Conservation Plan
for the
Chesney Landscape Zone

Biodiversity Action Planning in the Mid Goulburn Broken

Victoria The Place To Be

Department of Sustainability and Environment

Department of Primary Industries

Trust for Nature

Goulburn Broken Catchment Management Authority

Australian Government

Developed By:

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Front cover: Chesney Box Ironbark Forest (Photo: Debbie Colbourne)
Inset: Carpet Python (Morelia spilota metcalfei) (Photo: Peter Robertson)

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For further information about Biodiversity Action Planning please visit the DPI website at www.dpi.vic.gov.au or the DSE website at www.dse.vic.gov.au or call the Customer Service Centre on 136 186. Or visit the Goulburn Broken Catchment Management Authority website at www.gbcma.vic.gov.au

EXECUTIVE SUMMARY

The **ultimate aim** of Biodiversity Action Planning (BAP) is to achieve broad-scale conservation of native biodiversity. BAP identifies priorities for the conservation of native biodiversity, as part of the implementation of the Victorian Biodiversity Strategy 1997. It is not a 'stand-alone' project; rather a process for translating objectives set out in Victoria's Biodiversity Strategy to regional, catchment and local level (Victoria's Biodiversity Strategy fulfils a statutory requirement under Section 17 of the *Flora and Fauna Guarantee Act 1988* and provides the biodiversity action plan for Victoria).

In order to **translate objectives** from state to regional, catchment and local landscape level, Victoria was first divided on a bioregional basis (Bioregions) and then at a landscape level (landscape zones). The methodology used to develop the Landscape Zone plans is according to the 'Developers Manual for Biodiversity Action Planning in the Goulburn Broken Catchment' (GBCMA 2004). The Victorian Riverina Bioregional Plans and the Chesney Landscape Zone plan outline biodiversity priorities at the bioregional level. This Chesney Landscape Zone Conservation Plan has been developed at the local (landscape) level and is intended to assist government agencies (primarily extension staff) and the community, to work in partnership towards achieving catchment targets, by setting priority areas for protection and enhancement of native biodiversity. This plan is also intended to enable biodiversity priorities, data and advice to be disseminated to other planning processes, landholders and agencies.

The **Chesney Landscape Zone** is located within the Goulburn Broken Catchment of Victoria. The Zone, 84,730 hectares in extent, is part of the Victorian Riverina and Northern Inland Slopes Bioregion. It is within the Local Government area of Rural city of Benalla. Since European settlement most of the vegetation in the zone has been cleared, leaving a fragmented landscape, with many of the remnants that remain, being highly modified.

There are 326 **priority environmental sites** that have been identified within the Chesney Landscape Zone. The priority sites have been determined and ranked (low, medium, high or very high) based on factors such as, size, vegetation quality, Ecological Vegetation Class (EVC) conservation status, threatened species, landscape context and field survey results. These sites contain remnant vegetation and vary greatly in size from a stand of paddock trees, to the Warby Ranges.

Two important components in the Biodiversity Action Planning process, is the **focal species** approach and the Key Biodiversity Assets approach. The focal species approach uses the habitat requirements of a particular species, or a group of species, to define the attributes that must be present in a landscape, for these species to persist. Within the Chesney zone 7 focal species have been identified: Squirrel Glider (*Petaurus norfolcensis*), Jacky Winter (*Microeca fascinans*), Grey-crowned Babbler (*Pomatostomus temporalis*), Rufous Whistler (*Pachycephala rufiventris*), Brown Treecreeper (*Climacteris pecumnus*), Brolga (*Grus rubicunda*) and Carpet Python (*Morelia spilota metcalfei*).

The **Key Biodiversity** Assets approach is a method of grouping biodiversity assets (ie. birds, animals and plants) that use the same type of habitat. Eight Key Biodiversity Assets were identified for the Chesney Landscape Zone: Granitic Hills Woodlands, Creeklines, Wetlands, Spring soak Woodland, Box-ironbark Forest, and Grassy Woodland. The grouping of these assets will assist in targeting actions towards the very high value sites first.

Management actions have been developed for the Chesney Landscape Zone, based on the results of desktop analysis and field surveying. It is intended that government agencies (primarily extension staff) and the community will work together to implement these actions, for the benefit of biodiversity conservation in the Chesney Landscape Zone and the wider area of the Goulburn Broken Catchment.

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1.0 BACKGROUND

1.1 INTRODUCTION

Figure 1: BAP Process

Biodiversity Action Planning[1] (BAP) is an initiative by the Victorian Government to identify priorities for the conservation of native biodiversity, as part of the implementation of the State's Biodiversity Strategy (Crown 1997). In particular, it aims to:

- Conserve native biodiversity by maintaining viable examples of the range of ecosystems that occur naturally in Victoria
- Promote a more strategic and cost-effective expenditure of public funds for the protection, restoration and ongoing management of priority biodiversity sites
- Achieve community support for landscape planning for biodiversity and the conservation of strategic assets, particularly in rural landscapes.

