church of England. A garden layout was prepared by Peter Kerr, the designer of Parliament House. In about 1889, William Guilfoyle, Director of the Melbourne Botanic Gardens redesigned the gardens and the planting was well established by 1892. The layout today conforms to this design. In February 1890, an Agarita Oak (Quercus coccinea) was planted by the Premier of New South Wales, Sir Henry Parkes (1815–95), to commemorate the Australian Federal Convention of 1890–91. This tree has become known as the Federal Oak.

The Federal Oak is of historic significance for its associations with the Australian Federal Convention, the first meeting of representatives from the colonies to agree to the concept of Federation. The conference also signalled the beginning of the constitutional conventions designed to frame a Federal Constitution (AHC Criterion A.4).

The Federal Oak is of historic significance for its association with Sir Henry Parkes, an important figure in Australian political history. Parkes first entered the New South Wales Parliament in 1854 and first became Premier in 1877. He initiated numerous reforms and formed his fourth ministry in 1887. From 1885, he was a key figure in the federal movement and is regarded as the 'Father of Federation' (AHC Criterion A.4).

(Source: Heritage Council Victoria)

(Note: The statement of significance is a statement of the conclusion of a detailed process of assessment and is only part of the documentation required to substantiate the significance of a place.)

Summary
- Significance is often a combination of factors – for example, environmental and cultural, historic and aesthetic.
- Remnant vegetation in urban areas is modified but still important as habitat.
- Mixed urban plantings will often have cultural, aesthetic and amenity value.
- Vegetation is changing – growing and declining.
- Vegetation of local or greater significance should be surveyed and documented to support the introduction of planning policies and provisions.
- Surveys must be undertaken by qualified persons.
- Analysis of survey results should identify the comparative importance of vegetation to justify policies and protection measures.
- Prepare a succinct statement of significance.
Using the planning scheme to protect and conserve vegetation

**Developing a strategic vision – MSS and local policies**

If it is proposed to protect vegetation in a planning scheme, this must be supported by strategic justification and identified in the Municipal Strategic Statement (MSS).

The role of the MSS is to provide a vision for the future development of the municipality and provide a framework for local policies and the application of zones and overlays. The MSS should clearly articulate objectives for protecting vegetation, strategies for achieving the objectives and practical implementation measures.

The objectives should state why vegetation should be protected, what level of protection is being sought and what the desired outcomes are for protecting vegetation drawing on strategic work. Consideration should be given as to whether other planning scheme requirements would assist in meeting the objectives (such as buildings and works requirements).

The community should have ownership of the objective by being involved in formulating the strategic vision. If the community is involved, there is a greater likelihood that the outcomes sought by the planning scheme will be understood and supported.

Objectives for protecting vegetation may be related to other objectives such as protecting significant landscapes, valuable habitats or the character of a place or area.

Local policies should explain and inform planning decisions. They should reinforce and emphasise broader strategic objectives. In some areas, where vegetation protection is important to council’s broader planning objectives, the preparation of a specific policy for vegetation protection may be preferred (such as in the Yarra Ranges Planning Scheme). Typical local policies may reinforce the need to protect remnant vegetation, emphasise the significance of mature vegetation or the need to actively eradicate environmental weeds.

In some instances, a local policy may be all that is required to achieve a particular objective.

**Resource implications**

Remember to consider the resources needed to implement the planning requirements, including providing assistance and advice to property owners and developers.

**Summary**

- What is the strategic objective or vision? What is the outcome being sought?
- Demonstrate the strategic and policy basis for vegetation protection.
- Show a clear link between the objectives, strategy and implementation measures.
- Involve the community.
- Ensure that there is rigorous justification for the policy and provisions.
- Consider the resources needed to give advice and administer scheme requirements.

**Selecting a planning tool**

The principal tools in the VPP to protect vegetation in urban environments are overlays.

The VPP contains four overlays that can be used to protect and manage vegetation in urban areas: the Vegetation Protection Overlay (VPO), the Environmental Significance Overlay (ESO), the Significant Landscape Overlay (SLO) and the Heritage Overlay (HO). Each overlay includes a schedule that is used to specify how the overlay applies to land within a particular municipality.

Choosing the correct overlay is important and the principles used should be applied consistently throughout the planning scheme. The following questions should be asked when choosing an overlay to protect vegetation:

1. What is to be protected (individual or group of trees, area of habitat, etc.)?
2. Why is it being protected (heritage, scientific, cultural, landscape or habitat value)?
3. How should it be protected (protection of the root zone, requirements about buildings and works, subdivision)?
4. What other requirements apply to the land and are there any gaps (zone provisions, other overlays, native vegetation provisions)?

The overlay selected should accurately reflect the identified objectives. In other words, there should be transparency in the application of planning policy and requirements. This may involve weighing up various reasons for protecting the vegetation. For example, the principal reason for a tree’s significance may be its cultural value rather than its habitat value. The tree may be of Aboriginal significance or contribute to the setting of an historic building. Therefore, the HO may be more appropriate than a VPO.

The overlay should also provide the appropriate requirements to achieve the objective. In urban situations, buildings and works can have a significant impact on vegetation, including intruding on the root zone. In these cases, an overlay that provides areas where no buildings and works may be chosen. If the root zone is to be protected, the schedule may only require a permit for buildings and works within a certain distance from the vegetation.
Overlays for vegetation protection

Vegetation Protection Overlay
The VPO is specifically designed to protect significant native and exotic vegetation in an urban or rural environment. It can be applied to individual trees, stands of trees or areas of significant vegetation.

The purposes of the VPO are to:
- protect areas of significant vegetation
- ensure development minimizes loss of vegetation
- preserve existing trees and other vegetation
- recognise vegetation protection areas as locations of special significance, natural beauty, interest and importance
- enhance habitat and habitat corridors for indigenous fauna
- encourage the regeneration of native vegetation.

The VPO does not include buildings and works or subdivision requirements. It is, therefore, the appropriate tool for identifying and protecting vegetation where buildings and works or subdivision are not important considerations.

The VPO requires a permit to remove, destroy or top any vegetation specified in the schedule to the overlay. The responsible authority must specify the vegetation affected in a schedule and prepare a statement of the nature and significance of the vegetation to be protected, the vegetation protection objectives to be achieved and must specify permit requirements and decision guidelines. More than one area may be identified and multiple schedules may be required.

The area to which the schedule applies is identified geographically on the planning scheme maps and may be applied to an area or a specific group, individual trees or plants.

The vegetation specified in Clause 42.02-2 is always exempt from the overlay requirements. This includes, but is not limited to, the removal of vegetation to clear electric lines and the removal, destruction or topping of vegetation for emergency access.

Examples of where the VPO has been applied include:
- Wyndham Planning Scheme
  - Tuggerah Cemetery
  - Angas Estate Grassland Reserve
- Mornington Peninsula Planning Scheme
  - township vegetation (includes the Mt Eliza escarpment, areas within Mornington township, rural residential areas of Somerville, Hastings, Crib Point. Westernport coastal villages and the hillside, cliff top, sand dune and wild coast areas of the southern Mornington Peninsula)
  - significant roadside corridors (roadside reserves, along streamlines and within private property)
- Barlade Planning Scheme
- Loyola Seminar Precinct.

Environmental Significance Overlay
Where there are environmental constraints on development or other important ecological values are identified, such as in coastal or riparian habitat, the use of an ESO may be appropriate.

This overlay is applied if vegetation protection is part of a wider objective to protect the environmental significance of the area.

The ESO may contain requirements for the construction of buildings and the earthing of works as well as fencing structures. It can also include requirements for subdivision and the removal, destruction or topping of vegetation.

A schedule to the ESO is used to specify the name of the environmental significance area and provides a statement of the environmental significance and environmental objectives to be achieved. For vegetation, the schedule can specifically state if a permit is not required for the removal, destruction or topping of vegetation. If exemptions are not specified in the schedule, all vegetation within the overlay area is protected except the vegetation specified as exempt in Clause 42.01-2.

Examples of where the ESO has been applied include:
- Yarra Planning Scheme
  - Yarra River environs
  - Green Creek and environs
  - Darebin Creek and environs
- Port Phillip Planning Scheme
  - light rail remnant indigenous vegetation
- Greater Dandenong Planning Scheme
  - Greens Road Plains grassland area
  - Abbotts Road vegetation protection area
Significant Landscape Overlay
The SLO also has broader applicability than the VPO. Its function is to identify and conserve the character of a significant landscape and should be used where vegetation is identified as an important contributor to the character of an area. The SLO also includes permit requirements for building and works which can be applied where appropriate to assist in vegetation protection.

In the SLO, the schedule to the overlay must specify a permit requirement for the removal, destruction or lopping of vegetation.
Examples of where the SLO has been applied include: Baw Baw Planning Scheme - Warragul township Wyndham Planning Scheme - Werribee River - Skeleton Creek Including Dry Creek Tributary Queenscliff Planning Scheme - Swan Bay landscape area - Point Lonsdale Lookout and Queenscliff Lighthouse/Ocean View carpark - The Narrows (area between Point Lonsdale and Queenscliff).

Heritage Overlay
The purposes of the HO include conserving and enhancing places of natural and cultural significance and ensuring that development does not adversely affect the significance of heritage places. As well as buildings and structures, a heritage place can include a tree, garden, park, reserve or significant landscape. The tree controls could apply to the whole of a heritage place (for example, a park, reserve or garden) or a tree or group of trees could be specifically nominated as a heritage place (such as a landmark or specimen tree or an Avenue of Honour).

Under the HO, a planning permit is required to remove, destroy, prune or lop a tree if the schedule to the overlay identifies the heritage place as one where tree controls apply. However, in addition to this requirement, the HO also regulates the construction of buildings and the construction or carrying out of works. It is important to include land surrounding the tree or trees to ensure that any new development takes into account the health, appearance, significance or setting of the tree. As a guide, all land within five metres of the canopy edge of the tree or trees should be included in the overlay area.

Examples of where the HO has been applied include: Melbourne Planning Scheme - Aboriginal scarred tree, Royal Zoological Gardens - Maidenhair tree, Flagstaff Gardens Ballarat Planning Scheme - House and garden, Webster Street, Ballarat - Ballarat Avenue of Honour, Ballarat-Bunyipbeet Road, Ballarat Gippsland Planning Scheme - Cork Oak, Uniting Church, Percy Street, Portland - Norfolk Island Pines, Cliff Street, Portland.

Examples of schedules to the VPO, ESO and SLO are attached.

Other implementation measures
The Good Design Guide for Medium Density Housing, Revision No. 2, April 1998
Significant vegetation must be considered in the assessment of planning permit applications for medium-density housing under the Good Design Guide.

A site analysis and design response should identify existing vegetation on the site and significant vegetation within the surrounding area. The Good Design Guide recognises the importance of vegetation in the assessment of applications in the objectives for Urban Character (Element 3) and Site Layout and Landscaping (Element 4). Other elements may indirectly relate to vegetation protection, such as Building Envelope (Element 8) and Visual and Acoustic Privacy (Element 7).

