Shire of Dardanup
Local Biodiversity Strategy
Discussion Paper

May 2009

A report by Ironbark Environmental
& Eco Logical Australia
for the Shire of Dardanup

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Abbreviations

CCW	Conservation Category Wetlands
DRF	Declared Rare Flora
EPA	Environmental Protection Authority
GBRS	Greater Bunbury Regional Scheme
IBRA	Interim Bio-regionalisation of Australia
LBS	Local Biodiversity Strategy
LNA	Local Natural Area
LPS	Local Planning Strategy
PBP	Perth Biodiversity Project
REW	Resource Enhancement Wetland
ROS	Regional Open Space
SWBP	South West Biodiversity Project
SPF	Specially Protected Fauna
TEC	Threatened Ecological Community
WALGA	WA Local Government Association
WAPC	WA Planning Commission

Acknowledgements

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Maps and statistics have been provided by Jodie Wood of the South West Biodiversity Project.

This is a draft paper produced for the Shire of Dardanup. The contents do not form Council policy.

All reasonable efforts have been made by Ironbark Environmental and Eco Logical Australia to ensure the accuracy of its contents.

The native vegetation statistics used in this Discussion Paper are provided by the South West Biodiversity Project (SWBP) and have been produced for the purposes of developing the Shire's Local Biodiversity Strategy. Remnant native vegetation mapping was undertaken by desktop interpretation of the 2006 1:20,000 digital ortho-photos and by incorporating information provided by the Shire of Dardanup Officers on areas that have either been cleared during 2006 and 2007 or are approved to be cleared. The mapping of vegetation complexes was undertaken at a regional scale and will need to be verified through site-specific assessments.

Remnant native vegetation mapping has not included the assessment and verification of the vegetation's condition. As a result, statistics of remaining native vegetation in each vegetation complex are likely to be an over-estimate of the amount remaining of each complex. Any decision relating to the retention, protection or management of a Local Natural Area should be supported by site-specific assessments using standardised formats.

Executive Summary

This Discussion Paper is an important stage in the development of the Shire's Local Biodiversity Strategy. The Strategy has been commissioned by Council to identify significant natural areas across the Shire and determine how they could be protected as the region continues to grow. A key part of the Strategy will be to integrate natural area protection into the Shire's planning system, including the Shire's forthcoming Local Planning Strategy.

Biodiversity, the natural variety of living things, is best conserved by protecting natural areas such as bushland, wetlands, rivers and estuaries. The aim of the Shire's proposed Local Biodiversity Strategy is therefore to:

> *"Preserve significant areas of remnant native vegetation, significant wetlands and waterways as well as key biodiversity corridors for future generations."*

This aim is an essential part of protection of the environment and will contribute towards the goals of the Shire's Local Planning Strategy. Whilst clearing is controlled and prevented through various Local, State and Federal Government laws, pressure continues to be placed to develop on natural areas. The challenge is to design developments which protect significant natural areas and steer long-term development away from natural areas.

In this Discussion Paper, natural areas have been identified using mapping of native vegetation and wetlands (Figure 1). To determine the relative significance of a natural area, criteria have been recommended based on factors such as vegetation type and condition, size of natural area, and threatened species (Section 2.1). Figure 3 provides a Shire-wide view of the indicative level of significance of natural areas in the Shire.

After identifying natural areas and their relative significance, actions have been proposed to form the Shire's long-term Local Biodiversity Strategy. These actions fall into four categories:

- Changes to the Shire's Planning Scheme and Local Planning Strategy;
- A Local Planning Policy for biodiversity conservation;
- Management of Council lands; and
- Incentives for landowners with natural areas.

Integrating natural area protection into the Shire's Planning System is a significant challenge and requires new provisions and mechanisms in both the Local Planning Strategy and Planning Scheme. To assist in this integration, and to understand some of the major issues and opportunities in different parts of the Shire, a number of biodiversity planning precincts are used in the Paper (Figure 4). These precincts are based on areas with similar development pressures. The precincts are:

- Eaton Residential area
- Preston Industrial Park
- Dardanup townsite and expansion
- Burekup townsite and expansion
- Dardanup West &Crooked Brook Small Holdings area, and
- General Farming zone.

Recommended actions and provisions which relate to these specific precincts have been proposed in Appendix 6. Actions proposed in this Paper which cover the whole Shire and which would implement the biodiversity strategy over private and public lands are listed below. The Shire of Dardanup would have primary responsibility for implementing these actions. The support of the Department for Planning and Infrastructure is required where actions relate to the Shire's planning system.

High Priority Actions

1. Include the following provisions in the Shire's forthcoming Local Planning Strategy (LPS):
   - Statement that biodiversity conservation is a relevant planning matter;
   - Identification of the location and general values of LNAs; and
   - Identification of the indicative level of significance LNAs according to ecological criteria.

2. Include requirements to conserve biodiversity in the Shire's LPS strategies for mineral resources proposals and buffers to industrial developments.

3. Make specific changes to the Town Planning Scheme to consider Local Natural Area conservation and restoration as detailed within this Discussion Paper.

4. Make amendments to the Town Planning Scheme and structure plans that relate to specific development areas in the Shire as detailed within this Discussion Paper.

5. Continue to work with land developers to ensure that natural areas in new local reserves are ceded to Council with an approved management plan as detailed within this Discussion Paper.

Medium Priority Actions

6. Consider introducing a Local Planning Policy to set standards of ecological impact assessment required of proponents, and put in place protection mechanisms appropriate to LNAs in different zones and development types.

7. Consider introducing an annual budget allocation to fund management of natural areas in reserves. This budget allocation could start at $5000 per annum and increase to $30,000 over a five year period.

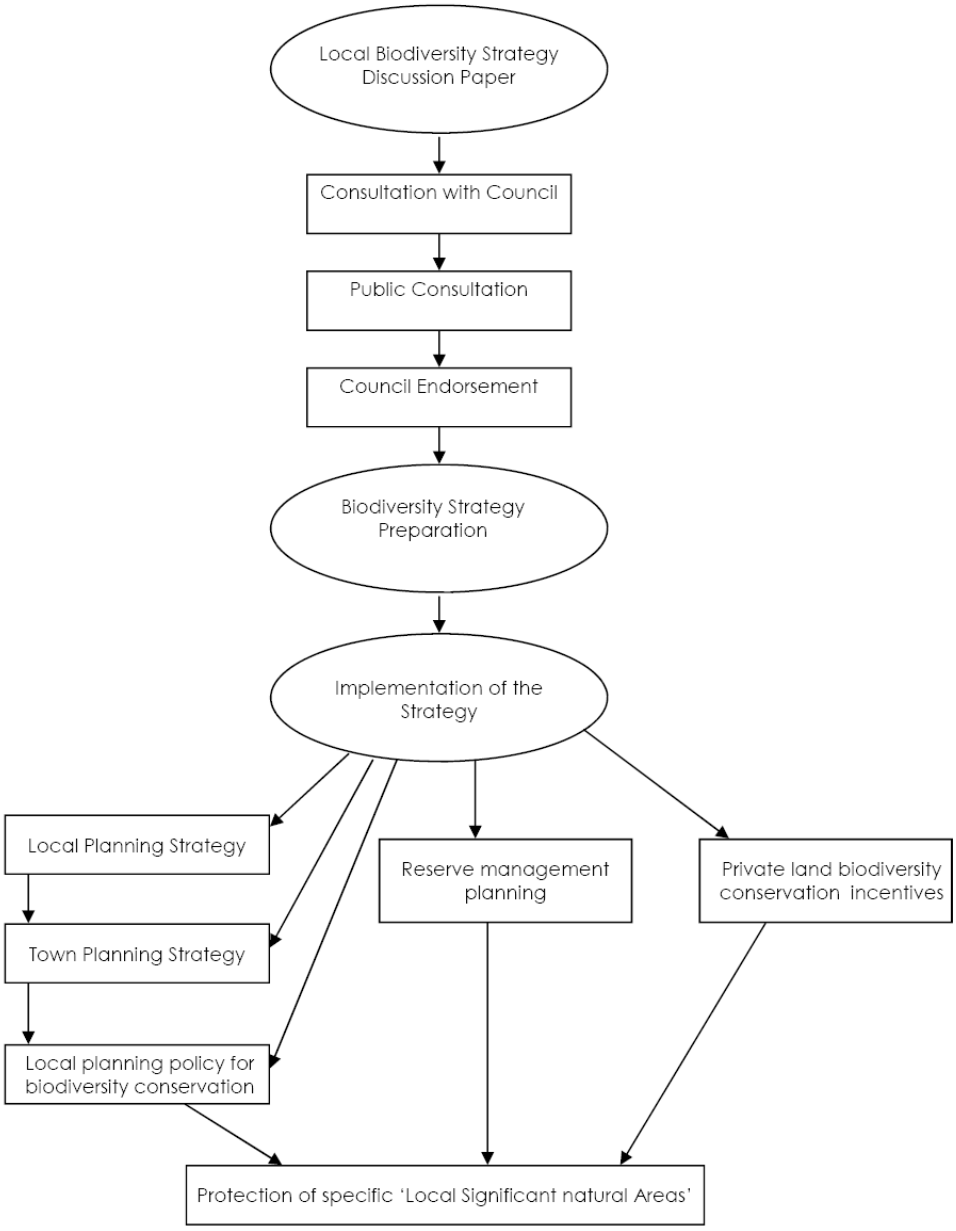
Actions within 3-5 years

8. Council to consider introducing a simple conservation assistance package for ratepayers which includes a range of specific advice on land management and funding, and a free allocation of local native plants.

9. Council to establish a program to assess the condition of all natural areas in reserves.

There are many ways in which the Local Biodiversity Strategy Discussion Paper can be implemented. The following flow chart shows how this can work in relation to other planning actions:

Possible implementation framework



1. Introduction

This Discussion Paper provides an opportunity for landowners and the wider community to comment on the Shire's proposed Local Biodiversity Strategy. A Local Biodiversity Strategy will provide guidance to the Shire of Dardanup for conserving biodiversity in the future, as the region continues to grow.

1.1 Biodiversity

Biodiversity is the natural variety of living things including plants, animals and microorganisms, the genes they contain, and the ecosystems of which they form a part.

The conservation of biodiversity is critical given our community and lifestyle, which are intrinsically dependent upon it. Biodiversity is fundamental to the continued growth and prosperity of the Shire. It supports all of our natural systems keeping our soil, water and air cleaner than it otherwise would be, and provides attractive places for residential and recreational use.

All levels of Government – Federal, State and Local - have a responsibility to plan for the conservation of biodiversity and natural areas (Commonwealth of Australia, 1996).

Biodiversity can only be conserved by protecting and managing natural areas. These are areas of native vegetation, wetland, watercourses or other ecosystems that retain a reasonable level of naturalness, and therefore biodiversity. Figure 1 provides an indication of the location of natural areas in the Shire, using mapping of native vegetation and wetlands.

The protection of trees and other native flora is fundamentally important in providing additional habitat for native animals, but it is the protection and management of natural areas that is the key requirement for biodiversity conservation.

1.2 Local Natural Areas

This Discussion Paper and the Shire's Local Biodiversity Strategy focus on Local Natural Areas (LNAs). These are the natural areas that are currently not protected in the public conservation estate, or included within state forests or water catchment areas. A map of all natural areas showing those which are also Local Natural Areas is provided in Figure 1. Further statistics on the Shire's natural areas is provided in Appendix 1.