In order to achieve these aims, effective planning of actions for native biodiversity also requires detailed planning at a bioregional and landscape level. Therefore, Victoria was first divided on a bioregional basis (Appendix 1) and then at a landscape level (landscape zones) (Appendix 2). Figure 1 illustrates the Biodiversity Action Planning process and where the Chesney Landscape Zone Conservation Plan (highlighted in red) fits within a policy context.

At the regional scale the 'Landscape Plan for the Goulburn Broken CMA – Chesney Zones' identifies the broad priorities for biodiversity conservation in the region. They also provide the foundation for producing detailed Plans. This Chesney Landscape Conservation Plan is intended to provide biodiversity conservation actions for the community to implement at a local level.

1.2 OBJECTIVES

The 'Chesney Landscape Zone Conservation Plan' has been developed at the local (landscape) level and is intended to assist government agencies (primarily extension staff) and the community, to work in partnership towards achieving catchment targets. This plan aims to ensure that private and public resources expended for conservation are targeted to priority sites. In this way, available resources can be used for the greatest possible outcomes. There are 326 priority sites, identified in the Chesney Zone, ranging across very high, high, medium or low value. The protection and management of these priority sites, is important for the conservation of flora and fauna in the local area.

Broadly, this plan details:

- The landscape, vegetation and significant flora and fauna of the area,
- Conservation objectives for the Chesney Landscape Zone,
- Priority assets to be conserved, and the threats to these biodiversity values,
- Priority actions required to protect and restore the assets, and
- Further monitoring requirements for the zone (GBCMA in prep).

[1] For further information on Biodiversity Action Planning visit Department of Sustainability and Environments website at www.dse.vic.gov.au

1.3 CONTEXT FOR THE DEVELOPMENT OF THE CHESNEY CONSERVATION PLAN

The Goulburn Broken Regional Catchment Strategy (GBRCS) identifies a vision for biodiversity in the catchment. The vision is that "the community will work in partnership with Federal and State Governments and other agencies, to protect and enhance ecological processes and genetic diversity, to secure the future of native species of plants, animals and other organisms in the catchment" (GBCMA 2003 p87). This Chesney Landscape Conservation Plan is to assist in achieving this vision, through providing a strategic coordinated approach, for conservation of priority assets.

The GBRCS also identifies targets and priorities for the catchment (refer to Appendix 3 for further detail). The following points are intended to provide a summary of the GBRCS targets and priorities for biodiversity conservation. For further information please refer to GBCMA 2003.

The Goulburn Broken Catchment Management Strategy identifies the following biodiversity resource condition targets for native vegetation in the catchment:

- Maintain the extent of all native vegetation types at 1999 levels in keeping with the goal of 'Net Gain' listed in Victoria's Biodiversity Strategy 1997
- Improve the quality of 90% of existing (2003) native vegetation by 10% by 2030,
- Increase the cover of all endangered and applicable vulnerable Ecological Vegetation Classes to at least 15% of their pre-European vegetation cover by 2030
- Increase 2002 conservation status of 80% threatened flora and 60% threatened fauna by 2030,
- Maintain the extent of all wetland types at 2003 levels where the extent (area and number) has declined since European settlement
- Improve the condition of 70% of wetlands by 2030, using 2003 as the benchmark for condition (GBCMA 2003 p11)

Priorities for action to conserve biodiversity in the Goulburn Broken are driven by the conservation significance of the biodiversity asset. Regional investments in biodiversity conservation in the Goulburn Broken Catchment are driven by the following goals (in order of priority):

1. **Protecting** existing viable remnant habitats and the flora and fauna populations they contain (ie through reservation, covenants, management agreements, fencing and statutory planning),
2. **Enhancing** the existing viable habitats that are degraded (management by controlling threats such as pest plants and animals, grazing, salinity, promotion of natural regeneration and/or revegetation with understorey), and
3. **Restoring** under-represented biodiversity assets to their former extent by revegetation (to create corridors, buffers, patches of habitat) (GBCMA 2003).

It is intended that the actions outlined in this plan will complement the targets of the GBRCS and other policy/strategies pertinent to the state, catchment and region (eg. Victoria's Native Vegetation Management – A Framework for Action (NRE 2002a): Goulburn Broken Native Vegetation Management Plan (GBCMA 2000): and the Victorian River Health Strategy (NRE 2002b)). This plan is also intended to integrate such policies (eg. targets and legislative requirements) in to the one document, for use by local communities. For example, this plan incorporates aspects of legislation (eg. Action Statements prepared under the *Flora and Fauna Guarantee Act 1988*), in to recommended on-ground actions, for the conservation of threatened species and communities.