Local variations to the Good Design Guide
Councils can prepare local variations to the Good Design Guide to protect ‘special characteristics’ of their municipality. To be accepted, local variations that include vegetation requirements must demonstrate the special character of the vegetation or its contribution to the character of an area in comparison with adjacent areas (see the Advisory Committee Report on the Morwell Planning Scheme Local Variations to the Good Design Guide). Local variations, if justified, are likely to be only part of an integrated and wider set of strategies for all areas of the municipality (Advisory Committee Report, p. 111).
Section 173 agreements
A Section 173 agreement under the Planning and Environment Act 1988 can be used to manage significant vegetation on development sites and can be effective if bonds are necessary.

Design and Development Overlay
The Design and Development Overlay (DDO) is not a tool to protect vegetation. The schedule may, however, contain specific landscaping requirements to ensure that a new development is respectful of the landscape character of the neighbourhood.

Summary
- The MS and local policies should provide the strategic basis for the application of vegetation provisions.
- Overlays are the principal tool in the VPP to protect vegetation.
- The VPO specifically protects vegetation.
- The ESO protects vegetation and wider environmental values.
- The SLO may protect vegetation in the broader landscape context.
- The HO may protect trees and gardens of State, regional and local heritage significance.
- The Good Design Guide requires vegetation on sites and in the neighbourhood to be considered.
- Local variations must demonstrate special character.
- Section 173 agreements under the Planning and Environment Act may be a suitable tool in some circumstances.
- The DDO is not an appropriate tool to protect vegetation.

Other ways of protecting and managing vegetation

Local laws
Local laws prepared under the Local Government Act 1989 may be used to protect vegetation. For example, the City of Bayside has introduced a local law to protect identified significant trees (listed on council’s significant tree register) or existing tree canopies on private properties for their amenity value (see Bayside City Council Environmental Local Law No. 2 [Amendment No. 1]). The approach may be considered as an alternative to using the planning scheme.

Incentives and assistance programs
Financial incentives or assistance programs may be considered to encourage landowners to retain vegetation, particularly indigenous vegetation where financial return is perhaps less obvious.

Increased awareness of the value of careful landscape assessment and care of existing vegetation during construction phases should be promoted through peak building and development bodies. This could be linked to awards or incentives for good performance. Differential rating could offer a reduction in the rate for sites of botanical significance. A rate rebate could be granted for vegetation protection works. Opportunities to access assistance from government and community organisations to assist community education and self-help programs should be explored. The National Landcare Program is an example.

Information and guides
Ongoing protection and conservation of vegetation relies on sound community understanding of the benefits, the potential disadvantages and the management implications. Information sources may include:
- Brochures: on topics such as indigenous vegetation and pest plants
- Local newspaper: can be used to report on the progress of community projects and events
- Vegetation Protection Guidelines: these could be published to aid pre-planning of building projects, landscaping of gardens, and land management. They could include sections on site planning for subdivision, building development, protecting existing vegetation during construction and safety in relation to slaweed or dangerous vegetation
- signage: signs can be used to identify significant sites, roadsides, etc. and to alert people to the need for permission to remove vegetation.
Planting programs

- Encourage planting of vegetation that may be important in heritage or cultural landscapes.
- Provide specialist advice and information about the original vegetation and species in a locality that may be suitable for revegetation.
- Provide lists of plants relating to periods of garden development.
- Provide tree tube stock for new gardens. Local nurseries and garden suppliers may be willing to distribute information on landscape and vegetation conservation.
- Garden clubs, service organisations, ‘friends’ groups and schools, with some funding and encouragement from councils, may be willing to provide valuable volunteer assistance in revegetation of open spaces such as parkland and waterways.

Community awareness

Community involvement in the strategy development process can stimulate education and publicity about the value of existing vegetation, the need for its protection and control over its removal.
Pre-application consultation can ensure that the planning objectives and importance of vegetation are recognised and costly delay avoided.

Street planting, park and open space planting policies

Significant roadside vegetation, or vegetation in parks or open space is often owned or managed by the council whether or not it is protected under the planning scheme. Master plans, street tree programs and maintenance policies can be prepared and adopted by councils to improve the appearance of streetscapes and other public spaces. They may also encourage the undergrounding of essential services and the planting of shade trees.

Enforcement

Protecting significant vegetation using the planning scheme places an obligation on councils to carry out enforcement. Gaining support for the principle of vegetation protection and improving knowledge of the planning provisions, their objectives and how they work, should assist in reducing the need for formal enforcement action. Enforcement strategies should, therefore, focus on community education and participation in order to gain broad support for vegetation and management policies rather than relying only on enforcement measures under the Planning and Environment Act.

The availability of advice and assistance and the efficient handling of applications may also minimise cases of unlawful vegetation clearance. Enforcement methods can be supported by:

- periodic review of the vegetation inventory as part of the normal planning process
- the appraisal of the effectiveness of the vegetation provisions and permit conditions in practice
- regular inspections of work sites
- enforceable permit conditions and agreements.

It is also essential that the record of existing conditions contained in the vegetation survey, photographs of the area or site and the assessment of significance are available as evidence. This material may need to be supported by expert evidence.

If negotiations with owners or developers to seek compliance with vegetation provisions fail, depending on the severity of the offence, an infringement notice, an interim enforcement order or enforcement order through the Victorian Civil and Administrative Tribunal may be required to recover or reinstate the vegetation.

Each method of enforcement has its advantages and disadvantages. Infringement notices are normally issued for minor offences but can be issued on the spot. If the case proceeds to the Magistrate’s Court, minimal penalties may result. An interim enforcement order should be considered for more serious offences if time and the nature of the offence allow.

Unfortunately, enforcement action is often too late to halt vegetation clearing. Subsequent orders will, however, effectively specify the things required to ensure compliance with the permit conditions or agreement.
Monetary value of vegetation
The monetary value of vegetation is a valid consideration when assessing whether or not a tree should or should not be reinstated.

Estimation of the amenity value of trees, translated into monetary terms, has been proposed as a way of ensuring that the importance of vegetation is recognised in planning and management decisions.

Some councils and professional arborists have adopted methods of evaluating trees. These take into account a range of indicators such as species, age, condition, historical association, site suitability and life expectancy.

Monitoring
Ongoing monitoring of planning schemes and the planning system is a key feature of the reform program.

To determine whether planning policy and provisions are successfully protecting vegetation, council must develop a monitoring program. Monitoring is critical as it can provide information that enables current practices to be reviewed.

In developing a monitoring program for vegetation protection, council should:
- be clear about what key elements of the planning scheme and planning system it wants to monitor
- identify indicators of council’s performance in relation to these key elements
- establish performance targets for particular indicators to guide the assessment of success.

Below is an example of a performance monitoring framework for vegetation protection.

1. Vegetation protection objective to be achieved
   - To protect and conserve native vegetation and habitat areas, including those of rare, threatened and endangered flora and fauna species, along roadsides, streamlines, linear reserves and other treatises.

2. Indicators
   - Net loss or effect on specified vegetation as a result of a planning approval
   - Net loss or effect on specified vegetation by unauthorised activity in terms of type and area of vegetation lost
   - Successful negotiations to retain vegetation and habitat areas
   - Awareness of objective in council maintenance works
   - Change in vegetation cover.

3. Targets
   - Per cent net loss of mature vegetation cover
   - Per cent compliance with permit conditions to replace lost vegetation as part of a replanting program

Consistent approaches to monitoring are encouraged. Neighbouring councils may wish to work together to adopt a consistent approach, to share information and develop best practice.

When developing targets and indicators, it is very important to start small. To collect information for even one indicator can often require substantial improvements to current systems. For example, councils may need to improve the way they maintain their Municipal Planning Register, conduct an annual vegetation survey or carry out regular audits of planning condition compliance.

Summary
- Ensure efficient handling of inquiries and applications.
- Periodically review the vegetation inventory to monitor the effectiveness of the scheme requirements.
- Ensure permits and agreements are properly drawn up and enforceable.
- Carry out inspections to ensure permit conditions are being complied with.
- Ensure proper records of surveys of existing vegetation are kept.
- Negotiate, where possible, to ensure compliance with provisions.
- Enforcement action should seek to recover or reinstate as much of the significant vegetation as possible.
- Infringement notices are for minor offences.
- Consider an interim enforcement order if time and the nature of the offence allow.
- Consider the monetary value of trees in supporting decisions to retain them.
- Develop a realistic, targeted monitoring system.

Useful references, case studies and information sources

References
Australian Committee for IUCN 1996, Australian Natural Heritage Charter – Standards and Principles for the Conservation of Places of Natural Heritage Significance, AHC and IUCN.
City of Frankston, Shires of Flinders, Hastings and Mornington and Melbourne Water 1992, Mornington Peninsula Local Plants, Department of Conservation and Environment, Victoria.
City of Frankston, Shires of Hastings and Mornington 1994, Mornington Peninsula Pest Plants, Department of Conservation and Environment, Victoria.
Contact St, and Ecology Australia (FL, 1996, Mornington Peninsula – Western Port Roadside Management Plan, vols 1 and 2, Cities of Frankston, Casey and Mornington Peninsula Shires.
Department of Natural Resources and Environment 1997, Victoria’s Biodiversity: Directions in Management.
Gutman, Chet and Walsh 1990, Rare or Threatened Plants in Victoria, Department of Conservation and Environment, Victoria.
Marquis-Kyle and Walker 1992, The Illustrated Burra Charter, Australia ICOMOS.

Case studies
Advisory Committee Report 1988, Monash Planning Scheme Local Variations to the Good Design Guide.
BirdsALL, Cam 1997, Sites of Faunal and Habitat Significance in North East Melbourne, North East Regional Organisation of Councils.
Bedgegong SE, McMahon ARG, Schultz M, Race GT and Gerner M 1992, Sites of Botanical and Zoological Significance East of Mullum Mullum Creek City of Doncaster and Templestowe Victoria (by Ecological Horticulture RL, Gerner and Sanderson P/L for the City of Doncaster and Templestowe).
Bedgegong SE, Colinson MH, McMahon ARG, Lane BA and Tomsley MR 1997, Sites of Botanical and Zoological Significance in Wonga Park by Ecology Australia RL, and AGC Woodward-Clyde P/L for the City of Manningham).
City of Banyule 1996, Banyule Planning Scheme.
City of Frankston 1998, Frankston Planning Scheme.
City of Manningham 1995, Site Design Guide for Residential Development on Bushland Fringes in the City of Manningham.
City of Prahran 1992, Significant Tree and Garden Study.
City of Whittlesea 1998, Whittlesea Planning Scheme.
Contact P/L et al 1991, A Study of Roadside Environments in the City of Doncaster and Templestowe.