LNAs include natural areas which are recognised to be of regional significance, such as those in the Preston Industrial Park. 5350 ha of the 26180 ha of vegetated natural areas in the Shire are LNAs.

1.3 Aims of the Shire's Local Biodiversity Strategy

Council has commissioned this project to identify significant natural areas in the Shire, and determine how best they can be retained or protected through the planning system. Given the level of clearing in the south west of WA, there is now a growing awareness that natural areas will be retained or protected as development occurs around them. Where this is not possible, then significant loss of local and regional biodiversity is likely to occur.

The specific aims of this Discussion Paper and the Shire's resultant Local Biodiversity Strategy are therefore to:

- Identify significant Local Natural Areas at a broad scale across the Shire;
- Determine where proposed development may pose an issue for the protection or retention of these areas; and
- Make recommendations for ways forward for the Shire.

In summary, it is proposed that the Shire's Strategy will aim to:

> *"Preserve significant areas of remnant native vegetation, significant wetlands and waterways as well as key biodiversity corridors for future generations."*

This aim has been adopted directly from the Shire's draft Local Planning Strategy and should therefore be supported by the Shire's future planning scheme. The key phrases in the aim are `significant areas' and `key biodiversity corridors'. These are described in Section 2.

Following public comment, the report will be considered by Council to form the Shire's Local Biodiversity Strategy. Parts of the report will also be used in the Shire's forthcoming Local Planning Strategy.

1.4 The protection or retention of natural areas

To conserve Local Natural Areas, it is important to distinguish between the protection and retention of natural areas. **Protection** is the formal protection of a specific natural area and its management for conservation through inclusion:

- In a public conservation reserve;
- In a conservation covenanted area; or
- Under a fixed term management agreement.

Retention, on the other hand, means that the area is not included under one of the above protective mechanisms, and can be subject to applications for clearing and development.

For example, bushland in a local reserve vested for recreation is considered to be retained and not protected. It is only considered protected if the reserve is vested for a purpose which includes conservation.

The distinction is important because retained natural areas in townsites or small holdings subdivisions should be protected and managed for conservation for them to be viable in the long-term. Retained areas are usually not specifically managed for conservation.

In general farming zones, whilst the distinction is less important, it is still important to encourage landowners to manage retained natural areas. Protection of natural areas in general farming zones becomes important when more intensive land use or development is proposed.

1.5 About local biodiversity planning

Local Governments in the south west of WA, especially on the coastal belt from Perth to Busselton, are encouraged to produce local biodiversity strategies (Molloy, S., O'Connor, T., Wood, J. and Wallrodt, S., 2007).

Biodiversity strategies and discussion papers are not statutory documents, and need to be incorporated into a planning scheme and local planning strategy to have a bearing on Local and State Government decisions. This is critical as many of the decisions that impact on biodiversity and natural areas are linked to land use planning and development.

Fortunately, the Shire is also in the process of preparing its Local Planning Strategy to guide development and address a number of relevant planning matters including the conservation of biodiversity. The LPS will form the basis of a review of the Shire's Town Planning Schemes and will incorporate parts of this Discussion Paper following community consultation and Council resolution.

The information in a Local Biodiversity Strategy can be used by the Department of Environment and Conservation when determining applications for a Permit to Clear under the Environmental Protection Act (1986, as amended).

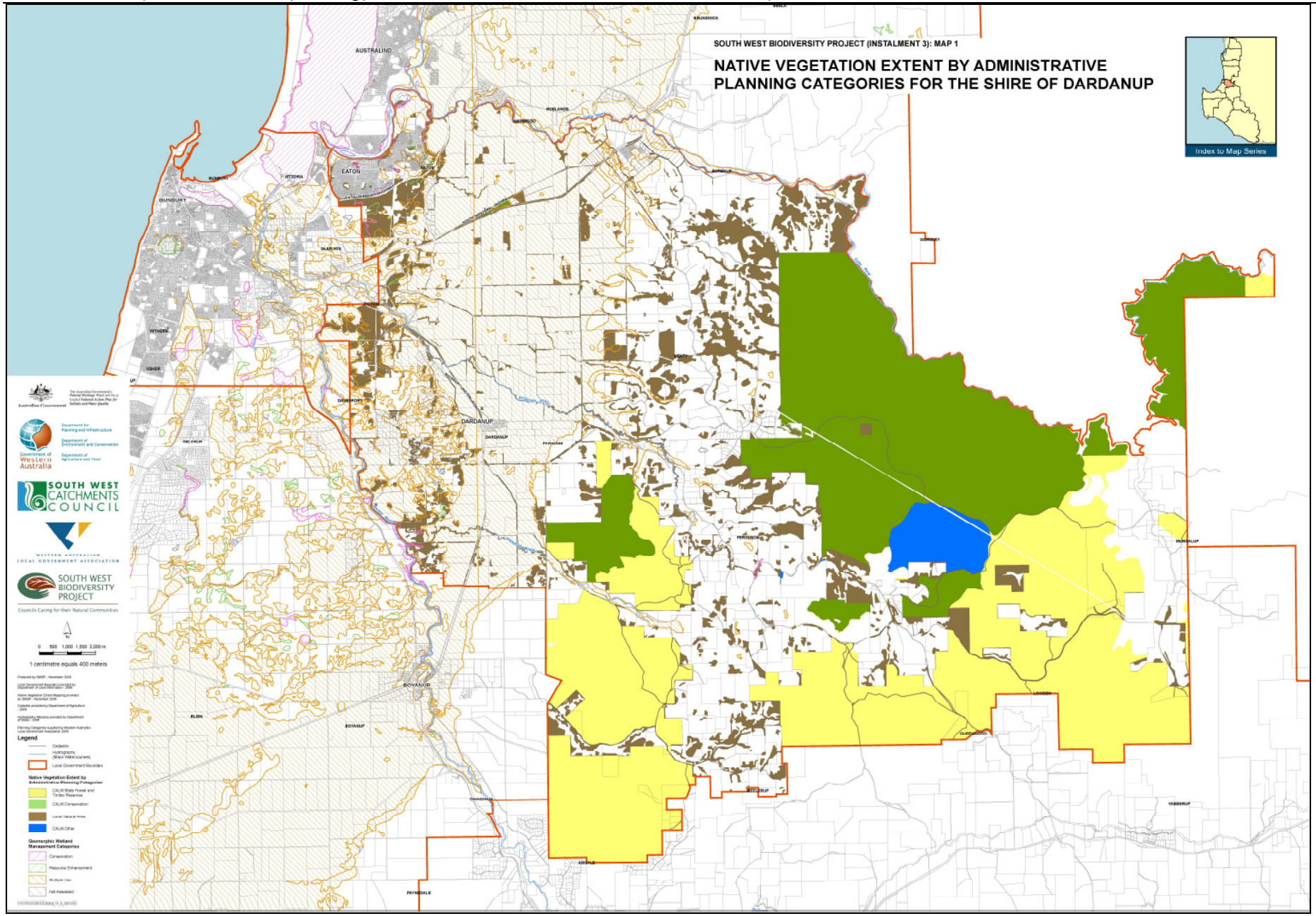


Figure 1: Local Natural Areas and other natural areas in the Shire of Dardanup (Local Natural Areas are shown in brown)

2. Determining the significance of natural areas

All vegetated natural areas and wetlands in the Shire are important, and given the amount of past clearing, the loss of further natural areas is likely to cause local loss of biodiversity. However, it is often important to understand the relative ecological significance of remaining natural areas so that they can be considered and protected as part of future planning and development. Where planning or development proposals may impact on natural areas, Council needs to understand the relative environmental value of those areas.

Figure 3 shows the location of some of the natural areas likely to be of significance which are described below in Section 2.1. This is described as an indicative level of significance given that further site-specific information is required to accurately determine each site's actual environmental value. This information should be gathered at the earliest possible stage of planning of development proposals.

The environmental significance of a natural area is dependent on a number of factors. Most of these factors have been used in the proposed criteria for significance shown in Section 2.1. These factors include:

a) The **vegetation complex** of the natural area's vegetation. Vegetation complexes are broad groupings of vegetation with similar underlying features based largely on soils and landforms. There are 27 vegetation complexes mapped in the Shire as shown in Figure 2. Some of the complexes may be rare in the Shire or across their original extent within the south-west of WA. Statistics on the extent of vegetation complexes remaining and protected in the Shire are included in Appendix 2;
b) Factors which relate to the **viability** and health of the natural area, such as its **size and compactness**;
c) The natural area's **condition;**
d) Suitability of habitat for the conservation of **significant species or ecological communities** which may be protected by law or Government policy. This includes Declared Rare Flora, Specially Protected Fauna and Threatened Ecological Communities;
e) The inclusion of a **wetland** or **watercourse** (riparian corridors);
f) The location of the natural area in proximity to a **Regional Ecological Linkage** or Local Eco-link; and
g) The inclusion of the natural area in an existing **local reserve.**

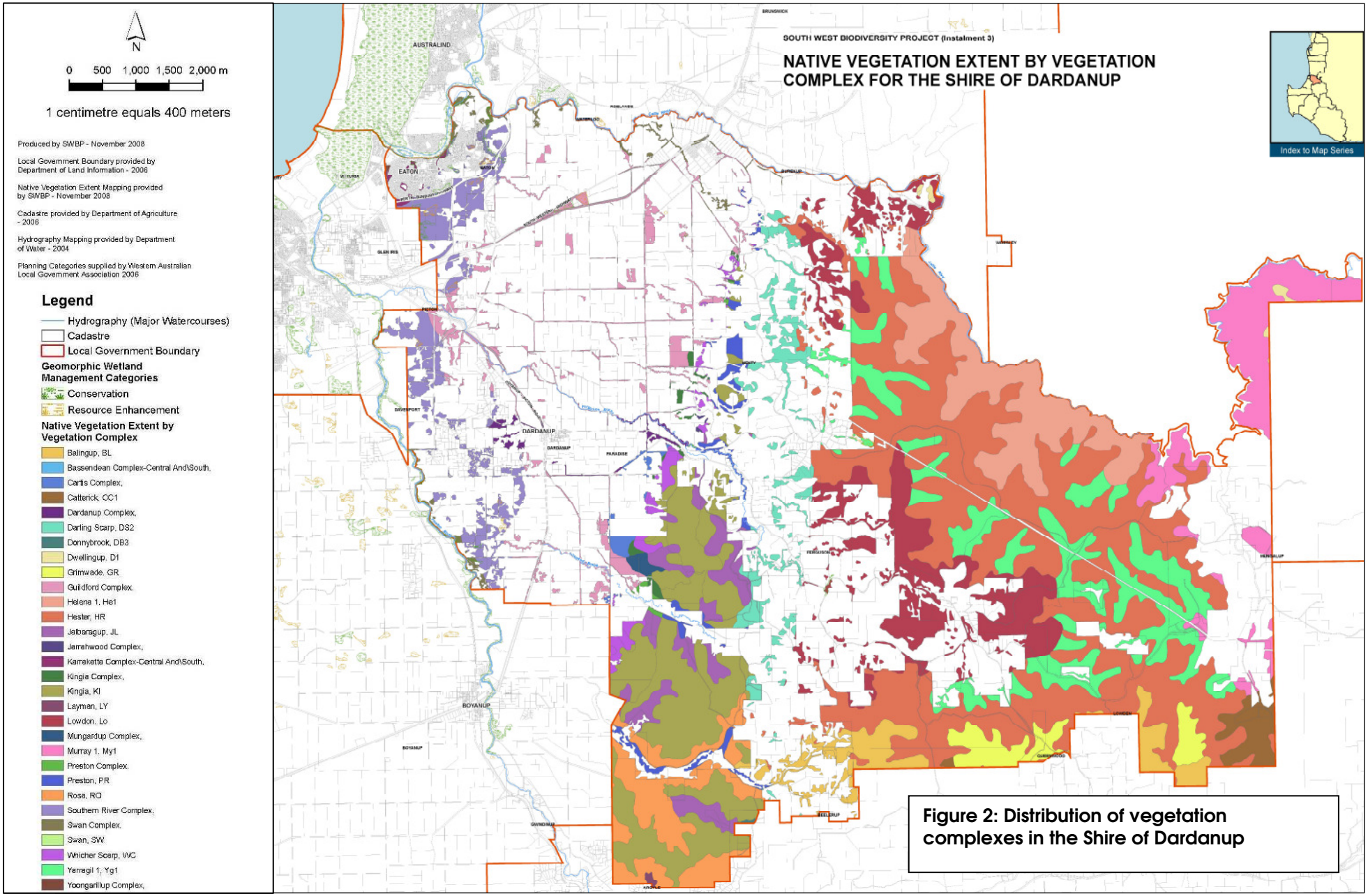


Figure 2: Distribution of vegetation complexes in the Shire of Dardanup

2.1 Proposed criteria to determine significant natural areas

A number of criteria are proposed below to determine the significance of natural areas in the Shire. Where a natural area meets one or more of the criteria then it is likely to be of significance at the local or regional level. The more criteria that are met, the greater the natural area's significance will be. All natural areas which are of local or regional significance should be retained (if under threat of clearing), and where possible protected.