The Biodiversity Action Planning (BAP) process uses current scientific knowledge to produce an 'ideal' landscape for biodiversity conservation. This 'ideal' landscape provides for the current levels of species abundance, diversity and interactions. BAP attempts to take a strategic approach to the conservation of threatened and declining species and vegetation types, by looking for opportunities to conserve groups of species in appropriate ecosystems (Platt & Lowe 2002). It is therefore intended that this Chesney Landscape Zone Conservation Plan will assist government agencies and the community, to work in partnership towards achieving catchment targets and an 'ideal' landscape, by setting priority areas for protection and enhancement of native biodiversity.

This plan is not intended to be a method of 'taking over' land, but rather a resource document, that assists with identifying priority assets and methods of action, to protect or restore valuable assets, through voluntary extension principles. This document may be used by agencies and community groups, for informing existing projects and for strategic planning. However, it must be remembered that this document is by no means 'comprehensive', as the BAP process relies on the regular updating of information, to keep it accurate and timely. The plan has therefore been developed as an adaptive plan, to enable management actions and information to be modified, in response to further information (eg monitoring).

As an adaptive plan, it will be reviewed when necessary to ensure that it remains a 'living' document. It is also intended that extension staff will use Geographical Information System (GIS) programs, databases and DSE/DPI staff, to fully identify and understand the BAP process and to provide further information to the community. Consultation and extension with relevant stakeholders, including agencies and community groups, was conducted (and will continue to occur) throughout the development and implementation of this plan. It is envisaged that this plan will be a valuable resource, for identifying priority biodiversity sites and initiating further conservation works in the Zone, and that at a later stage, will lead to further sites and projects being identified by interested individuals and groups.

2.0 THE STUDY AREA

2.1 LANDSCAPE

The Chesney Landscape Zone covers an area of approximately 85,730 ha within the Goulburn Broken Catchment (Figure 2). The zone is within the Broken River Basin with the Victorian Riverina bioregion covering 68% of the Zone. There are two main hill complexes within the zone, the Chesney Vale-Goorambat Hills and part of the Warby Range on the eastern boundary (Figure 2).

The soils are comprised of Ordovician marine sediments, Quaternary fluvial sediments, with the more recent granitic intrusions making up the hill complexes. Drainage occurs in a predominantly north-west direction and Lake Mokoan forms a major off-stream storage facility.

Private land covers 85% of the zone (CGDL 2004) with extensive clearing having taken place in the riverine are of the zone. The remaining vegetation of the riverine area is highly fragmented, and usually occurs as small, isolated remnants (Fig. 2). This results in not only a loss of habitat but also an inability for the landscape to function in a sustainable way. For example, many species may not be able to move across open farmland and therefore there cannot be any gene exchange and random events such as disease can wipe out sub-populations without replacement. Eventually, this results in decline and then extinction of species. There are still, however, areas of biodiversity significance in the east of the zone, associated with the Northern Inland Slope rises, which occupies, 32% of the zone and contain a substantial number of public land remnants, including Mt Meg Flora and Fauna Reserve and the Warby Range State Park.
Within private land, land use is varied, with the majority of the riverine area used for dryland mixed cropping and cattle grazing.

Public land occurs along stream frontages (various widths), roadsides and reserves, including Rowan Swamp Wildlife Reserve, the Warby Range State Park and Mt Meg Flora and Fauna reserve, and covers 12,963 hectares or 15% of the zone.