Information sources
BiMap Flora and Fauna Program, Department of Natural Resources and Environment, July 1997
A range of products and databases are available from the Department of Natural Resources and Environment (contact your DNRE regional office)
Australian Heritage Commission
GPO Box 787
Canberra ACT 2601
AUSTRALIA
Telephone (02) 6274 1111
Fax (02) 6274 2000

Legislation
Flora and Fauna Guarantee Act 1988
Catchment and Land Protection Act 1994
Planning and Environment Act 1997
1. Schedule to Vegetation Protection Overlay
2. Schedule to Environmental Significance Overlay
3. Schedule to Significant Landscape Overlay

These examples demonstrate ways in which schedules can be written. It is not implied that the content is appropriate to any specific location.
SCHEDULE 1 TO THE VEGETATION PROTECTION OVERLAY

Shown on the planning scheme map as VPO1

GUMNUT VEGETATION PROTECTION AREA

1.0 Statement of nature and significance of vegetation to be protected

A large number of trees and shrubs within the Gumnut Seminary Precinct form part of the building’s original garden surrounds and are an integral part of its significance. They provide a setting for the visual significance of the building and are a remnant representation of the rural location of the seminary. In addition, several of the trees and plantations in the gardens are of horticultural or genetic value, are rare or of localised distribution or are outstanding examples of their species and are included on the National Trust of Australia’s Register of Significant Trees of Victoria.

References:
“Classification Report – Buildings Committee, Gumnut College, Gumnut” National Trust of Australia (Victoria) 1993
“Landscape Report, Gumnut College Complex, Office of Corrections Training Centre, Gumnut Street, Gumnut”, Department of Planning and Development 1992

2.0 Vegetation protection objective to be achieved

To conserve the existing pattern of vegetation and landscape quality within the area.

To protect significant trees and shrubs.

To ensure that the trees and shrubs are maintained as a dominant feature of the landscape when the site is viewed from Gumnut Road.

3.0 Permit requirement

A permit is required to remove, destroy or top any tree or shrub identified as notable trees on the plan attached to this schedule, including dead or dying vegetation.

This does not apply to pruning a tree to improve its health or appearance, provided its normal growth habit is not retarded.

4.0 Decision guidelines

Before deciding on an application to remove, destroy or top any tree or shrub, the responsible authority may consider:

• Whether the application includes a landscape plan or agreement to replace areas of vegetation on the land.
• The “Classification Report – Buildings Committee, Gumnut College, Gumnut” National Trust of Australia (Victoria) 1993 and the “Landscape Report, Gumnut College Complex, Office of Corrections Training Centre, Gumnut Street, Gumnut”, Department of Planning and Development 1992”
• The value of the vegetation to the visual amenity of the area.
GUMNUT SEMINARY PRECINCT
VEGETATION PLAN 1994

LIST OF TREES
1. Perimeter and row plantings of Cupressus macrocarpa
2. Row plantings of Cupressus kroossii
3. Driveway and associated plantings of Cupressus macrocarpa ‘Horizontalis Aurea’
4. Break wall and circular planting of Eucalyptus maculata
5. Eucalyptus polyanthemos x 2
6. Eucalyptus maizita
7. Quercus faginea
8. Eucalyptus maizita
9. Quercus robur
10. Eucalyptus camaldulensis
11. Quercus species (possibly Quercus canariensis hybrid)
12. Quercus canariensis x 2
13. Quercus prinus
14. Quercus faginea
15. Quercus robur x 2
16. Eucalyptus citriodora
17. Cupressus globosa ‘Hedgegill’ x 2
18. Phoenix canariensis x 2
19. Eucalyptus maizita
20. Cedrus deodara
21. Eucalyptus citriodora
22. Juniperus virginiana
23. Eucalyptus virginalis x 3
24. Cedrela odorata capensis x 2
25. Eucalyptus citriodora x 2
26. Eucalyptus maizita
27. Eucalyptus sideroxylon
28. Eucalyptus leucocorys x 2
29. Quercus robur x 2
30. Eucalyptus citriodora
31. Semicircular planting of Eucalyptus leucocorys and other eucalypts
32. Eucalyptus citriodora x 3
33. Eucalyptus cladocalyx
34. Eucalyptus sideroxylon
35. Eucalyptus loxophlepha
36. Juniperus virginiana
37. Eucalyptus leucocorys
38. Quercus canariensis
39. Cupressus globosa
40. Quercus palustris
41. Eucalyptus cornuda
42. Eucalyptus meliodora
43. Eucalyptus maculata
44. Eucalyptus citriodora
45. Eucalyptus cladocalyx
46. Eucalyptus polyanthemos x 3
47. Angophora costata
48. Eucalyptus cladocalyx
49. Eucalyptus citriodora
50. Eucalyptus meliodora
51. Angophora costata
52. Eucalyptus loxophlepha x 4
53. Ulmus x Joffeandica
54. Cupressus sempervirens
SCHEDULE 2 TO THE ENVIRONMENTAL SIGNIFICANCE OVERLAY

Shown on the planning scheme map as ESO2

GREEN CREEK AND ENVIRONS

1.0 Statement of environmental significance

Green Creek is an environmental, heritage and recreation corridor which is significant for its role as a continuous corridor as well as for the qualities of individual reaches. All areas of the creek are important because they link areas of environmental, heritage and recreational values along the creek.

Green Creek and its immediate environs contain some of the most threatened riparian ecosystems in Victoria. They are threatened because of their proximity to densely developed residential areas. The creek has a unique role to play in the preservation of threatened flora and fauna. It contains regionally significant species, including River Swamp - Wallaby Grass (Amphibromus fluitans), which is vulnerable to extinction in Victoria.

References:
“Sites of Ecological Significance in the Green Creek Area”, Greenville Planning Authority, 1992
“The Middle Green Creek Concept Plan”, 1998
“Environmental Weed Invasions in Victoria”, Department of Conservation and Natural Resources and Ecological Horticulture Pty Ltd, 1992

2.0 Environmental objective to be achieved

Natural systems

- To restore and revitalise the creek and adjoining open space to a more natural and ecologically diverse environment.
- To protect significant threatened species of flora from adverse management practices that may result in their extinction.
- To ensure the health and vitality of the natural systems of the creek and its associated open space.
- To protect and enhance the diversity, integrity and health of the local native riparian, escarpment and plains vegetation associated with the creek.
- To ensure the suitability of the riparian, escarpment and plains vegetation habitat and in-stream habitats for local native animals.
- To improve the water quality of the creek.
- To provide for the retention, restoration and revegetation of local native species.

Waterway function

- To improve flood, regional drainage and waterway function of the creek to enable appropriate beneficial land use and water-based activities to be undertaken.
- To provide flood management and water quality protection through works that seek to mimic natural systems and produce a more natural-looking stream form.
3.0 Permit requirement

Buildings and works

A permit is not required:

To construct a building in a residential zone no more than 6 metres above ground level.

For works undertaken by a public authority or waterway management agency to:

- Sustain the form and stability of stream beds and banks, regulate or control the flow of water in a watercourse.
- Mitigate flooding or construct stream habitat works.
- Revegetation works including preparatory works associated with the revegetation.
- Construct a bicycle or shared pathway.

Vegetation

The requirement for a permit to remove, destroy or lop vegetation does not apply to:

- A tree in a residential zone with a single trunk circumference of less than 0.35 metre at 1 metre above the ground and which is less than 6 metres high or has a branch spread of less than 4 metres.
- A non-indigenous tree that adversely affects stream flow.
- The control or removal of non-indigenous plants in preparation for revegetation works.
- Pruning of plants to maintain access or to maintain a plant’s horticultural health.

4.0 Decision guidelines

Before deciding on an application for a permit the responsible authority must consider as appropriate:

- The views of the Green Creek Management Committee and Melbourne Water as considered appropriate by the responsible authority.
- The effect of the proposed removal of vegetation on the habitat value, wildlife corridor and long term viability of remnant and revegetated areas along the creek corridor.
- The significance of the native vegetation area, including the significance of plant communities or animal species supported.
- The reasons for removing the vegetation and the practicality of alternative options which do not require the removal of the native vegetation.
- The extent to which buildings or works are designed to enhance or promote the environmental values of the creek and the visual character of the creek corridor.
- The need to retain vegetation and natural features which contribute to the health and water quality of the creek.
SCHEDULE 2 TO THE SIGNIFICANT LANDSCAPE OVERLAY

Shown on the planning scheme map as SLO2

GREEN VALLEY LANDSCAPE AREA

Statement of nature and key elements of landscape

Land adjacent to Green River between Main Road and South Road consists of substantial areas of open space, a golf course, wetlands, vegetation and other natural habitat. The key element of the landscape is the dense vegetation that screens buildings on adjacent land from view. This provides a sense of remoteness for users of the open space along the river.

References:
“Green Corridor Landscape Study”, Green Dale and Wight, March 1989

1.0 Landscape character objective to be achieved

- To enhance and encourage the conservation and protection of areas along Green River.
- To protect Green River from development that may damage the visual, ecological and recreational values of the river environs.
- To protect and enhance the vista from the river, its banks, nearby parklands and prominent scenic points within the valley environs.
- To encourage development consistent with the Green River Landscape Study, March 1989.

2.0 Permit requirement

Buildings and Works

A permit is not required for:
- Buildings and works either in a residential zone or on public land, if the buildings or works are in accordance with an approved Development Plan.
- Repairs and routine maintenance.
- To construct a fence.

Vegetation

A permit is required to remove, destroy or lay any native vegetation whether dead or alive.

An application must be referred to the Secretary of the Department administering the Flora and Fauna Guarantee Act 1988 in accordance with Section 55 of the Act.

3.0 Decision guidelines

Before deciding on an application, the responsible authority must consider:
• Sites of Geological and Geomorphological Significance in the Western Region of Melbourne”, N G Bass, 1966.
• Whether buildings and works have been adequately screened when viewed from the river or its banks.
• The need to encourage building design that is in keeping with the character of the area. This includes:
  – Whether ridge lines on buildings are parallel with site contours on land with an average slope greater than 1 in 10;
  – Ensuring keeping the height of all buildings and structures to a minimum.
This version of the Biodiversity VPP Practice Note has been prepared for use with screen reader software. The printed publication contains various photographs, captions and design features that have been necessarily omitted from this version. In other respects this document contains identical text to that in the PDF version of the document which is available at www.dpcd.vic.gov.au/planning.

VPP Practice Note

Biodiversity

March 2002

The purpose of this VPP Planning Practice Note is to:

- explain the importance of biodiversity
- identify the role of planning schemes in achieving biodiversity objectives
- outline what planning authorities can do to establish a local biodiversity framework in their planning schemes
- provide examples of planning tools which can be used in planning schemes.

Biodiversity conservation and management is an integral part of the Victorian Government’s environmental policies and recognised as an essential component of responsible environmental and natural resource management.

Biodiversity means the variety of all life forms – the different plants, animals and microorganisms, the genes they contain and the ecosystems of which they form part.¹

Conserving biodiversity is fundamental to our quality of life and our economic wellbeing, both now and in the future.