1. Natural areas containing regionally significant vegetation complexes which have at least 2 ha in good or better condition (including wetlands). These are vegetation complexes coloured green in Figure 3:

    a) Swan vegetation complex: On Preston & Collie River floodplains, and Henty Brook in Burekup. These areas should all be able to be retained and protected as a reserve, or ceded at the time of subdivision. Swan complex on Preston is within the Dardanup West/Crooked Brook Structure Plan (163 ha). Protection of Swan vegetation complex can also be achieved on Henty Brook as part of Burekup expansion;

    b) Dardanup vegetation complex: These areas all occur in the Dardanup West/Crooked Brook Structure Plan area. About half of LNA already zoned Small Holdings, the other half is still zoned General Farming (70 ha);

    c) Southern River vegetation complex: Complex scattered through Eaton, Preston Industrial Park, and Dardanup West/Crooked Brook, considerable amount outside of the Preston Industrial Park (PIP) areas that the EPA has recommended for reservation. (914 ha);

    d) Guildford vegetation complex: Complex scattered throughout General Farming Zone on coastal plain (784 ha);

    e) Darling Scarp vegetation complex: Occurs on General Farming Zone (557 ha);

    f) Cartis vegetation complex, Preston vegetation complex and Kingia vegetation complex: All three complexes occur on, or immediately to the east of the Darling escarpment; and

    g) Balingup vegetation complex: In General Farming Zone to the south of the Ferguson Valley;[1]

2. Natural areas containing the Karrakatta Central & South vegetation complex: All remaining examples are within Eaton Residential Zone (26 ha);

3. Natural areas containing any other vegetation complex in the Shire in a natural area of at least 4 ha.

4. Habitat of Threatened Ecological Communities (TECs). The two known TECS in the Shire are:

[1] A number of other complexes occurring in the Shire are regionally significant, but either occur as very small LNAs, or no LNAs. Vegetation complexes that fall into this category are Bassendean Central & South (1 ha LNA), Jarrahwood (6 ha LNA), Mungardup, Donnybrook and Layman (no LNAs).

- SCP3c – *Corymbia calophylla – Xanthorrhoea preissii* woodlands and shrublands, Swan Coastal Plain (endangered on both State and Federal listings);and
- SCP08 – Herb rich shrublands in clay pan (Vulnerable, State listing).

5. The habitat of Declared Rare Flora, Specially Protected Fauna and Priority 2 and 3 Flora.
6. All vegetated wetlands, including all Conservation Category Wetlands (CCWs) and Resource Enhancement Wetlands), with an adequate buffer. An adequate buffer is one that is determined using the WAPC's draft Guidelines (WAPC, 2005).
7. All riparian corridors, including floodplains (floodway and flood fringe), and all vegetation immediately adjacent to this riparian vegetation.
8. All parkland cleared areas known to provide food sources for white-tailed and red-tailed black cockatoos:
    a. Carnaby's White-tailed Black Cockatoo, (*Calyptorhyncus latirostris*);
    b. Baudin's White Tailed Black Cockatoo (*C. baudinii*); and
    c. Red-tailed Black Cockatoo (*C. bankii*).
9. All natural areas in Local Reserves and freehold land owned by Council.
10. All natural areas on Regional Ecological Linkages, and the local EcoLinks designated in this Strategy. (See Section 2.2 and Figure 3).

2.2 Key biodiversity corridors

Key biodiversity corridors are:

1) All Regional Ecological Linkages as identified by the Environmental Protection Authority in their assessment of the Greater Bunbury Regional Scheme EPA(2003); and
2) Local Ecological linkages (Local Eco-links) recommended in this report to form north-south links between:
    a. The Collie, Henty Brook, and Ferguson Rivers (through the Burekup townsite development, Mineral Sand mining developments, and proposed Waterloo Industrial Park (Local Eco Link 1);
    b. The Ferguson River and Crooked Brook (Through Dardanup West Small Holdings) (Local EcoLink 2); and
    c. The Foothills link (through mineral sand mining rehabilitation) (Local Ecolink 3).

An ecological linkage is a series of natural areas that allow the movement of animals and plants across the landscape. Ecological linkages can be seen as a number of 'stepping stones' across the landscape, linking similar types of habitat. Linkages can be located either along watercourses or across upland vegetation types. In fact both types of linkages are required to conserve the variety of plants and animals found in the Shire.

Ecological linkages have been termed key biodiversity corridors in the Shire's forthcoming Local Planning Strategy.

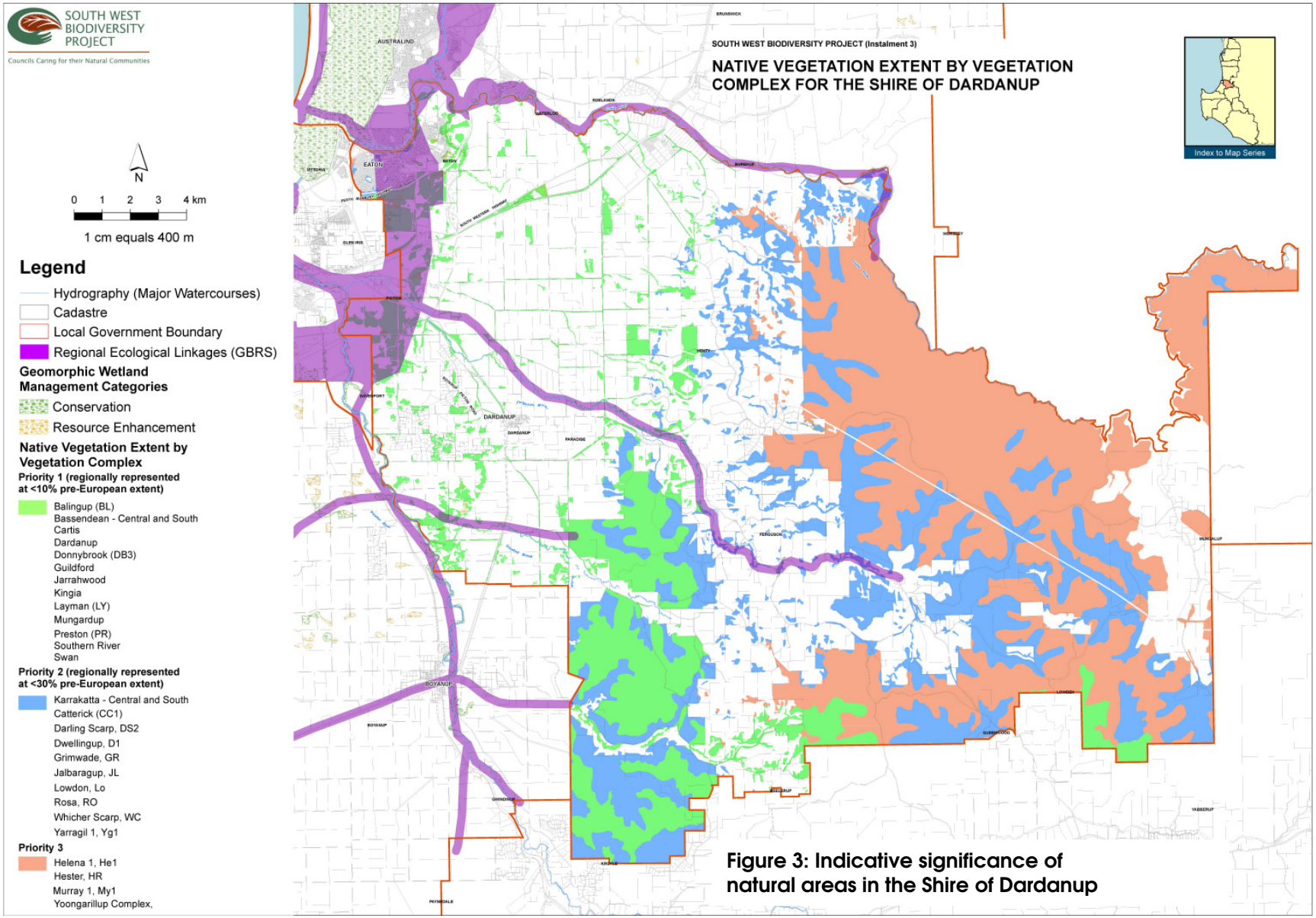


Figure 3: Indicative significance of natural areas in the Shire of Dardanup

3. Framework for local biodiversity planning

To assist in integrating biodiversity conservation in the Shire's planning system a number of biodiversity planning precincts or general zones are used in this Discussion Paper. These precincts are based on the major development pressure which will impact on biodiversity conservation. They are shown in Figure 4 and are as follows:

- Eaton Residential area;
- Preston Industrial Park;
- Dardanup townsite and expansion;
- Burekup townsite and expansion;
- Dardanup West &Crooked Brook Small Holdings area;
- General Farming zone; and
- DEC Conservation Forest/Estate.

It should be noted that precincts such as the Preston Industrial Park will be undergoing significant land use changes, which are to be considered as the Shire implements its Local Planning Strategy.

The General Farming zone could be further divided into a number of other precincts for the purposes of biodiversity conservation in the future. These include the proposed Waterloo Industrial Park and the two strategic deposits of mineral sands in the Shire. The protection of natural areas and the revegetation of lands should be included as development and land use objectives in each of these areas.