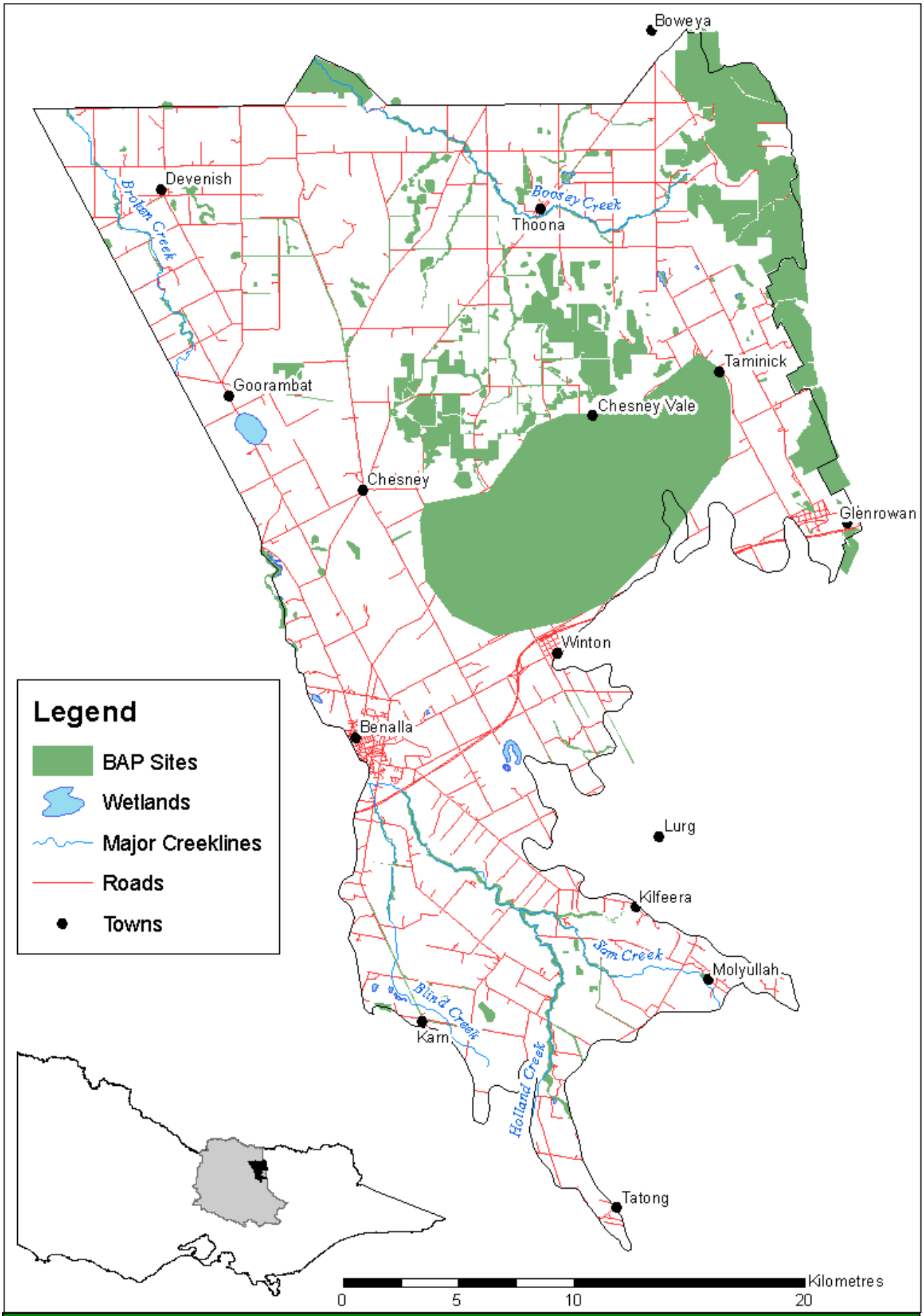

Figure 2: Chesney Landscape Zone

2.2 VEGETATION

Ecological Vegetation Class (EVC) is a Vegetation classification system derived form groupings of vegetation communities based on floristic, structural and ecological functions. Mosaics (combinations of EVCs) are a mapping unit where the individual EVCs could not be separated at the scale of 1:100, 000 (Berwick 2003).

Within the Victorian Riverina bioregion component of the zone 23 Ecological Vegetation Classes (EVCs) have been identified. The dominant EVCs are those that are the types of Grassy Woodlands, Grasslands and Wetlands. All EVCs except Grassy Dry Forest and Heathy Dry Forest are considered endangered or vulnerable at the bioregional level (GBCMA 2000). Of the 27 EVC's 15 are considered endangered or vulnerable. The Goulburn Broken Native Vegetation Plan describes goals and targets that have been set for the vegetation communities within the catchment. This includes ensuring that all EVCs are at least 15% of the pre-European cover by 2030 (GBCMA 2000). The majority of EVCs within the Chesney Landscape Zone are below the 15% target (Table 1). Therefore, revegetation in this zone will need be used to achieve bioregional targets. For further details on each EVC see the EVC cards on the DSE website.

Prior to European settlement, 27 EVCs[2] were known to have been present within the Chesney Landscape Zone (Figure 3). The vegetation of the Chesney Landscape Zone was a mixture of open grassy woodlands, wetlands and Granitic Hill Woodlands. Woodland communities on the plains were dominated by Grey Box (*Eucalyptus microcarpa*) and Yellow Box (*E. melliodora*). Ground cover in these woodlands comprised grasses and saltbushes with peas and wattles providing an understorey. The Riparian areas supported an overstorey of River Red Gum (*E. camaldulensis*). The wetlands, represented by the former Winton Swamp (now Lake Mokoan), were dominated by River Red Gum and tall grasses. On the granitic slopes Drooping Sheoak (*Casuarina verticillate*) and Blakely's Red Gum (*E. blaklei*) were common.