Increasingly, the services and benefits provided to urban and rural communities by these natural assets are being recognised. These ‘ecosystem services’ include the provision of clean air and water, nutrient recycling in soils, control of pests, mitigation of climate change, production of goods such as firewood and timber, filtration and erosion control and waste absorption and breakdown. These benefits can only be provided by landscapes which contain sufficiently intact biodiversity assets and healthy ecosystems.

It is important to recognise that managing biodiversity on private land is now our greatest conservation challenge and opportunity. Approximately 60 per cent of remnant vegetation on private land is of a threatened ecological vegetation class (EVC). Dedicated reserves, such as national parks, do not capture a representative and adequate array of ecosystems. Reserves alone cannot adequately protect biodiversity from further decline or loss.

The ongoing fragmentation of ecosystems, regardless of their significance, undermines the long-term viability of biodiversity in the landscape. Changing patterns of land use and development create both opportunities for and threats to biodiversity. The planning system can help manage these changes and improve their outcomes.

The role of the planning system

The planning system is one means by which Commonwealth, State and local biodiversity objectives can be implemented. Effective planning policies and controls in planning schemes are important mechanisms for achieving biodiversity objectives, especially on private land.

The main role of the planning system in protecting and enhancing biodiversity is to set in place a comprehensive framework of policy and controls to guide decision making about new use and

1 Biodiversity means the variety of all life forms – the different plants, animals and microorganisms, the genes they contain and the ecosystems of which they form part.
development through planning schemes. A national and State policy framework for biodiversity is established and set out in the State Planning Policy Framework (SPPF) of all planning schemes. This Practice Note provides guidance in developing a local planning policy framework that responds to these broader national and State policy objectives.

Other mechanisms

While this Practice Note focuses on planning schemes as a mechanism for achieving biodiversity objectives, land-use planning is one of a suite of complementary tools and mechanisms available to local government to fulfil its responsibilities in relation to biodiversity.

The role of the planning system is limited to new use and development. Many activities adversely affecting biodiversity occur as part of land management practices associated with existing use and development over which the planning system has no control. Likewise, many beneficial actions occur outside the planning framework.

Local government can influence outcomes beneficial to biodiversity through incentives, such as rate rebates for participation in environmental management or revegetation programs, through its own practices as a land manager for roadsides and other reserves, through working with other agencies and by generally encouraging good land management practices.

Responsibility for implementing biodiversity objectives rests with all levels of government, organisations, business and individuals. It is a community responsibility. Government, catchment management authorities, Landcare groups, research organisations, landowners and public land managers also undertake a wide range of programs and actions to protect and enhance biodiversity.

What council can do to establish biodiversity objectives in its planning scheme

1. Find out about the broader policy framework. This Practice Note provides a summary of the biodiversity policy framework which all levels of government, organisations, business and individuals have a responsibility to implement. Further reading is recommended.

2. Find out what information is available for your municipality, keeping in mind that information needs to be sufficiently robust to justify using it for planning purposes. Any mapped information should be at an appropriate scale and form for use in the planning scheme. This Practice Note provides advice on what data and information is available and where you can find it.

3. Involve the community. The community will have valuable information to contribute, especially in relation to what it values about local biodiversity and detailed knowledge of local assets.

4. Interpret the information – how can it be used for planning purposes? This Practice Note is intended to assist in understanding how the planning scheme can be used to achieve biodiversity objectives through the protection and enhancement of biodiversity assets at the local level. Discuss the information you have collected with your local Department of Natural Resources and Environment (DNRE) officer and your Department of Infrastructure (DOI) regional office to determine how it can best be used in the planning scheme. Identify information ‘gaps’ and determine how these may be addressed. Discuss broader strategic objectives for biodiversity and the practical application of the information in planning schemes, such as delineating overlay areas.

5. Choose the appropriate planning scheme tools being mindful of what protection the existing planning scheme provides (especially through the use of zones and the Statewide native vegetation controls). Again, the Practice Note provides guidance on this. Prepare the local provisions (Municipal Strategic Statement (MSS), local planning policies, and schedules to overlays) and ensure that they provide an adequate level of protection for the particular biodiversity asset. This should be done in consultation with DNRE and DOI. Appendixes 1 and 2 contain an example of a schedule to an Environmental Significance Overlay and a local planning policy respectively. Clear, precise and well considered local provisions will enhance the prospect of making appropriate decisions about individual planning permit applications.
and applying workable planning permit conditions. The Practice Note concludes with some general advice on planning permit conditions.

6. Establish a monitoring system, performance targets and indicators for measuring the effectiveness of the planning scheme tools in achieving biodiversity objectives.

7. Prepare and exhibit a planning scheme amendment to introduce the new local provisions into the planning scheme. This is the final step in the process. For more information on the planning scheme amendment process, refer to *Using Victoria’s Planning System*, DOI, November, 2001.

**Biodiversity framework and objectives**

**Strategic framework**

Recognition of the significance of biodiversity and the establishment of strategies to manage, protect and improve biodiversity assets stems from the highest level.

In 1992, all three levels of Australian government – Commonwealth, State and local government – signed the *Intergovernmental Agreement on the Environment*. The Agreement commits governments to integrating economic and environmental considerations into decision-making to achieve ecologically sustainable development. Later the same year, Australia committed itself to a *National Strategy for Ecologically Sustainable Development*. The protection of biological diversity is one of three core objectives of the National Strategy, and a cornerstone of the Intergovernmental Agreement.

In 1996 the governments of all Australian States and Territories agreed on the *National Strategy for the Conservation of Australia’s Biological Diversity*, the goal of which is to protect biological diversity and maintain ecological processes and systems.

Victoria’s strategy on biodiversity – *Victoria’s Biodiversity* (Sustaining Our Living Wealth, Our Living Wealth and Directions in Management) – was published in 1997. This fulfilled the requirement under the *Flora and Fauna Guarantee Act 1988* to prepare a strategy that includes proposals for guaranteeing the survival, abundance and development in the wild of all taxa and communities of flora and fauna.

*Restoring our Catchments: Victoria’s Draft Native Vegetation Management Framework* (2000) and the *Victorian Coastal Strategy* (2002) have been developed to implement management approaches to achieve biodiversity objectives under these various strategies. The draft Native Vegetation Management Framework includes a set of tools for estimating general vegetation/habitat quality on a consistent Statewide basis and a proposed accounting system to implement the notion of Net Gain.

**Statutory framework**


In planning schemes, the SPPF, in particular Clauses 13 and 15, sets out general principles of land-use and development planning, including reference to related legislation, and a range of objectives and general implementation provisions dealing with the environment.

**Establishing the local planning policy framework**

Local councils are encouraged to use the data and information available about biodiversity to develop their own local strategies for native vegetation management and biodiversity protection that can then be articulated in their MSS. Sources of biodiversity information are outlined in Appendix 3. A biodiversity strategy for a municipality can provide:

- an overview of the biodiversity assets within a municipality
• a framework for actions to protect and enhance local biodiversity assets
• a process for local action, community participation and ownership.

The draft regional vegetation plans being prepared under Victoria’s Draft Native Vegetation Management Framework will pave the way for effectively targeted local action that will achieve the best integration of the objectives for native vegetation retention and revegetation.2 Clause 15.09-2 of the SPPF requires local councils to give regard to approved regional vegetation plans when amending planning schemes and reviewing their MSS.

Where a council is unable to develop a local biodiversity strategy, it is encouraged to use the available information to identify the value and significance of known biodiversity assets and threatening processes in the municipality, such as those identified in DNRE’s Bioregional Plans.

It is important that planning schemes should be used not only to protect biodiversity assets but also to enhance them. The retention and management of existing native vegetation is the primary way to conserve the natural biodiversity across the landscape. Enhancement opportunities support the principle of Net Gain in native vegetation and other objectives in Victoria’s Biodiversity Strategy. Similarly, biodiversity enhancement is supported throughout the SPPF and other parts of the planning scheme which deal with the environment.

**Municipal Strategic Statement**

In implementing environmental and biodiversity objectives in the SPPF, planning schemes should include local objectives for biodiversity in their MSS.

Biodiversity objectives fall generally within the following categories:

• protecting and enhancing native vegetation and habitat
• managing threats to species and ecological communities
• maintaining and improving the quality and the health of watercourses, wetlands, terrestrial, coastal and marine environments
• maintaining and improving the quality of soils and their structure.

In developing local actions to protect biodiversity, councils should focus on how to deal with each of these categories. The planning system can influence them by:

• preventing the removal of native vegetation without a planning permit
• in identified locations, requiring a planning permit for development which might adversely affect water quality, the health of watercourses, wetlands or the marine environment, vegetation, habitat, soil structure or stability
• imposing appropriate conditions on planning permits for use or development that will mitigate, protect or enhance biodiversity assets, and
• monitoring the effectiveness of planning scheme controls in protecting and enhancing biodiversity.

As a guide, the biodiversity component of the MSS could:

• include a description of the significant threats to local biodiversity from activities that occur in the municipality or bioregion
• identify biodiversity assets and locations where additional policies or controls over the use and development of land may be warranted to reflect their significance
• indicate the role of biodiversity in maintaining ecosystem services
• recognise and apply the precautionary principle
• identify strategies to protect and enhance biodiversity.

For example:
- to retain native vegetation, including remnant vegetation, dead standing trees and native grasslands
- to apply the Net Gain approach to all planning decisions
- to ensure that riparian land is used and managed to protect and rehabilitate its biodiversity value
- to implement the restoration of riparian and wildlife corridors

• describe the mechanisms for implementing the MSS objectives and strategies.

Native vegetation management
Clause 52.17 (Native vegetation) provides a key mechanism for protection of biodiversity in Victoria. Clause 52.17 is part of all planning schemes and requires a permit to be obtained to clear any native vegetation on contiguous land in one ownership of 0.4 hectare or greater in area (subject to certain exemptions).

The native vegetation provisions (Clause 52.17) and decision guidelines (Clause 65) are the minimum ‘baseline conservation provisions’ for limiting the loss of biodiversity on a Statewide basis. They should not be regarded as adequate and effective in meeting all biodiversity conservation objectives and more specific provisions may need to be applied.

Choosing a planning scheme tool
Zones and overlays
The best combination of zones and overlays to achieve biodiversity objectives depends on:

- the intended outcomes of the land-use strategy for biodiversity
- the predominant (or preferred) land use
- the land tenure
- the level of significance of biodiversity assets
- the spatial characteristics of biodiversity assets
- whether the baseline conservation provisions of Clauses 52.17 and 65 need to be supplemented with additional planning controls.