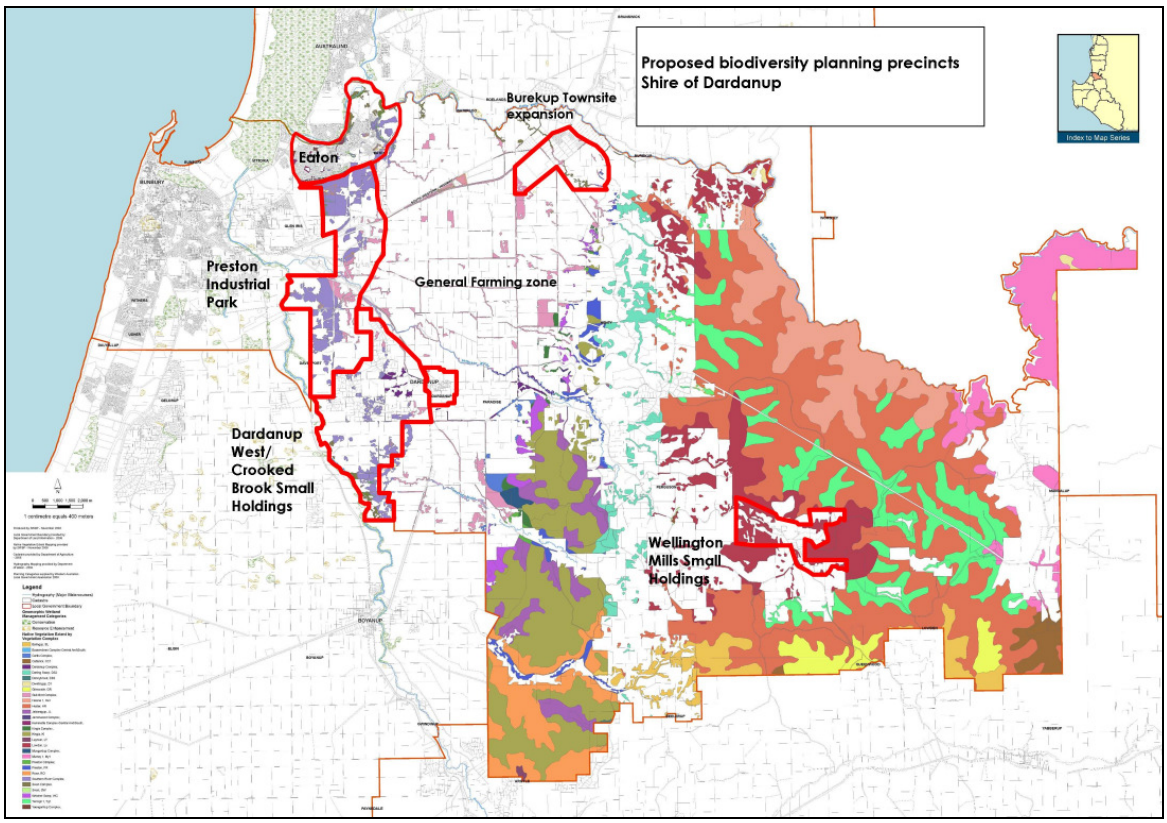


Figure 4: Proposed biodiversity planning precincts

3.1 Description of Biodiversity Planning Precincts

In order to understand some of the major issues and opportunities relating to the protection of natural areas in different parts of the Shire, Table 1 presents a summary of each of the precincts. The issues and opportunities presented in the final column of the table are discussed in Section 4.

Natural areas managed by the Department of Environment and Conservation (DEC) are significant natural areas, but are not included in the biodiversity planning precincts. A summary of the vegetation complexes found in DEC managed lands within the Shire is provided in Appendix 3.

Table 1: Planning Precincts, vegetation complexes and ecological linkages

Precinct	Vegetation Complex	Regionally Significant	Complex Location	Within Regional Ecological Link/	Local linkage opportunity	Major planning issues and opportunities related to biodiversity conservation
Eaton	Southern River	Yes	Patches south east to North east	Yes	No	Swan vegetation complex in ROS in GBRS and Recreation in TPS. TPS zone should be amended to Recreation and Conservation where natural areas occur.
	Karrakatta C/S	No	Fragmented patches to the west within REL	Yes	No	
	Swan	Yes	To the north on tributary to Collie	Yes	No	
Burekup	Guildford	Yes	Large patch(es) to the south west	No	EcoLink 1	Protection of Henty Brook floodplain and riparian vegetation. Restoration to recreation fauna habitat. Protection of the large patch of Guildford vegetation complex in the south-west of the proposed expansion area. Revegetation to enhance fauna movement along proposed Ecolink 1.
	Swan - Guildford - Swan	Yes	Narrow strip running north to south through the middle	No		
Dardanup	Guildford	Yes	Small yet important patch in the NW corner of expansion boundary. Ensure protection	No	EcoLink 2	Protect all remaining local native trees and understorey. Protection and restoration of Gavin's Gully Drain.
Dardanup West & Crooked Brook	Southern River	Yes	Patches to the south lie within important, ensure protection	Yes	EcoLink 2	Regionally significant vegetation throughout area where future

Precinct	Vegetation Complex	Regionally Significant	Complex Location	Within Regional Ecological Link/	Local linkage opportunity	Major planning issues and opportunities related to biodiversity conservation
						subdivision likely. Scheme amendments to prevent further fragmentation and protect all significant LNAs.
Wellington Mills Small Holdings area	Lowdon	Yes	The west consists of large consolidated patches Smaller fragmented patches exist in the east	Yes	No	Proximity to DEC estate and areas of Extreme Fire Risk. Where possible, ensure scheme amendments can meet fire safety requirements without clearing of natural areas.
Preston Industrial Park	Southern River	Yes	large consolidated patches within main north to south	Yes	No	Shire's Local Planning Strategy and Scheme to recognise the ecological significance of all LNAs as per EPA's advice.
General Rural	Darling Scarp	Yes	Throughout	Yes	EcoLink 3	Major developments include proposed Waterloo Industrial Park, Mineral Sand Mining, subdivisions and intensification of agriculture. Key issue is to gain planning control over intensive agricultural developments to ensure natural areas are protected through fencing, covenants or designation of habitat conservation areas in LPS. Subdivisions are to avoid fragmentation of natural areas and watercourses. Ensure natural areas on new lots are protected through "Habitat Conservation Areas" and/or covenants.
	Guildford	Yes	Throughout	Yes		
	Preston	Yes	Throughout	Yes		
	Kingia	Yes	Throughout	No		

4. Proposed actions to conserve biodiversity

The Shire proposes to implement its Local Biodiversity Strategy across all parts of the Shire and through a number of key Council initiatives.

The four main initiatives are:

1. The Shire's Planning Scheme and Local Planning Strategy;
2. A Local Planning Policy for biodiversity conservation;
3. Management of Council lands; and
4. Incentives for landowners with natural areas.

Figure 5 provides a snapshot of some of the major actions proposed in different parts of the Shire to implement the proposals in this Discussion Paper.

4.1 Conserving biodiversity through the Shire's Local Planning Strategy and Scheme

Council is currently preparing its first Local Planning Strategy as part of a review of the Shire's Local Planning Scheme. The Local Planning Strategy provides the strategic basis to the new Local Planning Scheme and will be used as a reference when making decisions under the Scheme. It is therefore a very important way of influencing future development.

To conserve biodiversity, it is recommended that the Shire's forthcoming LPS should:

a) Clearly state that biodiversity conservation is a relevant planning matter;
b) Identify the presence and location of LNAs, using Figure 1 and 2;
c) Identify the indicative level of significance of all LNAs, using Figure 3;
d) Set objectives for protection of natural areas; a proposed protection framework is described in Appendix 4; and
e) Support the need for a Local Planning Policy for Biodiversity Conservation.

It is also recommended that the LPS's strategies for mineral resources proposals and buffers to industrial developments incorporate requirements to conserve biodiversity. These proposals are included in Appendix 5.

Given the Scheme is a legal planning document, more specific changes are proposed in the Scheme to support biodiversity conservation. The major changes are to:

a) Include a new scheme objective: "To protect and restore the natural assets and values of the Shire for the benefit of all present and future residents" Or similar;
b) The Scheme should make reference to Local Natural Areas, the mapping of LNAs (Figure 1) and indicative significance of LNAs (Figure 3);
c) Consider establishing a requirement that intensive agricultural proposals require development assessment;
d) Create a new zone of Habitat Conservation, or similar, to allow the addition of LNAs to this zone as lands are considered for development; and
e) The Tree Preservation Areas shown in existing Town Planning Scheme 4 should be re-labelled as 'Habitat Conservation Areas' to encourage protection of all vegetation, and not just trees, in these areas.

Further changes to the Scheme or requirements for specific scheme amendments and structure plans are proposed in Appendix 6 (Table 10). These relate to specific precincts in the Shire.

4.2 Local Planning Policy

Creating a new Local Planning Policy (LPP) under the Scheme can help Council ensure than development is able to protect biodiversity at each stage of the planning and assessment process. A LPP sits under the scheme as a policy that must be given due regard by proponents and the Council when considering proposals.

It is proposed that Council consider introducing an LPP which makes biodiversity conservation a relevant planning matter that must be considered by proponents and Council.

The purpose of the LPP would be to specifically:

1) Set standards of ecological assessment required of proponents. These would be appropriate to the potential impact on biodiversity and stage of development. The Natural Area Initial Assessment templates produced by the Perth Biodiversity Project can be used for this purpose (Clarke & Cullity, 2003);
2) Give recognition to the levels of significance of LNAs, and the ecological values to be protected;
3) Detail the process and criteria to be used to assess the impact of proposals on biodiversity values; and
4) Details the protection mechanisms appropriate to LNAs in different zones and development types.

Similar LPPs have been developed by the Shire of Serpentine-Jarrahdale and the Town of Kwinana. These Councils have found that it is important to keep the policy simple so that it is easy to use and apply. It is recommended that the policy be trialled for a 6 month period prior to being finally adopted by Council.

Other policy issues: wetland buffers and landscaping with local native species

It is also important that Council make clear a number of other policy changes to proponents, most of which have been introduced at the State Government level. These policy positions could be included in the proposed Local Planning Policy or could be included in other existing Council policies. The policies relate to wetland buffers and the use of local provenance native species in landscaping and revegetation in new developments.

Proposed policy statements:

a) Buffers to wetlands and riparian corridors are to be based on protection of ecological values of wetlands/waterways, maintenance of floodways and flood fringes and buffering surrounding residences and land use from mosquitoes and other nuisance impacts of wetlands;
b) The method to determine the width of buffers is that of WAPC (2005) *Guidelines for the determination of wetland buffers;*
c) Buffers must be revegetated with local provenance species; and
d) All revegetation and at least 70% of landscaped areas in new developments are to be of local provenance plant species. Revegetation in or around natural areas, on watercourses and wildlife linkages must be of local provenance species.