Plains Grassy Woodland communities on the Riverine plains consisted of open woodlands with an understorey of scattered shrubs and a high species diversity of grasses, lilies, orchids, herbs and sedges. The overstorey component was generally comprised of Grey Box (*Eucalyptus microcarpa*), White Box (*Eucalyptus albens*) and/or Yellow Box (*Eucalyptu melliodora).* Wattles (*Acacia spp*) and Pea species provided the majority of the understorey component, whilst the groundcover was generally composed of grasses (eg. *Austrodanthonia* and *Stipa spp*) and chenopods (eg. *Atriplex spp*) (Berwick 2003).

Creekline Grassy Woodlands were typically located along ephemeral drainage lines on the Riverine Plains and floodplains. The creeks and major depressions typically supported an overstorey of River Red Gum (*Eucaylptus camaldulensis)* and an understorey of Wattles and were generally lined with tall sedges (*Carex spp*). The Drainage Line Complexes varied from grassy wetlands to open herblands, sedgelands and may have developed to Red Gum Wetlands in some areas (Berwick 2003).

Red Gum Wetlands were typically dominated by River Red Gum, sedges (eg. *Eleocharis spp*) and rushes (eg. *Juncus spp*). Plains Grassy Wetlands occurred in shallow depressions on the alluvial plains, where meanders of prior steams occurred. These shallow seasonal wetlands were typically treeless, with a grassland structure, grading in to sedgeland or herbland (Berwick 2003).

The current extent of native vegetation in the Chesney Zone has been dramatically reduced (Figure 4) since European settlement due to clearing. Table 1 identifies the pre 1750 EVCs in the Chesney Landscape Zone, including their Bioregional Conservation Status, their current extent (as of 2003) (in

[2] For further information on each EVC, refer to the Department of Sustainability and Environment website at www.dse.vic.gov.au

hectares and % cover). The table also identifies the area of 'Private Land No Tree Cover' and Unknown/Unclassified EVCs (Ahern et al 2003).

The Goulburn Broken Regional Catchment Strategy identifies goals and targets that have been set for the vegetation communities within the catchment (Appendix 3). This includes "increasing the cover of all 'Endangered' and 'Vulnerable' (where applicable[3]) EVCs to at least 15% of their pre-European vegetation cover by 2030" (GBCMA 2003). The majority of EVCs within the Chesney Landscape Zone are below the 15% target (Table 1) and are therefore considered 'Endangered' (17) or 'Vulnerable' (3) at the Bioregional level (Ahern et al 2003).

Swamp, were dominated by River Red Gum and tall grasses. On the granitic slopes Drooping Sheoak *Casuarina verticillata* and Blakely's Red Gum *E. blaklei* were common.

[3] Applicable to Ecological Vegetation Classes that are 'Vulnerable' and are below 15%