Situations where the baseline conservation provisions may need to be supplemented by an additional method include:

| sites of biological significance | Environmental Significance Overlay |
| subdivision (leading to subsequent loss or degradation of native vegetation) | Environmental Significance Overlay |
| the presence of significant relatively unmodified biodiversity assets | Environmental Significance Overlay |
| large relatively intact natural area where land use under the existing zone provisions may result in the loss of important biodiversity qualities | Environmental Rural Zone |
| hollows in mature dead trees dispersed on private land which provide important nesting sites for significant species | Vegetation Protection Overlay |
scattered living food trees with an exotic understory that does not conform to the ‘native vegetation’ definition in planning schemes

<table>
<thead>
<tr>
<th>scattered living food trees with an exotic understory that does not conform to the ‘native vegetation’ definition in planning schemes</th>
<th>Vegetation Protection Overlay</th>
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threatened vegetation classes that are highly fragmented and occur on private land, for example, grasslands

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<tr>
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<th>Environmental Significance Overlay</th>
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unknown locations of biodiversity assets or insufficient information on biodiversity assets to prepare an overlay

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<tr>
<th>unknown locations of biodiversity assets or insufficient information on biodiversity assets to prepare an overlay</th>
<th>Local planning policy</th>
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highly modified areas, such as salt works and treatment plants, whose features are relied on by significant migratory and nomadic species

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threatened species habitat that is highly modified (and therefore does not qualify as ‘native vegetation’), but retains structural or other components that allow species to survive

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<th>Vegetation Protection Overlay, Environmental Significance Overlay</th>
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areas of likely biodiversity significance

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<th>Environmental Significance Overlay</th>
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riparian and coastal habitats

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<th>riparian and coastal habitats</th>
<th>Environmental Significance Overlay, Local planning policy</th>
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Zones

In rural areas, the Rural Zone (RUZ), Environmental Rural Zone (ERZ) and the Rural Living Zone (RLZ) all provide for the protection and enhancement of biodiversity in the purpose of each zone. When combined with the baseline conservation provisions, the RUZ and RLZ may provide an adequate level of protection for some biodiversity assets.

Where biodiversity significance is high and the environment is in a predominantly natural state, the ERZ is likely to be the most suitable zone. One of the features of the ERZ that distinguishes it from the RUZ is its ability to control agricultural land uses and timber production that would not normally need a permit in the RUZ. However, the ERZ is not likely to be suitable where widely dispersed or fragmented vegetation is to be protected. Within areas where high biodiversity values are linear or fragmented and the surrounding environment has been substantially altered (for example, broadacre agricultural areas with wildlife corridors), the other rural zones may be more appropriate, supplemented with overlays.

If the land is publicly owned, the Public Conservation and Resource Zone is the most appropriate zone for protecting biodiversity values, however, depending on the predominant land-use activity, other public land zones may also be appropriate coupled with an overlay. As with private land, the predominant land-use activity and strategic land-use objectives need to be weighed up to determine the best combination of controls.

In predominantly urban environments, zoning is not the best way to achieve biodiversity objectives for isolated locations with biodiversity values, such as waterways, open space areas or recreation uses such as golf courses. It is preferable to use a zone appropriate for the preferred strategic use of the land and to protect biodiversity assets by using an overlay.

In outer urban areas, biodiversity objectives may influence the zoning pattern. For example, on the urban fringe, zoning can be used to control the expansion of urban land uses into areas with biodiversity values. In areas designated for urban development, the design of new subdivisions should be influenced by biodiversity objectives. Tools such as the Incorporated Plan Overlay or Development Plan Overlay may be used for this purpose.

Overlays

Duplication of controls should be avoided. In deciding whether to apply an overlay, review whether the biodiversity objectives can be achieved satisfactorily through the Local Planning Policy Framework (LPPF), the choice of zones and the baseline conservation provisions. If the purpose and decision guidelines in the zone, Clause 65.01 and the native vegetation provisions in Clause 52.17 provide adequate control, the application of overlays will not be necessary.

The rationale for applying additional planning controls needs to be informed by knowledge of the local biodiversity assets, values and threats.
If the protection or enhancement of a biodiversity asset requires the use of an overlay, the appropriate overlays are the ESO and the VPO. Both provide an additional level of vegetation control and allow for specific environmental outcomes to be articulated through the schedules. The ESO contains additional controls over the construction of buildings, works, fence construction and subdivision. The VPO should be used in preference to the ESO only where impacts on biodiversity caused by the clearing of vegetation are the sole concern.

The flood overlays, in particular the Floodway Overlay (FO) and Land Subject to Inundation Overlay (LSIO) indirectly protect biodiversity values due to their restrictive nature. The Significant Landscape Overlay (SLO) may also have indirect biodiversity benefits; however its principal aim is the maintenance of aesthetic landscape values rather than particular habitat qualities. Other overlays such as the Erosion Management Overlay (EMO) or the Salinity Management Overlay (SMO) contain vegetation protection provisions but these are directed at outcomes to protect soil quality. While soil quality is indirectly linked to biodiversity, these overlays should be used for their specific purpose rather than identifying native vegetation for its habitat or botanical significance.

Examples of ways in which overlays can be used to protect biodiversity assets include:

- applying the ESO to identified sites of biological significance
- applying the VPO or ESO to protect native vegetation which is significant, scattered or not covered by Clause 52.17
- applying the ESO to protect other environmental assets important to the conservation of biodiversity, such as riparian land and identify areas of biodiversity significance
- giving effect to decision guidelines in zones, overlays and other provisions requiring the protection of biodiversity.

The ways in which overlays can be used to enhance biodiversity assets include:

- applying the ESO to land identified for the establishment of vegetation corridors or revegetation.

**Schedules**

Through the schedules to the ERZ and overlays, the planning authority can specify particular environmental objectives and add new decision guidelines that ensure proper weight is given to biodiversity considerations. Well-prepared schedules can also assist in justifying the application of planning permit conditions or the refusal of a planning permit on biodiversity grounds.

Schedules to overlays can be prepared to protect a variety of biodiversity assets. Schedules can be used to protect well-defined and delineated sites of biological significance, for example, those drawn from the DNRE BioSites database or other reports using robust methodologies. Incorporated and reference documents provide good sources of information for drafting schedules.

The content of schedules will vary according to the nature and attributes of the site, and appropriate decision making criteria will be needed. Several schedules may be required. Where there are many sites of significance within a municipality it may be useful to tabulate the characteristics of each site as a table to the schedule as illustrated in Appendix 1.

Alternatively, schedules can be used to protect essential habitat elements for threatened species where these are scattered through a landscape. Mobile species (such as birds) often use small, dispersed areas of remnant habitat on a seasonal or erratic basis. It is appropriate to use an overlay to cover a broad area where patches of suitable habitat are believed to occur, and to describe those habitat components important for that species. For schedules like this, the description of significance will be highly specific. The application requirements and decision criteria will need to be customised for each case.

Appendix 1 provides an example of an ESO schedule that could be applied to either a threatened species or a significant habitat as required.
Local planning policies

A local planning policy is a tool for day-to-day decision-making in relation to a specific discretion in a zone, overlay or other relevant provision in the scheme (such as the native vegetation provisions). It should help applicants and the community to understand how a proposal will be considered and what will influence decision making. If the planning authority is satisfied that the SPPF, the MSS and/or the decision guidelines in the zone or overlay provide sufficient direction for the exercise of discretion, there is no need to include a local planning policy.

A local planning policy should be practical to implement and provide clear guidance about on-ground outcomes that will be expected as a result of exercising a specific discretion in the planning scheme. Local planning policies can be used to protect or enhance biodiversity assets.

For example:

- a council may have a local planning policy that requires a demonstrated contribution to Net Gain in native vegetation or improvements to habitat or water quality in association with every planning permit application having a negative impact on habitat values. As a means of protecting biodiversity assets, this would:
  - achieve incremental gains in native vegetation
  - establish a culture of considering net gain implications within the municipality
  - affirm the importance of biodiversity at a local level
  - focus the attention of applicants on the fact that they have a positive obligation to protect and enhance biodiversity

- a council may have a local planning policy that either supplements an overlay or provides specific policy guidance for discretions under a zone or the native vegetation provisions for biodiversity objectives identified in the MSS. This type of policy may be appropriate for use in municipalities where the application of overlays in a planning scheme is limited or where biodiversity information is insufficient for the preparation of overlays. Appendix 2 contains an example local planning policy covering a range of biodiversity issues identified in Gumnut Shire’s MSS

- most rural planning schemes apply an ESO over watercourses. As an alternative, a council may have a local planning policy that deals with a specific issue such as the management of riparian land as a means of enhancing biodiversity assets. It could set out a range of measures that would be required to be implemented (as appropriate) whenever a planning permit is required as a result of the overlay. These could include encouraging the retention of riparian vegetation, stock management and revegetation of degraded areas.

When drafting a local planning policy, incorporated and reference documents may provide useful sources of information.

Biodiversity information

There is a range of data and information available on biodiversity assets, potentially threatening processes and management requirements of assets available from many sources and in a number of formats. The principal division in this information is between mapped data (location of assets and values of areas for biodiversity) and asset specific data (relating to the ecological requirements, management requirements and threats to species, communities and ecosystems). Not all biodiversity assets have been evaluated or mapped. The absence of information on biodiversity value does not infer lack of value at a site but that it is of an unknown value.

Appendix 3 sets out some useful sources of biodiversity information in Victoria.

Within the planning system, information and data can be used to:

- prepare action plans, policies and strategies
• identify specific biodiversity assets in planning schemes as the basis for applying zones or overlays
• understand the significance of particular biodiversity assets potentially affected by a planning permit application to enable appropriate decisions
• frame appropriate conditions to include in planning permits.

Local councils are encouraged to access this information to assist in defining their conservation objectives and developing strategies to implement these objectives through their planning schemes. Assistance is available from DNRE in understanding and using material about biodiversity.

Planning permit conditions
Should a council decide to approve a permit application, permit conditions to protect or enhance biodiversity assets can include:

• physical constraints (such as specification of a works area, construction methods and timing) which minimise or avoid damage to surrounding areas
• protection requirements for significant areas such as fencing or legal protection
• measures aimed at improving remaining biodiversity assets (such as weed and animal control)
• the planting or regeneration of native vegetation to replace lost native vegetation based on Net Gain principles, to improve riparian land or to establish or enhance habitat and habitat corridors.

The planning system is an effective means of achieving biodiversity objectives, particularly if the planning scheme tools are employed using available resources and information. The attached appendixes provide guidance on developing specific planning scheme tools and best practice approaches for the collection and analysis of biodiversity information.

APPENDIX 1 - Example schedule to the Environmental Significance Overlay
This example demonstrates two options for developing a schedule. Option 1 is a schedule for known sites of biological significance. Option 2 is a schedule developed to protect a specific threatened species.

SCHEDULE NUMBER TO THE ENVIRONMENTAL SIGNIFICANCE OVERLAY

Shown on the planning scheme map as ESO number.