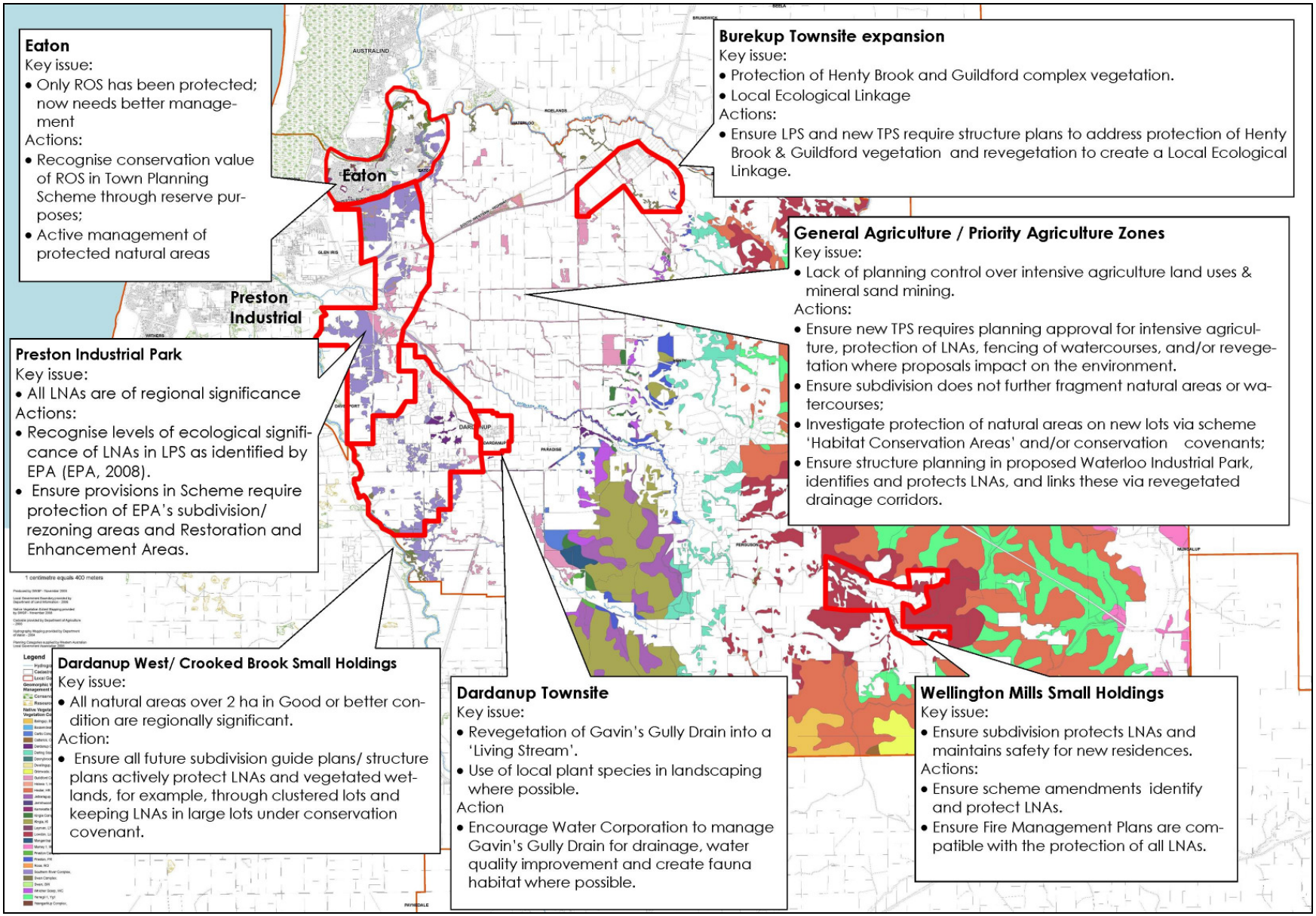


Figure 5: Summary of major biodiversity issues and proposed planning actions by precinct

4.3 Management of Council lands

Natural areas make up an important part of the Shire's reserves, with twenty of the Shire's thirty reserves containing at least 0.5 hectare of native vegetation. In total, sixty hectares of native vegetation and 46 hectares of Conservation-Category Wetlands occur on Council's reserves. In addition to these areas, many reserves also contain estuarine and riverine foreshores. A further 31 hectares of native vegetation occurs on two properties owned freehold by Council.

The management of these areas is challenging given that Council has not had the skills or resources to manage these areas in the past. As the Shire continues to develop, new natural areas will be added to the local reserves estate. The Shire has now reached a stage where active management of these areas is becoming more important as many residents live near a natural area. This increased use means that the areas need to be more actively managed.

Recently the Council has worked with the South West Biodiversity Project to assess the condition and management requirements of six wetland areas in reserves in Eaton. The resultant management plan provides Council with recommended management actions that each of the six areas require over the long-term (Eloura Park, 2008). Council has also approved a further 5 assessments to occur in other reserves in 2009.

These assessments are important in making Council and the community aware of the extent of work that each of the areas requires. In most areas, environmental weed control, rehabilitation of degraded areas, and providing safe controlled access for the public are the top management requirements.

The implementation of these works is best achieved by a dedicated, ongoing funding commitment from Council, in a similar way that Council allocates funds for the management of parks and other assets. This budget allocation could start at $5000 per annum and increase to $30,000 over a five year period. The community's support in making this allocation will be very important, and will need to be considered against the current expenditure in managing parks, gardens and ovals.

Whilst a budget of $5000 may be only able to fund limited works, Council should be able to attract matching funding for these types of environmental works (e.g. from various state and Federal Government funding bodies). It is also important, given the limited funds, that all of the allocation is used for on-ground works in accordance with management plans.

Council will also continue to work with land developers to ensure that natural areas in new local reserves are handed over to Council with an:

1) approved management plan;
2) initial works such as fencing, initial environmental weed control and rehabilitation of degraded areas; and
3) at least 3 years of post-development management and monitoring.

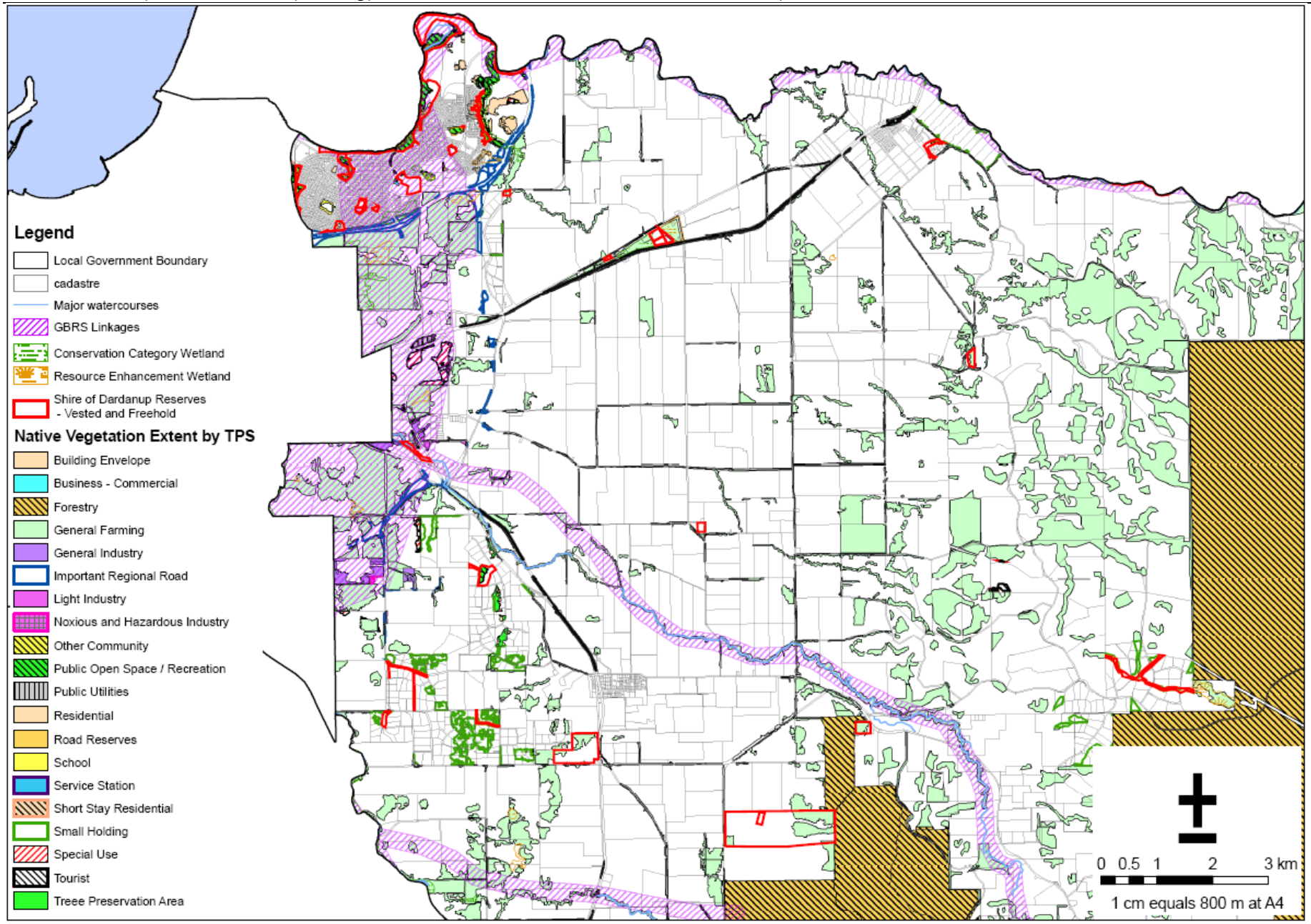


Figure 6: Location of Shire of Dardanup Reserves – vested and freehold.

To ensure this occurs, Council proposes that:

a) All future scheme amendments which create local reserves contain provisions to ensure a management plan is prepared prior to lodging a subdivision application to protect and restore natural areas.
b) Implementation of management plans created as a result of subdivision should occur, and be substantially completed, prior to the clearance of titles. Ongoing maintenance by the subdivider should occur for at least 3 years.

Finally, as a way of monitoring the condition of natural areas in local reserves and Council's management efforts, a program of assessing each reserve should be put in place in the long-term. This should be established in the next five years once Council has begun to undertake initial management works in its natural areas. The aim should be to re-assess all reserves every five years to monitor changes in condition.

4.4 Incentives for landowners with natural areas

Approximately 4,480 hectares of the Shire's 5,355 hectares of Local Natural Areas are privately owned. Gaining the support of these landowners is therefore an important part of conserving biodiversity in the Shire.

Whilst various State and local laws prohibit clearing and grazing native vegetation, this is not enough to conserve these natural areas into the long-term. Many natural areas need active management to ensure that they are resilient against on-going impacts such as weeds, dieback, altered fire regimes and feral animals.

This Discussion Paper is the Shire's first step in recognising the important community service that landowners play in helping to conserve biodiversity in the Shire. Many landowners already actively manage natural areas on their properties and place a high value on them. The efforts of these and other landowners should be recognised, and where possible encouraged by Government.

The provision of Government incentives to landowners with bushland has gained momentum over the past 20 years. There are now also numerous examples of rural and regional Local Governments providing incentives to their ratepayers to reward the active management of natural areas on their properties (Bateson, 2001).

An incentive for private land conservation is a financial or non-financial inducement intended to motivate landowners to conserve natural areas on their properties. Incentives are voluntarily entered into by landowners.

An incentive could be as simple as providing free local native plants to landowners with significant bushland, or could be as significant as providing development bonuses to landowners who place their natural areas under conservation covenant.

One of the most common incentives is to provide ratepayers with easy access to a program that can offer technical advice and access to grants and/or equipment to undertaken management of their natural areas. These types of programs are called stewardship programs and can be operated at the regional level. The State Government operates a stewardship program, Land for Wildlife, which can be accessed by any ratepayer with a natural area. It is most appropriate for landowners in the General Farming zone.

To show that the Council supports landowners with natural areas, it is suggested that within the next 3 years, the Council introduces a simple conservation assistance package for ratepayers which includes:

1) Access to a free local plants allocation – open each year to ratepayers with significant natural areas, subject to budget allocation;
2) Advice on land management issues, such as weed control and dieback management; and
3) Advice on suitable external funding sources for larger projects.