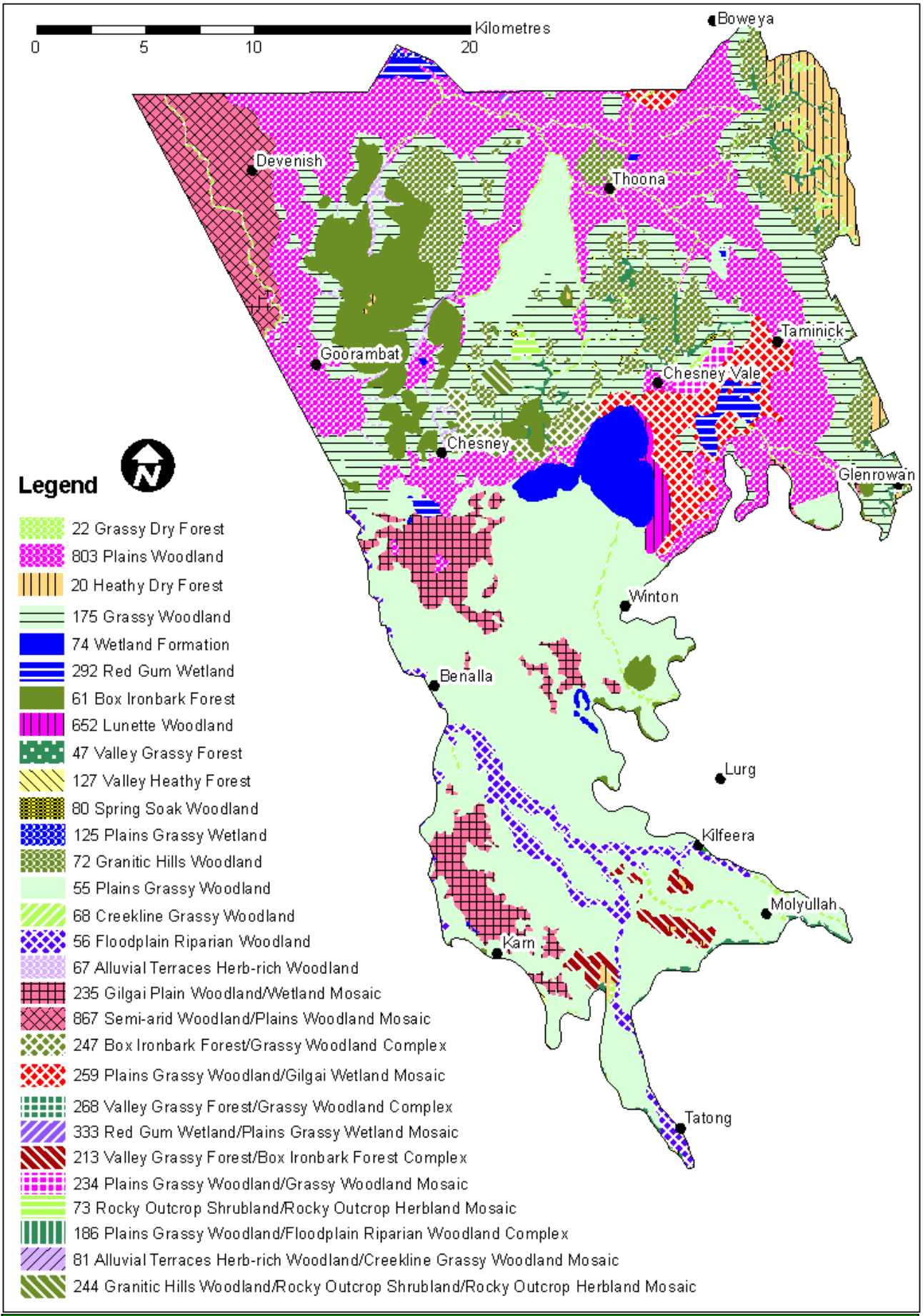

Figure 3: Pre-European Native Vegetation Cover – Chesney Landscape Zone. The different colours represent different Ecological Vegetation Classes. For details of which EVCs are represented see