NAME OF ENVIRONMENTAL SIGNIFICANCE AREA (OR THREATENED SPECIES)

1.0 Statement of environmental significance

[Option 1 (known sites of biological significance)]

The site(s) covered by this schedule [substitute names of individual areas as appropriate] have been identified as sites of biological significance in [the Department of Natural Resources and Environment Biosites Database and/or other documents identifying sites of significance]. Their protection and appropriate management is of particular importance for the maintenance of Victoria's biodiversity. The significant assets of each site are listed in Table 1 below [where the overlay covers few sites, a table is not necessary].
Table 1 to Schedule #

<table>
<thead>
<tr>
<th>Site name Biosites number</th>
<th>Significance level</th>
<th>Known assets contributing to biological significance of site</th>
<th>Threats and management requirements and management practices to be encouraged</th>
</tr>
</thead>
<tbody>
<tr>
<td>Map Identifier shown on planning scheme map</td>
<td>National State Regional Local</td>
<td>Names of threatened species recorded (common and scientific names)</td>
<td>Potentially threatening processes and development activities that may be of concern at the site (may be identified in Biosites database)</td>
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<tr>
<td>Map no. same as above</td>
<td></td>
<td>Names of EVC or communities</td>
<td>Management practices that would result in the enhancement of biodiversity conservation values at the site (for example, weed control, exclusion of grazing). This information may be found in action statements, recovery plans, management plans or the Biosites database.</td>
</tr>
</tbody>
</table>

[Option 2 (for a specific threatened species, for example, regent honeyeater)]

[Statement should include details of the status of the species to be protected, the nature of their habitat in the area (that is, level of clearance, habitat characteristics such as small remnant patches of specific trees, key vegetation components, food resources), and any additional values of this habitat. The statement should provide clarity on the types of elements of the landscape or habitat that are important in the retention of this species as a guide to decision-making. This information may be obtained from recovery plan action statements and more general literature on the species.]

The area covered by this overlay provides important habitat for the nationally endangered regent honeyeater (Zanthomiza phrygia). The habitat of this species has been extensively cleared and degraded. Remaining patches of Mugga ironbark (Eucalyptus sideroxylon), white box (Eucalyptus albens), yellow box (Eucalyptus melliodora) and Blakely's red gum (Eucalyptus blakeleyi) on private land represent a key feeding resource of this species. Usage of particular patches of feeding habitat varies from year to year, according to the amount of flowering that takes place, and the maturity of trees at the site. It is important to retain immature trees that may provide future feeding sites for the regent honeyeater as well as existing known feeding locations.

The area also provides habitat for the squirrel glider (Petaurus norfolcensis), brush-tailed phascogale (Phascogale tapoatafa), grey-crowned babbler (Pomatostomus temporalis) and bush stone curlew
(Burhinus magnirostris), which are all listed as threatened species under the Flora and Fauna Guarantee Act 1998. Remnant vegetation here provides an important regional habitat link between the Warby Ranges and the Great Dividing Range.

2.0 Environmental objective to be achieved

[Option 1 (known site)]

- To protect and to maintain or improve the viability of habitats, ecological communities, flora and fauna, and genetic diversity in areas identified as being of [regional/State/national] significance in [Biosites database or other publications]. These sites include both the biological (living and dead) and physical components of the habitat.

- To ensure that any use, development or management of land within and adjacent to areas of biological significance are compatible with their long-term maintenance and conservation, and will not have detrimental impacts on biodiversity values.

- To maintain the integrity of the site(s) through protection from [list potentially threatening processes identified in 'Biosites' or other data sources (for example, reduction and fragmentation of habitat, alteration to the natural temperature regimes of rivers and streams, degradation of native riparian vegetation increase in sediment input into rivers and streams, invasion by environmental weeds, pest plants or pest animals (including domestic animals such as cats and dogs), loss of hollow-bearing trees)]

- To recognise the important contributions that sites of biological significance make to the overall character and identity of the area.

[Option 2 (specific threatened species, for example, regent honeyeater)]

[Include a brief statement of the aim of the schedule. If possible include recovery/action statement goals]

- To protect remnant habitat for the regent honeyeater and a suite of other threatened species.

- To retain and enhance all stands of native open forest or woodland that contain any of the 'key' eucalypt species Eucalyptus sideroxylon (Mugga ironbark), E. albens (white box), E. melliodora (yellow box), and E. leucoxylon (yellow gum). This should include remnant stands on agricultural land, in streamside and roadside reserves, travelling stock routes, State forest and conservation reserves. [from action statement]

- To manage all such sites to retain the number of the key eucalypt species and to increase the number of mature trees of these species. [from action statement]

- To encourage regeneration of key tree species remnants on private and public land in proximity to existing remnants utilised by regent honeyeaters.

3.0 Permit requirement

A permit is not required:

- To undertake development or works which are carried out as part of an approved management plan specifically to enhance habitat values for the asset listed in Table 1 [or if using Option 2 state the threatened species].

- To remove vegetation not native to Victoria, except where the species forms an important part of the habitat for species listed in Table 1.

- To remove, destroy or lop any vegetation except [list native species that a threatened species relies on specifically in this area for example for Regent Honeyeater – identify Mugga ironbark, (E. sideroxylon), etc.].
• For activities conducted on public land by or on behalf of the Department of Natural Resources and Environment (DNRE) under the relevant provisions of the National Parks Act 1975, the Reference Areas Act 1978, the Wildlife Act 1975, the Fisheries Act 1995 or the Forest Act 1958.

4.0 Application requirements

An application must be accompanied by:

A report including:

• Identification of any native vegetation or other habitat components to be removed, destroyed, damaged or otherwise disturbed.

• The reasons for any removal, destruction or lopping of any native vegetation or habitat components.

• How the proposal is consistent with the SPPF, the LPPF and the zone and overlay provisions.

• How the proposal responds to the purpose and decision guidelines of the native vegetation provisions.

• The likely impact on the protection and conservation of biodiversity.

• The likely impact on stream channel stability and on flooding characteristics.

• The type, significance and fauna values of the vegetation or other habitat components to be removed (to be prepared by an appropriately qualified ecologist/biologist), with particular reference to, but not restricted to the known assets contributing to the biological significance of the site listed in Table 1 to this schedule [for Option 1].

• The measures to be taken to ensure that any impacts on native vegetation, flora and fauna are compensated for by rehabilitation or revegetation to meet the requirement of no net loss in quantity or quality of native vegetation.

• Other areas on the land that have been cleared within the previous 10 years whether or not this clearing required a permit.

Scaled and dimensional plans showing, where relevant:

• Property boundaries.

• Adjacent properties.

• Nearest public roads and intersection.

• Existing development on the site.

• Existing fencing.

• Records of threatened species or communities and the boundaries of any sites of significance.

• Existing native vegetation or other habitat on the site and any native vegetation or other habitat to be removed, destroyed or lopped.

• Location of watercourses, water bodies and drainage lines.

• Location of any known fauna habitats or corridors.
• Location and management of rehabilitation and revegetation activities proposed to compensate in equivalent quality and quantity for clearing of native vegetation or other habitat.

5.0 Referral of applications

An application must be referred to the Department of Natural Resources and Environment under section 55 of the Act for advice regarding the potential impacts of the proposal and actions proposed to avoid, minimise or mitigate those impacts.

6.0 Decision guidelines

Before deciding on an application to construct a building; construct or carry out works; remove, destroy or lop any vegetation; or to subdivide land, the responsible authority must consider, as appropriate:

• The potential impacts on [name the specific threatened species the schedule is designed for] habitat value and potential habitat value of the area, or on other threatened species utilising the area.

• The impact of the proposal on the biodiversity conservation values of the area and its immediate locality.

• The reason for removing any vegetation and the practicality of any alternative options which do not require removal of native vegetation or other habitat components. Where alternatives exist which do not require the loss of native vegetation or other habitat values these alternatives should be favoured.

• The results of any flora and fauna survey and assessment of the biological values of the land and consideration of whether the survey and assessment has been adequately completed under appropriate seasonal conditions and by suitably qualified personnel.

• Whether the flora and fauna of the area are to be adequately protected and their sustainability and long-term conservation ensured.

• The conservation requirements of [name the specific threatened species the schedule is designed for] and other threatened species or communities known from the site including those in recovery plans or action statements.

• Critical habitat, if determined under the Flora and Fauna Guarantee Act 1988.

• Whether there are statutory requirements under the Environment Protection and Biodiversity Conservation Act 1999 or the Flora and Fauna Guarantee Act 1988.

• Whether appropriate management practices are proposed, including the control of environmental weeds.

• The contribution of the proposal towards the ecological restoration of the remnant vegetation and habitat, or the potential for the proposal to reduce the capability for ecological restoration of the site.

• The need to impose conditions on lot sizes, lot boundaries, road network, open space, building envelopes or effluent disposal sites to ensure better protection of the significant values of the site [or name the threatened species]

• Any management requirements listed in Table 1 to this schedule including the imposition of appropriate controls to achieve this.

• The views of any other appropriate committee or authority [for example, relevant threatened species recovery team, friends of species, etc.].
7.0 References/information sources [as appropriate]

- Biosites database, Register of Sites of Significance, Flora and Fauna Division, DNRE, East Melbourne.
- Other surveys or assessment of sites of significance in the area used in compiling Table 1[nominate other documents identifying sites of significance].
- Action statements [for species identified as occurring in the area covered by the schedule (list species and plans)] prepared in accordance with provisions of the Flora and Fauna Guarantee Act 1988.
- Recovery plans (for species identified as occurring in the area covered by the overlays (list species and plans))(federal).
- Freshwater Ecosystems: Biodiversity Management issues, DNRE.
- Relevant management plans.
- Threatened Vertebrate Fauna in Victoria 2000: A systematic list of vertebrate fauna considered extinct, at risk of extinction or in major decline in Victoria, East Melbourne, DNRE.
- Threatened Fauna in Victoria 1995: A systematic list of fauna considered extinct, at risk of extinction or in major decline in Victoria, East Melbourne, DNRE [for threatened invertebrates only].
- Relevant regional vegetation plans.

APPENDIX 2- Example local planning policy

The text shown in blue shading are guidance notes, not part of the example local planning policy.

22 LOCAL PLANNING POLICIES

22.01 BIODIVERSITY CONSERVATION

This policy would be appropriate for use in a municipality where the application of overlays is limited or where biodiversity information is insufficient for the application of overlays. It would be used to support the discretion provided in the zones and native vegetation provisions (Clause 52.17) to achieve better biodiversity outcomes on a precautionary basis.

This example provides policy direction for classes of assets and activities which may impact on biodiversity that were identified in the MSS as being important in Gumnut Shire. The MSS listed all 20 of the Shire's threatened species and nine EVCs found on private land, land managed by the local government and other small areas of public land (such as water frontages and road reserves). Of these assets, there was sufficient information about some to prepare a number of schedules to environmental overlays, mainly ESOs. The remaining threatened species and threatened EVCs were identified as requiring protection through a local planning policy. In addition, the MSS identified a number of issues affecting biodiversity in the municipality that required elaboration through a local planning policy – management of roadsides, management of riparian vegetation and wetlands and subdivision of bushland.