The main cost of such an initiative would be the free plants allocation. An allocation of $5000 could fund approximately 2500 plants per annum. The package could be promoted through a simple brochure.

The support of the community for such a new initiative would be essential.

4.5 Summary of proposed actions

This Discussion Paper includes numerous proposed actions that will be considered by Council. A summary of the major actions presented in Section 4.1 to 4.4 is included in Table 2. More detail on actions that relate to the planning system, scheme amendments and structure plans are included in Appendix 6.

The Shire of Dardanup would have primary responsibility for implementing these actions. The support of the Department for Planning and Infrastructure is required where proposals relate to the Shire's planning system. Educating and providing the community, council and Shire of Dardanup staff with the necessary information to implement these actions is also required.

Table 2: Summary of major actions to implement the Local Biodiversity Strategy

	Action	Priority or Timeframe
	Local Planning Strategy	
1	Council includes the following in the forthcoming Local Planning Strategy (LPS): a) Statement that biodiversity conservation is a relevant planning matter; b) Identify the presence and location of LNAs, using Figure 1 and 2; c) Identify the indicative level of significance of all LNAs, using Figure 3; d) Set objectives for protection of natural areas; a proposed protection framework is described in Appendix 4; and e) Support the need for a Local Planning Policy for Biodiversity Conservation.	High priority, as part of LPS
2	Council includes in its LPS strategies for mineral resources proposals and buffers to industrial developments requirements to conserve biodiversity. These proposals are included in Appendix 5.	High priority, as part of LPS
	Town Planning Scheme	
3	Council makes the following changes in its new Town Planning Scheme: a) Includes a new scheme objective: "To protect and restore the natural assets and values of the	High Priority, as part of Scheme Review.

	Action	Priority or Timeframe
	Shire for the benefit of all present and future residents" or similar; b) The Scheme should make reference to Local Natural Areas, the mapping of LNAs (Figure 1) and indicative significance of LNAs (Figure 3); c) Establish a requirement that intensive agricultural proposals require development assessment; d) Create a new zone of Habitat Conservation, or similar, to allow the addition of LNAs to this zone as lands are considered for development; and e) The Tree Preservation Areas shown in existing Town Planning Scheme 4 should be re-labelled as `Habitat Conservation Areas' to encourage protection of all vegetation, and not just trees, in these areas.	
	Scheme amendments and structure plans	
4	Council makes other changes to the Scheme, scheme amendments and structure plans as recommended in Appendix 6, Table 10. These relate to specific development areas in the Shire.	High priority, as part of scheme review, amendments or structure plans.
	Local Planning Policy	
5	Council considers introducing a Local Planning Policy to: 1) Set standards of ecological assessment required of proponents. These would be appropriate to the potential impact on biodiversity and stage of development. The Natural Area Initial Assessment templates produced by the Perth Biodiversity Project can be used for this purpose (Clarke & Cullity, 2003); 2) Give recognition to the levels of significance of LNAs, and the ecological values to be protected; 3) Detail the process and criteria to be used to assess the impact of proposals on biodiversity values; and 4) Details the protection mechanisms appropriate to LNAs in different zones and development	Medium priority

	Action	Priority or Timeframe
	types.	
	Management of Council lands	
6	Council considers the introduction of an annual budget allocation to fund management of natural areas in reserves. This budget allocation could start at $5000 per annum and increase to $30,000 over a five year period.	Medium priority, commencing in 2010/11.
7	Council is to continue to work with land developers to ensure that natural areas in new local reserves are handed over to Council with an: 1) Approved management plan; 2) Initial works such as fencing, initial environmental weed control and rehabilitation of degraded areas; and 3) At least 3 years of post-development management and monitoring.	High priority, ongoing.
8	Council is to establish a program to assess the condition of all natural areas in reserves within the next 5 years.	Within the next 5 years
	Incentives for landowners with natural areas	
9	Council considers the introduction of a simple conservation assistance package for ratepayers which includes: 1) Access to a free local plants allocation – open each year to ratepayers with significant natural areas; 2) Advice on land management issues, such as weeds control and dieback management; and 3) Advice on suitable external funding sources for larger projects.	Within the next 3 years

5. Glossary

Biodiversity is the variety of all life forms – the different plants, animals and microorganisms, the genes they contain, and the ecosystems of which they form a part. Biodiversity is not static, but constantly changing; it is increased by genetic change and evolutionary processes and reduced by processes such as habitat degradation, population decline and extinction (Commonwealth of Australia 1996). Biodiversity has two key aspects:

- Its intrinsic value at the genetic level, individual species level, and species assemblages levels; and
- its functional value at the ecosystem level.

Two species assemblages may have different intrinsic values but still have the same functional value in terms of the part they play in maintaining ecosystem processes.

Bushland is land on which there is vegetation which is either a remainder of the natural vegetation of the land or, if altered, is still representative of the structure and floristics of the natural vegetation, and provides the necessary habitat for fauna (Bush Forever, vols 1 & 2). 'Bushland' falls into the following condition classes: Pristine, Excellent, Very Good and Good (after Keighery 1994).

Catchment (as in river catchment) is the area from which the river's water is collected; usually defined on maps as a surface water catchment boundary.

Clearing refers to the killing or destruction of; the removal of; the severing or ringbarking of trunks or stems; or the doing of any other substantial damage to some or all of the native vegetation in an area. It includes the draining or flooding of land, the burning of vegetation, the grazing of stock, or any other act or activity that causes the killing or substantial damage to some or all of the native vegetation in an area (adapted from Government of Western Australia, 2002c).

Connectivity refers to the degree of connection between natural areas. Effectiveness will vary according to the type and mobility of different species.

Corridors are contiguous natural areas or revegetated areas that directly connect larger natural areas allowing the movement over time of organisms between these larger areas.

Covenant is a restriction on the use of land recorded on the property title and binding on successive owners. Covenants may be 'negative' (imposing restrictions) or 'positive' (imposing positive obligations).

Declared Rare Flora (DRF) are those species protected under the Wildlife Conservation Act 1950, as identified in the current listing. At time of, the current listing is Wildlife Conservation (Rare Flora) Notice 2001 (Government of Western Australia 2001b).

DEC Estate consists of indigenous State Forest and timber reserves and formal reserves designated for the purpose of conservation. The formal conservation reserves are either national parks, nature reserves, conservation parks or Conservation and Land Management Act Section 5(1)(g) or (5)(1)(h) reserves (Conservation Commission 2003). Informal conservation reserves are also maintained by DEC within the State Forest and timber reserves (Conservation Commission 2003).

Development (according to the Planning and Development Act 2005) means the development or use of any land, including the demolition, erection, construction, alteration of or addition to any building or structure on the land and the carrying out on the land of any excavation or other works and, in the case of a place to which a Conservation Order made under Section 59 of the Heritage of Western Australia Act 1990 applies, also includes any act or thing that:

a) is likely to change the character of that place or the external appearance of any building or
b) would constitute an irreversible alteration of the fabric of any building depicted on a subdivisional plan or diagram, whether so exhibited or deposited or not, but which is, either before or after the coming into operation of the Town Planning and Development Act Amendment Act 1956, approved by the Commission.

Ecological community is a naturally occurring biological assemblage that occurs in a particular type of habitat (English & Blyth 1997; 1999). The scale at which ecological communities are defined will often depend on the level of detail in the information source, therefore, no particular scale is specified (Environmental Protection Authority 2003a). The criteria in this document are based on using vegetation complexes as a means of interpreting ecological communities (except for threatened ecological communities).

Under the Environment Protection and Biodiversity Conservation Act 1999, ecological communities are similarly defined as assemblage of native species that:

- inhabits a particular natural area; and
- meets the additional criteria specified in the regulations made for the purposes of this definition.

Ecological linkages are non-contiguous natural areas that connect larger natural areas by forming stepping stones that allow the movement over time of organisms between these larger areas.

Environmental Protection Policies (EPPs) are policies prepared by the Environmental Protection Authority under their powers as set in the Environmental Protection Act. EPPs have the force of law and can cover the protection of any portion of the environment or the prevention, control or abatement of pollution.

Environmentally Sustainable Development (ESD) refers to development that uses, conserves and enhances the community's resources so that ecological

processes, on which life depends, are maintained, and the total quality of life, now and in the future can be increased.

Freehold is a tenure of property by which an estate of inheritance in fee simple or fee tail or for life is held. It refers to a landholding that is owned by a landholder having certain rights over that land, for example, private land or Council-owned land that can be sold.

GIS or Geographic Information System is a system of storing, managing and manipulating mapped information using computers and computer software.

Habitat is the natural environment of an organism or community, including all biotic (living) or abiotic (non-living) elements; a suitable place for an organism or community to live (Environmental Protection Authority 2003c). This term can be applied at a range of scales (Environmental Protection Authority 2003c). Vegetation can become a reasonable surrogate for outlining habitat when its main components, structure and associated landform are also described (Environmental Protection Authority 2003c). Habitat can be occupied by an organism or community continuously, periodically or occasionally or can have once been occupied and still have the potential for organisms of that kind to be reintroduced (Williams et al 2001).

Local Biodiversity Strategy is a strategic plan for biodiversity conservation at a local government level.

Local Natural Areas (LNAs) are natural areas that exist outside of Bush Forever Sites (Swan Coastal Plain), the DEC Managed Estate and Regional Parks. In the past these areas have been referred to as Local Biodiversity Areas.

Provenance refers to patterns of genetic variation exhibited by a species over its geographic range. The characteristics of the plants being collected from, or the area in which they are located, should sufficiently match those of the planting location or its local vegetation (Mortlock 1999).

Native vegetation is indigenous aquatic or terrestrial vegetation. It does not include vegetation that was intentionally sown, planted or propagated unless that vegetation was sown, planted or propagated as required under the Environmental Protection Act (1986) or another written law; or that vegetation is of a class declared by regulation to be included in this definition.

Native vegetation does not include dead vegetation unless that dead vegetation is of a class declared by regulation to be included in this definition. Native vegetation does include non-vascular plants (for example, mosses, fungi, algae) and marine plants (seagrass, macro algae (seaweed)). Native vegetation is more than trees and includes understorey and groundcover plants.

Natural area is used to describe an area that contains native species or communities in a relatively natural state and hence contains biodiversity. Natural areas can be areas of native vegetation, vegetated or open water bodies (lakes, swamps), or watercourses (rivers, streams, creeks – often

referred to as channel wetlands, estuaries), springs, rock outcrops, bare ground (generally sand or mud), caves, coastal dunes or cliffs (adapted from Environmental Protection Authority 2003a).

Note that natural areas exclude parkland cleared areas, isolated trees in cleared settings, ovals and turfed areas.

Offsetting an offset is an action taken away from the development site that may seeks to compensate for the loss of vegetation caused by that development site. It may take the form of monetary compensation, revegetation, regeneration etc.

Priority flora are plant taxa that are under consideration as threatened flora but need further survey to adequately determine their status, or are adequately known but require monitoring to ensure that their security does not decline. Priority Flora lists are maintained by DEC.

Priority fauna are those 'Conservation significant' animal species listed by DEC's Threatened Species Consultative Committee but which are not currently listed under Section 14 (2) (ba) of the Wildlife Conservation Act 1950 as Specially Protected Fauna.

Regionally significant is a component of remnant vegetation that collectively aims to form a comprehensive, adequate and representative system of conservation areas (Environmental Protection Authority 2003a). In order for bushland areas to fall into this category, they need to be part of the existing or proposed conservation system or to meet, in part or whole, a range of criteria which are outlined in Appendix 3 of Environmental Protection Authority (2003a).

Reserves are areas of Crown land reserved for various public purposes, for example, parks, recreation, drainage or church sites. The reserve is identified by a number, for example, Reserve No. 12345. Reserves may be vested, leased or Crown Granted in Trust. Crown Reserves have varying levels of protection depending on the purpose of the reserve.

Retention is all the processes of ensuring a natural area is retained but not necessarily afforded protection to ensure its continued existence and viability.

Riparian refers to the zone along or surrounding a water body where the vegetation and natural ecosystems benefit from and are influenced by the passage and storage of water (Water and Rivers Commission 1998)

Specially Protected Fauna are species protected under the Wildlife Conservation Act 1950. The current listing is Wildlife Conservation (Specially Protected Fauna) Notice 2001 (Government of Western Australia 2001c).

Swan Coastal Plain refers to the IBRA Swan Coastal Plain Bioregion as defined in Commonwealth of Australia (2001a).

Targets are specified levels or ranges of measurable parameters that decision-makers have agreed they will try to achieve; targets are policy tools, but they have a scientific base; they may be associated with one or more indicators (Williams et al 2001).

Tenure is commonly referred to as ownership. However, land differs from goods in that no one person can possess land in absolute ownership. Tenure is the system of holding land for the Crown.

Threatened Ecological Community (TEC) is an ecological community that has been assessed through a procedure (coordinated by DEC) and assigned to one of the following categories related to the status of the threat to the community. The categories are 'Presumed Totally Destroyed', 'Critically Endangered', 'Endangered' or 'Vulnerable' (English & Blyth 1997; 1999).

Threatened flora are plant species likely to become extinct or which are rare, and declared so, under Section 23F of the Wildlife Conservation Act 1950 (Government of Western Australia 2000b). See Declared Rare Flora.

Threatened fauna are animal species likely to become extinct or which are rare, and declared so, under Section 14(2)(ba) of the Wildlife Conservation Act 1950 (Government of Western Australia 2000b). See Specially Protected Fauna.

Vegetation condition is a rating given to vegetated natural areas (both uplands and wetlands) to categorise disturbance related to human activities. This rating refers to the degree of change in the structure, density and species present in native vegetation in relation to undisturbed 'pristine' native vegetation of the same type. (Adapted from Government of Western Australia 2000b).

Vegetation complexes (as defined by Heddle, Loneragan & Havel 1980; Mattiske & Havel 1998). Vegetation complexes are based on the pattern of vegetation at a regional scale as they reflect the underlying key determining factors of landforms, soils and climate. In the area covered by the System 6 region and Swan Coastal Plain portion of the System 1 region, there was a reliance on the underlying landform and soils as defined and mapped by Churchward and McArthur (1980) and a major review of the forest climates by Gentilli (1989).

Viability (as in ecological viability) is the likelihood of long-term survival of a particular ecosystem or species.

Watercourses are all streams, creeks, rivers, estuaries, coastal lagoons, inlets and harbours (Water and Rivers Commission 1998) and include wetland types in which the water flows in a channel landform either permanently or intermittently (streams creeks, rivers and man-made drainage features)(Environmental Protection Authority 1997).

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Appendix 1: Further statistics on Dardanup's natural areas

Biodiversity – the variety of living things

Biodiversity is the variety of living things naturally found in the environment. The conservation of biodiversity is an important part of local and global sustainability and is fundamental to the growth of the Shire of Dardanup.

Biodiversity in Dardanup

Biodiversity is best conserved in natural areas. About 26,188 ha of the Shire supports native vegetation, or as termed in this report, natural areas.

For the purposes of local biodiversity planning, these natural areas are either considered:

a) Protected, either in National Parks, regional parks, nature reserves, conservation covenanted land, or Bush Forever sites;
b) Retained in State Forest, proclaimed water catchments or other similarly managed areas; or
c) Local Natural Areas. These are areas of native vegetation and granite outcrops on private land, local reserves and any other Government owned lands.

Local Natural Areas

Local Natural Areas (LNAs) are the focus of this Paper and the Shire's future Local Biodiversity Strategy. There are around 5350 ha of vegetated Local Natural Areas in the Shire (Table 3).

Table 3: 2008, Vegetated Local Natural Areas by Ownership Category

Ownership	Local Natural Area (ha)
Commonwealth	0.01
Local Government - Vested	60.64
Local Government - Freehold	32
Multiple Vesting	2.19
Unknown	445
Private	4482.43
State Government	299.56
Vacant Crown Land	33.19
	5355.02

Local Natural areas are areas that currently have an unclear protection status given that they are not part of the public conservation estate, State Forests or proclaimed water catchments. LNAs include natural areas identified by the EPA for Regional Open Space in the Preston Industrial Park.

These Local Natural areas sit alongside other areas of native vegetation that are either protected, or retained as other DEC managed lands (Figure 1). A total of 8945 ha of the Shire's 26,188 ha of native vegetation are protected within National Parks, Nature Reserves or Regional parks (Table 4). The

balance is either included in State Forest, other DEC lands, or is termed `Local natural Areas (LNAs).

Table 4: 2008 Native Vegetation Extent by Administrative Planning Category

Administrative Planning Category	Area (ha)
DEC Conservation	8945.03
DEC State Forest	11210.96
DEC – Other	674.0
LNA's	5358.03
Total	**26188**

Appendix 2: Vegetation Complexes

Vegetation complexes are broad groupings of vegetation with similar underlying features based largely on soils and landforms. An LNA's vegetation complex is an important characteristic which can be used to set targets. Table 5 shows how much of each of the vegetation complexes in the Shire is still remaining, as well as how much was originally found.

Table 5: Vegetation Complex Retention and Protection Information for the Shire of Dardanup

	Original	2008 Remaining Extent							
Vegetation Complex	Pre-European	Remaining Extent		DEC Conservation	Protection	DEC State Forest	DEC Other	LNA	Total
	Total (ha)	Total (ha)	%	(ha)	(%)	(ha)	(ha)	(ha)	(ha)
Balingup (RS)	1291	760	59			552		204	756
Bassendean Complex-Central And\South	2	1	28					1	1
Cartis Complex (RS)	417	77	18	45	11	3		30	88
Catterick	375	333	89			318		14	333
Dardanup Complex (RS)	985	70	7					70	70
Darling Scarp (RS)	3220	662	21	4	0	102		557	662
Donnybrook (RS)	7	6	90			6			6
Dwellingup (RS)	189	47	25	30	16			16	63
Grimwade (RS)	538	538	100			533		5	538
Guildford Complex (RS)	9366	840	9	20	0	36		784	840
Helena 1	1938	1928	99	1873	97	0		55	2024
Hester	9303	7977	86	3583	39	3645	397	352	8016
Jalbaragup	1045	789	75	111	11	619		59	799
Jarrahwood Complex (RS)	27	6	20					6	6
Karrakatta Complex-Central And\South	231	26	11					26	26
Kingia Complex (RS)	3748	3078	82	404	11	2463	0	211	3089
Layman	15	15	99			15			15
Lowdon (RS)	5682	2237	39	846	15	137	106	1148	2251
Mungardup Complex (RS)	58	58	99	42	72	16			130
Murray 1	3250	1477	45	1119	34	310		48	1511
Preston Complex (RS)	1240	304	24	2	0	57	0	244	304
Rosa	1308	1166	89			1077		89	1166
Southern River Complex (RS)	3330	914	27					914	914
Swan Complex (RS)	1407	163	12					163	163
Whicher Scarp (RS)	797	255	32	31	4	128		96	259
Yarragil 1	3027	2457	81	837	28	1190	171	260	2484
Yoongarillup Complex	37	2	6					2	2
Total	52833	26186	50	8945	17	11205	674	5353	26194

(RS) = Regionally Significant

Prioritisation of vegetation complexes which occur in the Shire of Dardanup

The vegetation complexes found in the Shire have been prioritised in Table 6 by the SWBP (2008) based on:
a) the amount of the vegetation complex remaining across its natural extent (i.e. the IBRA region); and
b) the amount of the complex protected within the IBRA region.

Table 6: Prioritisation of vegetation complexes found in the Shire of Dardanup

Priority	Vegetation Complexes	Criteria
1st Priority	Bassendean - Central and South	***Vegetation communities < 30% or 1500 ha remaining within the IBRA Region (Swan Coastal Plain and Jarrah Forest)***
	Cartis	
	Dardanup	
	Guildford	
	Jarrahwood	
	Kingia	To contribute to 30% retention across the Swan Coastal Plain and the Jarrah Forest
	Mungardup (<1500) - no LNA in Dardanup	
	Preston	
	Southern River	
	Swan	
	Balingup (BL)	
	Donnybrook (DB3) - no LNA in Dardanup	
	Layman (LY) <1500 - no LNA in Dardanup	
2nd Priority	Karrakatta - Central and South	***Vegetation communities at or around 10% protection within the IBRA Region (Swan Coastal Plain)***
	Catterick (CC1)	
	Darling Scarp (DS2)	
	Dwellingup (D1)	
	Grimwade (GR)	
	Jalbaragup (JL)	
	Lowdon (Lo)	
	Rosa (RO)	
	Whicher Scarp (WC)	
	Yarragil (Yg1)	
3rd Priority	Yoongarrillup	***Vegetation communities that meet current policy requirements of > 30% remaining and > 10% protected within the IBRA Region (Swan Coastal Plain and Jarrah Forest)***
	Helena 1 (He1)	
	Hester (HR)	
	Murray (My1)	

Zoning of Local Natural Areas

The zoning of land on which Local Natural Areas are found is critical to understanding how they may be protected. Table 7 summarises the zoning of land according to the Shire's Town Planning Schemes and Table 8 according to the Greater Bunbury Region Scheme.

Table 7: 2008 Native Vegetation Extent by Town Planning Scheme (TPS) Zoning

TPS Zoning	All Natural Areas (ha)	Local Natural Areas (ha)
BUILDING ENVELOPE	2.8	2.8
FORESTRY	19592.9	154.2
GENERAL FARMING	5752.9	4484.2
GENERAL INDUSTRY	29.3	29.3
IMPORTANT REGIONAL ROAD	66.1	66.1
LIGHT INDUSTRY	2.8	2.8
NO ZONE	1.8	1.3
NOXIOUS & HAZARDOUS INDUSTRY	0.5	0.5
OTHER COMUNITY	0.7	0.7
PUBLIC OPEN SPACE	0.9	0.9
PUBLIC UTILITES	42.2	42.2
RECREATION	55.7	55.7
RESIDENTIAL	15.1	15.1
ROAD RESERVES	3.5	3.5
SCHOOL	4.4	4.4
SHORT STAY RESIDENTIAL	0.1	0.1
SMALL HOLDING	128.5	127.8
SPECIAL	35.3	35.3
TOURIST	16.5	14.0
TREE PRESERVATION AREA	7.6	7.6
Blank	426.5	307.5
Total	**26186.6**	**5356.9**

Table 8: Area of remnant vegetation within the GBRS Rural Zoning by TPS Zoning

TPS Zoning	GBRS Rural Zoning (ha)
BUILDING ENVELOPE	2.8
FORESTRY	65.2
GENERAL FARMING	4421.9
GENERAL INDUSTRY	0.02
IMPORTANT REGIONAL ROAD	3.8
NO ZONE	1.3
PUBLIC UTILITES	4.1
RECREATION	2.8
RESIDENTIAL	0.19
ROAD RESERVES	0.3
SCHOOL	0.06
SMALL HOLDING	127.8
SPECIAL	19.4
TOURIST	14.0
TREE PRESERVATION AREA	7.5
Blank	224.8
Total	**4896.5**

Appendix 3: Vegetation complexes found in the DEC managed estate

Table 9: Vegetation complexes found in the DEC managed estate.