The structure of this policy may not be suitable in all circumstances. Alternative approaches include developing issue-specific local planning policies with a detailed decision guidelines relating to biodiversity (such as a policy to minimise impacts of subdivision within box iron bark forest or for riparian land) either within a general local planning policy on biodiversity conservation, or as separate local planning policies.
This policy applies to all land and waters in the Gumnut Shire where the following biodiversity assets are present:

- Areas of threatened EVCs: creekline grassy woodland, floodplain riparian woodland, alluvial terraces, herb-rich woodland, grassy dry woodland, hills herb-rich woodland and river red gum forest.
- Grassy woodland and native grasslands.
- Other remnant native vegetation.
- Habitats of threatened species including bush stone curlew, brush-tailed phascogale, squirrel glider, grey-crowned babbler, trailing hop-bush and hairy anchor plant.
- Roadside vegetation.
- Riparian habitats and wetlands.

22.01-1 Policy basis

This policy:

- Applies the biodiversity objectives in the SPPF (particularly Clauses 13 and 15.09-2) to local circumstances.
- Builds on and implements the objectives relating to the protection of biodiversity assets identified in the MSS (in Clause [enter number as appropriate] or list themes in the MSS the policy addresses).
- Applies the relevant recommendations of the Broader Gumnut Regional Vegetation Plan, Sites of Zoological and Botanical Significance in Gumnut Shire, the Gumnut Roadside Management Plan, and the Goldfields and Victorian Riverina bioregional plans [These should also be mentioned in the MSS as means of implementing the Shire's biodiversity objectives].
- Builds on the native vegetation provisions of Clause 52.17.

Gumnut Shire has a range of remnant native habitats supporting a wide variety of indigenous flora and fauna including some threatened species. These contribute to the shire’s unique natural values. [Include a list of threatened flora and fauna recorded in the municipality in the MSS. DNRE can generate species lists for all municipalities.]

Important elements of the Shire’s biodiversity include:

- Species such as the bush stone curlew (Burhinus grallarius), brush-tailed phascogale (Phascogale tapoatafa) and squirrel glider (Petaurus norfolcensis) may occur at unrecorded sites in good quality habitat remnants in both the Grevillia Heights and Green River environs. These locations are not recorded in Statewide data systems due to the lack of detailed survey. Brush-tailed phascogale often occur in box ironbark forests and grassy woodlands. Bush stone curlew can also be found in box ironbark forest, grassy woodlands and open forest communities composed of grey box, river red gum or yellow box. Squirrel glider prefer dry forests, riverine forests and box woodlands, particularly the river red gum forests which follow Green River. This glider prefers habitat with abundant hollow-bearing trees and mix of eucalypts, acacias and banksias that include species that flower abundantly in winter and is particularly vulnerable to the impacts of habitat fragmentation and reduction of habitat size.
- Box-ironbark forest predominates on the slopes of the Box Ranges in the south of Gumnut Shire. Key issues in the protection of box ironbark forest include protection of existing remnants, and encouragement of measures to reduce fragmentation.
- In the south of the shire, particularly around the small community of Banksia, there are still moderate sized areas of heathy dry forest and grassy dry woodland and it is important to
ensure that connectivity of these remnants is maintained and improved. Measures to improve links between these remnants and enhance their viability are also a high priority.

- Grassy woodland and grassland areas in the north of the shire are vegetation types that are threatened throughout the State. These small, special areas of grassland continue to be found on private land that has only been lightly grazed. The contribution that such remnants (even where the trees have been removed and only the native grassy understorey remains) can make to grassland conservation Statewide is significant.

- Within the agricultural areas to the west of the shire, remnants of the natural landscape are reduced to roadsides and streamsides and other small patches scattered in the landscape. Some roadside habitats left in this area contain abundant mature trees with relatively intact understorey vegetation, and frequently provide good connectivity between outlying public and private forest blocks and smaller remnants. While the remnants are small in many areas, they are all that remain of some vegetation classes on more fertile soils. Due to their small size they are particularly vulnerable to disturbance. Slashing of understorey species and removal of dead wood for firewood both impact on the viability of the habitat for grey-crowned babbler. Of particular note are the few remnants of hills herb-rich woodland in the west of the shire which are some of the best remaining examples of this ecological vegetation class in the region.

Several threatening processes impact on the shire’s indigenous flora and fauna. Priorities to be addressed include the invasion of remnant vegetation by pest plants and animals, grazing within areas of indigenous vegetation, removal of isolated dead trees and intensification of agricultural practices particularly in areas of remnant native grassland.

Pest plants and animals are a particular problem for the grassy woodland areas near the rural residential areas on the outskirts of Grevillia Heights. This area is also subject to increasing pressure for rural residential development resulting in clearing large areas of box ironbark forest and grassy woodland.

[For the purposes of this example, assume that the policy has the appropriate basis and support in the MSS and that this is presented in general terms in the MSS. As this level of detail is important for exercising discretion, it is more appropriately included in the local planning policy.]

[This material can be sourced from bioregional plan zone descriptions, ecological consultants, DNRE parks, flora and fauna and mapped data.]

22.01-2 Objectives

- To encourage otherwise appropriate land use and development that enhances or which has no impact on biodiversity assets and ecosystem health.

[While ‘ecosystem health’ is not mentioned in the policy basis, including it in the policy objectives assumes it is addressed in the MSS.]

- To identify protect and enhance existing and potential habitat of threatened species including bush stone curlew, brush-tailed phascogale, squirrel glider, grey-crowned babbler, trailing hop-bush and hairy anchor plant.

- To protect and enhance particular threatened rare and depleted EVCs.

- To identify, protect and enhance remnant grassland.

- To identify and protect habitat of threatened species.

- To protect the habitat corridors along Green River and its tributaries in the west of the shire, along roadsides and within habitat remnants.

- To achieve net gain in the extent and quality of native habitat.
[Although a key concept in native vegetation policy, this objective needs to be introduced and supported by the MSS.]

- To promote the restoration of degraded habitats and revegetation of cleared areas with indigenous species of local provenance.

**22.01-3 Policy**

*Creekline grassy woodland, floodplain riparian woodland, alluvial terraces, herb-rich woodland, grassy dry woodland, hills herb-rich woodland and river red gum forest*

This section indicates those threatened EVCs requiring the most stringent extra protection, but which are not covered by an overlay.

It is policy to:

- Avoid the removal, destruction or lopping of vegetation.

- Refuse development in locations with significant biodiversity assets that would be adversely affected by the development, if alternative sites, which would result in lesser impacts, are available.

- Exclude areas of native vegetation, from the proposed subdivisions or developments.

- Require management of activities (including reduced intensity and changes to the timing of an activity) to minimise the impact of the proposal. [for example definition of building envelopes, limit of any clearance for fencing and other works, restriction of areas where construction materials may be stored, ensuring machinery is cleaned before entering site in phytophthora is a potential issue.]

Where a permit is required for a proposal that involves the removal destruction or lopping of native vegetation or other impacts on biodiversity values, it is policy to:

- Ensure an appropriate contribution to targets for Net Gain in the extent and quality of native vegetation, as established in the Gumnut Regional Native Vegetation Plan and the MSS.

**Other remnant native vegetation**

[This section articulates the municipality’s views of likely outcomes for applications impacting on native vegetation contributing to biodiversity.]

It is policy to:

- Avoid removal, destruction or lopping of native vegetation.

- Exclude areas of native vegetation from proposed subdivisions or developments.

- Refuse development in locations that will negatively impact upon biodiversity assets if alternative sites, which would result in lesser impacts, are available.

- Require management of activities (including reduced intensity and changes to the timing of an activity) to minimise the impact of the proposal (for example, definition of building envelopes, limit of any clearance for fencing and other works or restriction of areas where construction materials may be stored).

Where a permit is required for a proposal that involves the removal, destruction or lopping of native vegetation or other impacts on biodiversity values, it is policy to:

- ensure an appropriate contribution to targets for net gain in the extent and quality of native vegetation, as established in the Gumnut Regional Native Vegetation Plan and the MSS.
Habitat of threatened species (bush stone curlew, brush-tailed phascogale, squirrel glider, grey-crowned babbler, trailing hop-bush and hairy anchor plant)

[Threatened species may occur across a range of EVCs both threatened EVCs and EVCs of lower conservation status, and in some cases may occur in areas which are not native vegetation (for example beaches, rock outcrops, or exotic vegetation). Habitat of threatened species is therefore dealt with as a separate policy item to the native vegetation in this policy.]

It is policy to:

- Avoid removal, destruction or lopping of and other damage to vegetation and habitat of threatened species.

- Refuse development in locations with significant biodiversity assets that would be adversely affected by development, if alternative sites, which would result in lesser impacts, are available.

- Require management of activities (including reduced intensity and changes to the timing of an activity) to minimise the impact of the proposal (for example, definition of building envelopes, limit of any clearance for fencing and other works and restriction of areas where construction materials may be stored).

Where a permit is required for a proposal that involves the removal destruction or lopping of native vegetation or other impacts on biodiversity values, it is policy to:

- Ensure an appropriate contribution to targets for net gain in the extent and quality of native vegetation, as established in the Gumnut Regional Native Vegetation Plan and the MSS.

Roadsides

It is policy to:

- Minimise the impact of access-ways to private property on remnant roadside vegetation.

- Ensure roadside management activities are consistent with the Gumnut Roadside Management Plan wherever roadside management activities and works take place.

Riparian land and wetlands

It is policy to:

- Ensure that new allotments adjacent to riparian land and wetlands are of a sufficient size to accommodate a vegetated buffer of at least xm from the water margin and a building envelope that does not extend into the vegetated buffer.

- Ensure that the subdivision is designed to protect riparian and wetland biodiversity assets.

- Exclude riparian land, wetlands and other areas and features of habitat/vegetation significance from the proposal.

- Not support development in locations with biodiversity values if alternative sites, which would result in lesser impacts, are available.

- Encourage particular river management activities for biodiversity enhancement, such as reestablishment of riparian vegetation.

- Encourage the use of suitable indigenous species to minimise soil erosion.

- Avoid clearing or damaging native vegetation or water margins.

- Ensure that vegetation buffer zones to be fenced are of a sufficient width to create a suitably diverse and stable riparian environment. the minimum width of the vegetation buffer zone
should be 30 m along Green River and 20 m along its tributaries and other creeks and wetlands in the Shire).

Where a permit is required for a proposal that involves the removal destruction or lopping of native vegetation or other impacts on biodiversity values, it is policy to:

- Ensure an appropriate contribution to targets for Net Gain in the extent and quality of native vegetation, as established in the Gumnut Regional Native Vegetation Plan and the MSS.

**Subdivision**

It is policy to:

- Consider the potential impact of subdivision on habitats (If a proposal for subdivision will result in land being subdivided to lots under 0.4 ha, the native vegetation provisions in Clause 52.17 will not apply. For example, through additional exemptions from permit requirements resulting from reduction in lot size, etc., increased density of buildings, of domestic pets, increased utilisation of firewood.)

- Where subdivision in areas with threatened or depleted within EVCs occur, particularly in the Low Density Residential Zone on the outskirts of Grevillia Heights to restrict building envelopes to areas which are already cleared.

- Support subdivisions designed to exclude and protect areas of native vegetation or at least minimise the impact on biodiversity assets.