Precinct	Vegetation Complex	Regionally Significant	Complex Location	Within Regional Ecological Link/	Local linkage opportunity	Other planning issues
DEC Conservation Forest/Estate	Cartis	Yes	Single isolated patch in north west corner of the northern forest above Crooked Brook	Yes	No	These areas are key regional conservation assets. They are a critical part of the Regional Ecological Linkages. Land use and development in adjacent lands needs to be compatible with their conservation objectives. Management of DEC lands should employ `good neighbour approach.
	Preston	Yes	Fragmented patches north and south of Crooked Brook and the waterway segmenting the southern and middle forestry	No	No	
	Rosa	No	Large stands through majority of southern forest	No	No	
	Kingia	Yes	Largest patches running north to south through the three western DEC forests	No	No	
	Jalbarugup	No	Several fragmented patches through the three western forestry's	No	No	
	Balingup	Yes	Southern patches within eastern forest	No	No	
	Yarragil	No	Several patches running NW to SE of the eastern forest	No	No	
	Hester	No	Majority of the eastern forest	No	No	
	Helena	No	Large consolidated patch in the north of the eastern forest	No	No	
	Grimwade	Yes	Two patches on the southern reaches of the eastern forest	No	No	
	Catterick	No	Isolated patch in the far SE corner of eastern forest	No	No	

Appendix 4: Proposed protection framework for natural areas

This appendix describes the various protection levels that should apply to LNAs throughout the Shire. These range from LNAs that have already been identified as regionally significant (e.g. areas in Preston Industrial Park) to the protection framework proposed in this summary, and which should be included in the LPS.

1) **Regionally Significant Natural Areas to be Protected in Regional Open Space** – includes the areas identified as such in the PIP in EPA (2008);

2) **Significant natural areas to be protected in development precincts**:
    a. Eaton future urban development – Reserves for Conservation and Recreation;
    b. Preston Industrial Park – Conservation covenants, or zone as Habitat Conservation Areas as part of Scheme amendments;
    c. Dardanup West/Crooked Brook
        i. Zone Preston River Foreshore for future Regional Open Space
        ii. Scheme amendments to identify areas to be covered by conservation covenants or Habitat Conservation Areas
    d. Burekup Townsite expansion – Local Reserves for Recreation, Conservation and Drainage (Henty Brook) or Recreation and Conservation (Guildford vegetation and Local Ecolink 1).
    e. Dardanup Townsite expansion – Local Reserve for Recreation, Drainage and Conservation
    f. Wellington Mills Small Holdings and other future small holdings – identify Habitat Conservation Areas in Scheme Amendments, and zone as such;

3) Locally significant LNAs
    a. General Farming –
        i. Identify these LNAs for Retention in the Local Planning Strategy, except where clearing is required to comply with bushfire safety or where a cleared area does not exist to allow construction of a residence.
        ii. Significant developments – LNAs should be identified as `Habitat Conservation Areas' in LPS as a condition of development approval, and then in Scheme as omnibus amendments.
        iii. Conservation covenants or zoning of Habitat Conservation Areas through the subdivision or rezoning process
    b. All other Local Natural Areas – identify in Local Planning Strategy for retention, except where clearing is required to comply with bushfire safety or where a cleared area does not exist to allow construction of a residence.

Appendix 5: Mineral sand mining and buffers to industrial developments

Mineral sand mining proposals (LPS Mineral Resources Strategy)

It is important that the Shire carefully consider proposed mineral sand mines and other facilities to ensure that significant Local Natural Areas are protected, or impacts are mitigated, and that appropriate rehabilitation occurs. Mitigation and rehabilitation should leave the Shire with a positive environmental legacy that improves the overall conservation of biodiversity. Consideration should be given to:

a) Identification of significant natural areas as defined in this Strategy within the Mineral Resources Strategy. (LNAs of regionally significant vegetation complexes of sufficient size and condition; vegetated wetlands, riparian vegetation on waterways etc);
b) Protection of significant areas wherever possible;
c) Ensure the loss of any significant natural areas is offset by adequate revegetation in locations which will create linkages between the designated Regional Ecological Linkages.
d) Aim to ensure that all such works re-instate lost vegetation complexes and floristic communities, and achieve a net gain in vegetation for the Shire.

The Shire should reflect the above position in its LPS Mineral Resources Strategy (Houghton, 2009).

Buffer Strategy (LPS)

The Shire should include reference to the ecological values of natural areas or revegetation in buffers for industrial land use. The following text is recommended:

a) The Shire encourages the retention of natural areas and revegetation of buffers using locally significant native species and may require this as a condition of development approval;
b) Retention of natural areas and revegetation in buffers is to act as a visual screen, and provide habitat for native flora and fauna;
c) The Shire may require a buffer management plan to ensure the buffer will be managed in accordance with these values.

Appendix 6: Proposals to conserve biodiversity in specific precincts, scheme amendments and structure plans

Table 10: Priority Actions - Summary of priority actions to conserve biodiversity through scheme amendments and structure plans.

Zone or Precinct	Priority Actions
Residential	
Eaton (Structure Plans under consideration) Includes Millbridge and Parkridge developments)	• Ensure buffers to Regional Open Space in new residential areas are based on ecological requirements of vegetation complexes and separation of wetlands from proposed residences (mosquito management zones). These should be achieved through the structure planning process. • Ensure existing Regional Open Space is reserved for Recreation and Conservation where there are natural areas. • Maximise protection of tree stands and understorey in POS, local schools and wider road reserves and road islands. • Consider providing proponents with incentives to change road layouts to accommodate tree and understorey retention - e.g. increased densities adjacent to protected natural areas.
Burekup Townsite Expansion	• Ensure scheme amendments and structure plans: o Identify Henty Brook Floodplain; o Protect Henty Brook vegetation and floodplain in public lands. The protected area should include a buffer to protect all slopes greater than 1 in 6 in the floodplain and all existing native vegetation; protect the natural areas in the south-west of the site (Guildford Vegetation Complex). o Revegetate a 30 m corridor between the south-west natural area and Henty Brook to provide movement, shelter and feeding habitat for insectivorous birds. o Ensure scheme amendments/structure plans require submission of management plans at time of subdivision application, and implementation prior to clearance of titles.
Dardanup Townsite Expansion	• Ensure scheme amendments/structure plans require protection of stormwater corridors and encourage revegetation of Gavin's Gully Drain with local native species.
Possible Future New Residential Areas	• Ensure scheme amendment reports carry out thorough ecological assessments. All natural areas should be identified, and assessed against the criteria in EPA Guidance Statement 10. • New residential areas should be designed into

	cleared areas and should not involve the clearing of any natural area or native vegetation. • Where relevant, require provisions in new scheme amendments to identify values of natural areas and protect these where possible in Local POS. Ensure Structure Plans/scheme amendments include provisions to require management plans to be submitted with subdivision applications, and implemented prior to clearance of titles
Small Holdings	
Dardanup West/Crooked Brook – (land yet to be subdivided)	• Scheme amendments and structure plans should: o Ensure that natural areas are not fragmented by subdivision (new lot boundaries do not intersect areas of native vegetation or intact wetlands). o Protect natural areas on individual lots, and cover them by 'Habitat Conservation Areas' in the Scheme or by conservation covenants; o Ensure significant wetlands are protected by adequate, vegetated buffers, which includes the revegetation of cleared areas adjacent to wetlands. o Include provisions to identify and revegetate corridors of no less than 40 m wide to link existing natural areas. o New subdivision adjacent to wetlands to consider use of WSUD principles as part of consent conditions. • Protection (public reservation) of the Preston River floodplain, a regional ecological linkage, should encompass all of the floodway and flood fringe, and a 30 m buffer.
Dardanup West/Crooked Brook - Southern area (Where WAPC does not support subdivision)	• Subdivision is not supported in this area. However, if for other planning reasons subdivision is again considered, then this should only occur via a scheme amendment requiring a structure plan and appropriate environmental assessment, including provisions which protect the natural areas in large lots, with conservation covenants. Fragmentation of natural areas should not be allowed
Wellington Mills	• Ensure any subdivision is able to be compliant with the State Government's Planning for Bushfire Policy whilst minimising unnecessary removal of vegetation.
Possible Future Smallholdings[2]	• Ensure scheme amendments are required to carry out a high level of ecological assessment as defined

[2] This is not to pre-empt further rural smallholding subdivision. No further subdivision of this type is supported under current statutory and strategic

	in EPA Bulletins 51 and 56. • Scheme amendments and structure plans are to include provisions to avoid fragmentation of natural areas, keep natural areas in large lots, preferably over 5 ha (4 ha LNA plus 1 ha development envelope), and ensure development envelopes are clearly designated in cleared, fire-safe areas. • Where re-subdivision of small holdings is proposed, then further fragmentation of natural areas should not be approved.
Industrial	
Preston Industrial Park	• Identify in the Shire's Local Planning Strategy, the areas recommended for Regional Open Space by the EPA as "Significant natural areas of regional significance which should be protected by the State Government." • Identify all other natural areas in the PIP as significant natural areas to be protected through the TPS. • Ensure all scheme amendments and structure plans in the PIP: o Adequately identify and assess natural areas. o Protect natural areas through covenanting, and adequate on ground management. o To provide assistance to landowners with natural areas in the PIP, Council should consider re-distributing density bonuses across the PIP so that some sharing of the cost of natural area protection is achieved. This would require the creation of a gazetted structure plan by the Shire.
Proposed Waterloo Industrial Park	• Ensure all scheme amendments, structure plans and developments retain and protect natural areas. There are not many natural areas to protect - these should be protected in local reserves. • Management Plans are to be required at time of subdivision application, and implemented prior to clearance of titles. • The creation of revegetated ecological corridor on the site to link the Ferguson River with the Collie River should be considered. This would be parallel to South Western Highway and avoid the movement of fauna across the Highway.
Local Reserves	• Local Reserves with natural areas should be vested for purposes which include Conservation, or similar words.

plans. Consideration of this type of development is discouraged in vegetated natural areas and significant wetlands.

	• All local reserves with natural areas should have management plans which identify, protect and restore the area's natural values. The Council has a large number of local reserves and so a number of management plans should be produced each year.
General Farming Zone (two rural precincts as shown in LPS)	• Include provisions in the Shire's new Scheme to ensure that any subdivision in the General Farming Zone must be in accordance with a Structure Plan and should avoid further fragmentation of natural areas. • Ensure subdivision does not further fragment natural areas. Any consideration of subdivision to create lots below 80 ha should ensure that natural areas on new lots are protected via scheme 'Habitat Conservation Areas', and/or encourage protection by 'conservation covenant' with appropriate management measures (management plan to protect ecological values, fencing of natural areas etc). • Include requirements in the Scheme to require new intensive rural developments to submit a planning application which address any impacts on significant natural areas, key biodiversity corridors and other native vegetation (e.g. parkland areas) where these may be affected by the proposal. Any loss or impact on these areas should not be considered acceptable, and then only if mitigated by offsets.[3] • Also note recommendations in regard to Mineral sand mining above.

[3] Offsets can mean restoration of other degraded areas or revegetation etc.