- Encourage subdivisions with lots greater than the minimum lot size if this will reduce the potential for negative impacts on biodiversity assets.

- Seek the advice of DNRE for any subdivision of land in or near the Box Ironbark Forest and Grassy Woodland north of Grevillia Heights, on the slopes of the Box Ranges and around Banksia, including land in the Low Density Residential Zone.

Where a permit is required for a proposal that involves the removal destruction or lopping of native vegetation or other impacts on biodiversity values, it is policy to:

- Ensure an appropriate contribution to targets for net gain in the extent and quality of native vegetation, as established in the Gumnut Regional Native Vegetation Plan and the MSS.

**Information to accompany applications**

It is policy that, when considering an application for subdivision of an area that contains native vegetation or other habitat or a proposal that involves the destruction removal or lopping of native vegetation or other habitat, applicants be requested to provide the following information:

- A report including (where relevant) [Select only those items relevant to the issue being addressed]:
  
  Identification of any native vegetation or other habitat components to be removed, destroyed, damaged or otherwise disturbed.

  The reasons for any removal, destruction or lopping of any native vegetation or habitat components.

  How the proposal responds to the decision guidelines of this policy and any other relevant provision in the scheme.

  The type, condition and significance and flora and fauna values of the vegetation or other biodiversity components present at the site, which may be impacted upon (to be prepared by an appropriately qualified ecologist/biologist).

  The impact on stream channel stability and on flooding characteristics.
The type, significance and flora and fauna values of the vegetation or other habitat components to be removed.

The measures to be taken to ensure that any impacts on native vegetation, flora and fauna are compensated for by rehabilitation or revegetation to meet the requirement of Net Gain in quantity or quality of native vegetation.

Other areas on the land that have been cleared within the previous 10 years whether or not this clearing required a planning permit.

- Scaled and dimensional plans showing, where relevant [Select only those items relevant to the issue being addressed]:
  - The existing title boundaries of the property.
  - The proposed subdivision layout.
  - Nearby properties.
  - Nearest public roads.
  - Existing development.
  - Existing fencing.
  - Records of threatened species or communities and the boundaries of any sites of significance.
  - Existing native vegetation or other habitat on the site.
  - Any native vegetation or other habitat to be removed, destroyed or lopped.
  - Location of watercourses, water bodies and drainage lines.
  - Location of any known flora or fauna habitats or corridors.
  - Location and management of rehabilitation and revegetation activities proposed to compensate in equivalent quality and quantity for clearing of native vegetation or other habitat.

22.01-4 Decision guidelines

Before deciding on an application, the responsible authority will consider, as appropriate:

- the impact of the proposal on the biodiversity of sites identified in Sites of Zoological and Botanical Significance in Gumnut Shire.
- for a proposal affecting road reserves, the management strategies in the Gumnut Roadside Management Plan.
- whether the proposal may be detrimental to the outcome of any recovery plan under the Environment Protection and Biodiversity Conservation Act 1999 or Action Statement under the Flora and Fauna Guarantee Act 1988.
- whether habitat critical to the survival of a species or ecological community such as for foraging, breeding, roosting or dispersal is likely to be adversely affected.
- whether the life cycle of the species is likely to be disrupted to the extent that a viable local population of that species will be adversely affected.
- whether an area of known habitat is likely to become isolated from currently interconnecting or nearby areas of habitat.
• whether any species or ecological community that may be impacted upon is at the limit of its known distribution.

• whether rare or threatened ecological communities or rare or threatened species will be adversely affected.

• whether a species or ecological community impacted upon by the proposal is adequately represented in conservation reserves (or other similar protected areas) in the municipality.

• whether the proposal is of a class of development or activity that is recognised as a potentially threatening process under the Flora and Fauna Guarantee Act 1988.

• whether an invasive species that is likely to be harmful to the ecological character of a significant habitat or ecological community is likely to be established as a result of works or development.

• The advice of the Department of Natural Resources and Environment.

References

Broader Gumnut Regional Vegetation Plan, Gumnut Catchment Management Authority, 2001
Sites of Zoological and Botanical Significance in Gumnut Shire, Murray Z Ball, 1989
Gumnut Roadside Management Plan, Gumnut Shire Council, 1997
Goldfields Bioregional Plan, Department of Natural Resources and Environment, 2001
Victorian Riverina Bioregional Plan, Department of Natural Resources and Environment, 2001

APPENDIX 3- Identifying biodiversity assets, values and threats and sources of biodiversity information

Identifying biodiversity assets, values and threats

Any planning action for biodiversity needs to utilise available information on the value and significance of biodiversity assets and threatening processes in the municipality.

The following aspects of biodiversity should be identified within the municipality:

• the contribution that biodiversity in the municipality makes to biodiversity in the bioregion and Statewide

• the EVCs present and their local and wider conservation status

• terrestrial habitats including areas of important native vegetation (threatened, rare or depleted EVCs, significant roadsides, wildlife corridors and habitat of threatened taxa)

• important aquatic habitats including wetlands, particularly those listed as internationally significant under the Ramsar Convention and rivers, particularly heritage rivers

• coastal habitats including those associated with marine reserves

• species and communities that are threatened at the national, State, regional and local level.

Table 1 in this appendix contains advice on sources of biodiversity information. Accurately mapped biodiversity information is becoming increasingly available. However, the quality, resolution and completeness of the information varies across the State.

The following issues should be considered when using existing information sources:

• many conservation studies have concentrated on highly significant sites. It is important that biodiversity of local and regional significance is also recognised and protected
many taxa and ecological communities declining in their range and abundance have not yet been listed as threatened under State or Commonwealth legislation. These assets may also require protection through planning schemes.

the absence of published or detailed information on biodiversity values in a particular area does not mean there are no values. Information on a broader scale can be used to assess the likely presence of significant biodiversity assets.

In some cases, additional survey data may be required before a full evaluation of the biodiversity values of a site can be made.

APPENDIX 3- Identifying biodiversity assets, values and threats and sources of biodiversity information

Identifying and evaluating biodiversity assets
Identifying the value, quality or utility of biodiversity assets within a municipality is an important task for any local council.

Figure 1 illustrates the general steps involved in determining the value and significance of biodiversity assets. DNRE has developed standardised methodologies for evaluation and rating of significance of biodiversity assets. These are used in assigning significance to areas mapped and incorporated in the DNRE BioSites database.

Significance rankings can be useful in prioritising the level of protection and management required to conserve an asset. It is also useful in assessing the level of offset required to achieve the objective of Net Gain in extent and quality of native vegetation. The more important the biodiversity asset, the more critical are decisions about its future. The level of significance of a biodiversity asset can often be used as a guide to determine which planning control will be most appropriate. However, the effectiveness of the planning control is also a factor of the size and distribution of the asset and its resilience or sensitivity to change. The value of locally significant assets should also be considered in any review of a planning scheme and in decisions on planning permit applications, particularly to ensure the maintenance of ecosystem threshold levels.

The quality (condition and viability) of native vegetation and habitat areas is also an important consideration in determining the significance of a biodiversity asset. Determining the condition of an area includes considerations such as the presence of old trees, retention of the 'original' structure and floristic diversity, presence of regeneration and absence of weeds. Within a landscape context, assessing viability includes the size of the area and links to neighbouring areas.

General process undertaken to evaluate biodiversity values
- Define area within which an evaluation is to be made, for example, a bioregion
- Locate and identify the biological assets in that area
- Describe and classify those assets using an accepted classification system for example into EVCs
- For each classified asset evaluate each using accepted criteria to determine individual biological values. Criteria such as species richness, rarity, habitat function could be applied
- Rank each asset in terms of its significance compared to others, for example, high to low international to local.

Appendix 2 of Restoring our Catchments - Victoria’s Draft Native Vegetation Management Framework (DNRE 2000a) provides the methodology for assessing the bioregional conservation status of EVCs. The results of this assessment are given in DNRE (2000d).

Threats to biodiversity
There are many threats to the conservation of biodiversity values within a municipality. Human activity has changed the Victorian landscape. Much irreversible damage has occurred to biodiversity assets, and many of our ecosystems are in decline. The challenge is to manage the biodiversity assets that
remain and rectify environmental damage where possible. To do this, we need to understand and manage the environmental risks arising from our economic and social development. Our lifestyles today, our desire for space and transport, and our demand for food, water, energy and manufactured products continue to place pressure on the environment and Victoria's biodiversity.
Table 1
Sources of biodiversity information

<table>
<thead>
<tr>
<th>Information source</th>
<th>Information available</th>
<th>Further Information/Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>DNRE (Information Centre)</td>
<td>General biodiversity information</td>
<td>(03) 9637 8080</td>
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<tr>
<td></td>
<td></td>
<td><a href="http://www.nre.vic.gov.au">www.nre.vic.gov.au</a></td>
</tr>
<tr>
<td>DNRE</td>
<td>Biodiversity Mapping (BioMap) at 1:100,000 and 1:25,000</td>
<td>Information Management, Parks Flora and Fauna</td>
</tr>
<tr>
<td></td>
<td>Vegetation/Habitat mapping</td>
<td>(03) 9412 4258</td>
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<tr>
<td></td>
<td>BioSites database – register of known biological significance</td>
<td>Email : <a href="mailto:Infomgmt.pff@nre.vic.gov.au">Infomgmt.pff@nre.vic.gov.au</a></td>
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<td>Flora Information System and Wildlife Atlas – CD ROM</td>
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<td>Aquatic Fauna Database</td>
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<td>EVC mapping – vegetation type and status</td>
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<td>DNRE</td>
<td>DNRE threatened species lists</td>
<td><a href="http://www.nre.vic.gov.au">www.nre.vic.gov.au</a></td>
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<td>Flora and Fauna Guarantee Act – lists of threatened taxa, communities and potentially</td>
<td>Look under plants and animals</td>
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<td>threatening processes</td>
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<td>– action statements</td>
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<td>Tree cover mapping at 1:100,000 and 1:25,000</td>
<td>Team Leader, Native Vegetation Management, Catchment and Water Division</td>
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<td>(03) 9412 4388</td>
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<td>Catchment Management Authorities</td>
<td>Regional and local knowledge of biodiversity conservation issues, advice on specific</td>
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<td>Draft Regional Native Vegetation Management Plans</td>
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<th>Information source</th>
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<tr>
<td>Information Victoria</td>
<td>Maps and publications on biodiversity</td>
<td>(03) 9603 9938</td>
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<td>Local Councils</td>
<td>Native vegetation plans, Roadside conservation plans, Local environmental strategies, Consultant reports</td>
<td>Environment officers in local councils - <a href="http://www.mav.asn.au/environment/environment.htm">www.mav.asn.au/environment/environment.htm</a></td>
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<td>Environment Australia (Commonwealth Government)</td>
<td>Information and publications on rangelands, oceans, coastlines, alpine areas, ozone protection, invasive species</td>
<td><a href="http://www.ea.gov.au/about/publications/list">www.ea.gov.au/about/publications/list</a></td>
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