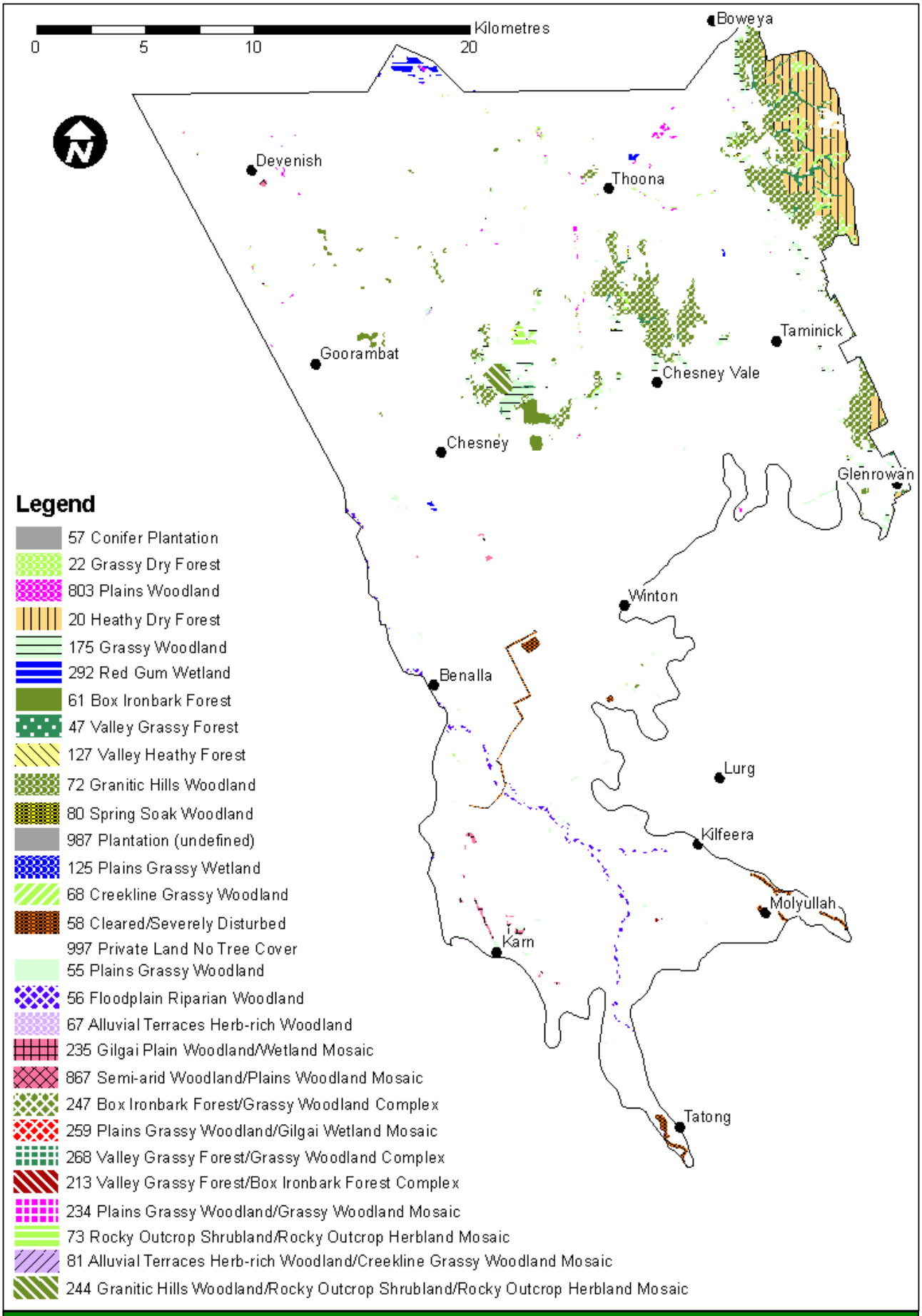

Figure 4: Current extent of Native Vegetation Cover, (represented by darker areas) and cleared land (represented by white areas) in the Chesney Landscape Zone.

Table 1 Chesney Zone Ecological Vegetation Classes (pre-1750 and current)

EVC Group	EVC Number	EVC Bioregional Conservation Status	EVC Name	Pre-1750 Area (ha)	Current Area (ha)	% current cover	15% pre-1750 target Ha
4	61	V	Box Ironbark Forest	5204	222	6	780
4	72	V♣	Granitic Hills Woodland	6100	3538	67	915
4	244	LC	Granitic Hills Woodland/Rocky Outcrop Shrubland/Herbland Mosaic	139	119	86	21
4	247	V	Box Ironbark Forest/Shrubby Granitic-outwash Grassy Woodland Mosaic	746	9	1.3	112
5	80	E	Spring Soak Woodland	104	17	16	16
5	175	E	Grassy Woodland	11900	659	6.5	1785
5	254	E	Shrubby Granitic-outwash Grassy Woodland/Valley Grassy Forest Complex	23	4	17	3
6	20	LC	Heathy Dry Forest	1900	1690	93	285
6	22	D	Grassy Dry Forest	460	318	86	70
6	47	E	Valley Grassy Forest	1420	260	40	213
6	127	E	Valley Heathy Forest	26	1	3.8	4
14	55	E	Plains Grassy Woodland	40700	198	1.5	6105
14	234	E	Riverina Plains Grassy Woodland/Shrubby Granitic-outwash Grassy Woodland Mosaic	266	1	.4	40
14	235	E	Gilgai Plain Woodland/Wetland Mosaic	3917	72	1.8	588
14	294	E	Plains Grassy Woodland/Gilgai Plains Woodland/Wetland Mosaic	2614	3	.12	392
14	299	E	Unclassified Lunette Woodland	369	0	0	55
14	867	E	Pine Box Woodland/Riverina Plains Grassy Woodland Mosaic	3626	13	.36	544
15	56	V	Floodplain Riparian Woodland	1958	262	13.4	294
15	68	E	Creekline Grassy Woodland	1202	52	12	180
16	67	E	Alluvial Terraces Herb-rich Woodland	332	<1	0	50
16	81	E	Alluvial Terraces Herb-rich Woodland/Creekline Grassy Woodland Mosaic	32	3	9.7	5
19	74	E	Wetland Formation	1876	0	0	280
19	125	E	Plains Grassy Wetland	40	1	2.5	6
19	292	E	Red Gum Wetland	790	120	15.19	119
19	333	E	Red Gum Wetland/Plains Grassy Wetland Mosaic	16	0	0	2.4
21	73	D	Rocky Outcrop Shrubland/Herbland Mosaic	167	83	50	25
99	58	NA	Cleared Severely Disturbed	0	314		
99	997	NA	Private Land No Tree Cover	0	57180		
100	999		**TOTAL**	**58227**	**731**	**1.26**	**8734**
Table Information including column A & B from Ahern et al 2003				*A*	*B*	*C*	*D*

Column C derived from (column B divided by column A) multiplied by 100 (for %)

Column D derived from (column A divided by 100) multiplied by 15 (*rounded to unit ten)

Explanation of Terms:

- EVC Bioregional Conservation Status refers to the threatened status of the EVC in the bioregion (eg. Victorian Riverina). Endangered (E) means that 'less than 10% of the pre-European extent remains, whilst Vulnerable (V) is defined as 'less than 10-30% pre-European extent remaining (Platt 2002).
- EVC Number refers to the unique number attributed to that EVC
- Catchment Target refers to the GBRCS targets of increasing native vegetation to 15% of pre European extent (GBCMA 2003)

♣ LC for the Northern inland slopes Bioregion

2.3 SIGNIFICANT FLORA AND FAUNA

2.3.1 Flora:

A range of native flora is found within the Chesney Landscape Zone. Overstorey species include River Red Gum (*Eucalyptus camaldulensis*), Grey Box (*Eucalyptus microcarpa*), Black Box (*Eucalyptus largiflorens*), Yellow Box (*Eucalytpus melliodora*), Murray Pine (*Callitris glaucophylla*) and Buloke (*Allocasuarina leuhmannii*). The range of small trees and shrubs includes species such as, Lightwood Wattles (*Acacia implexa*), Mallee Wattle (*Acacia montana*), Golden Wattle (*Acacia pycnantha*), Gold-dust Wattle (*Acacia acinacea*), *Emubush (Eremophila longifolia*) and Lignum (*Muehlenbeckia spp*). The zone also contains a range of groundcover plants including Wallaby Grass (*Austrodanthonia spp*) and Spear Grasses such as Corkscrew Spear-grass (*Austrostipa setacea*), herbs such as Leafless Bluebush (*Marieana aphylla*) and Smooth Rice-flower (*Pimelea glauca*) and Lilies such as Chocolate Lily (*Arthropodium strictum*). Plants that favour moist environments, such as Common Spike-Rush (*Eleocharis actua*) and Nardoo (*Marsilea drumondii*) may also be found (Ahern et al 2003).

Yellow Hyacinth Orchid – Photo: John Eichler

A total of 17 species of threatened flora are known from the Chesney Landscape Zone including one of only three known stands of Northern Sandalwood in Victoria. The list of species is provided in Robinson et al (2004). The Small Scurf-pea occurs in the zone in lowland grassland areas, many areas of which have now been converted to agricultural land. The Chesney Landscape Zone is one of the most important areas for the Narrow Goodenia, found in spring-soak woodlands, which are associated with granitic bedrock. Of the 17 species of threatened flora, four are endangered or vulnerable on an Australian-wide basis, including Red Swainson-pea (*Swainsona plagiotropis*) and Mountain Swainson-pea (*Swainsona recta*).

2.3.2 Fauna:

The fauna of the Chesney Landscape Zone includes mammals, birds, reptiles, amphibians, invertebrates and microfauna. For a landscape to function, all of these elements need to be present and interacting in order to achieve long-term conservation and sustainability within the zone. There have been 178 bird species recorded in the zone, and of these 27 are considered threatened at the State level (FFG Act 1988). The zone contains the most southerly Victorian population of the Carpet Python, which has its stronghold in the granitic hills of the Mt Meg Flora and Fauna Reserve and the Warby Range State Park. Of particular importance in the zone is the provision of habitat for Bush Stone-curlew (*Burhinus grallarius*) (Threatened in Australia, endangered in Victoria). Other Threatened fauna include Squirrel Glider and Tree Goanna. The Broken and Holland Creeks provide significant habitat for threatened fish species, waterbirds and declining woodland birds such as the Black-chinned Honeyeater, Jacky Winter and Brown Treecreeper. For a full list of threatened fauna in the zone, Appendix 5. The area is also an important wintering feeding area for Swift Parrot and Regent Honeyeater. Other notable species are, Tree Goanna (*Varanus varius*) (vulnerable in Victoria), Growling Grass Frog (*Litoria raniformis*) (Vulnerable across Australia and endangered in Victoria) and Squirrel Glider (*Petaurus norfolcensis*) (endangered in Victoria)

3.0 PREPARING A CONSERVATION PLAN

3.1 METHODOLOGY

The methodology used to prepare this plan contained eight main elements. These were,
1) Identification of Conservation Features and Threatened Species,
2) Ground Potential BAP Sites,
3) Field Survey BAP sites,
4) Priorities BAP Sites,
5) Generate Focal Species List,
6) Generate Key Biodiversity Asset List,
7) Develop Actions for Key Biodiversity Assets, and
8) Landscape Context Analysis.

Step 1. Identification of Conservation Features and Threatened Species
Features in the landscape that are of potential priority for conservation were identified, as well as flora and fauna species of conservation significance (ie. Threatened under State or Commonwealth legislation). This involved desktop analysis of data (eg. literature review; spatial data (eg EVC, trees cover, wetlands, flora and fauna records, aerials); corporate databases (eg. Biosites, Victorian Fauna Display and Flora Information Systems); local knowledge investigations; and the Landscape Context Model (refer to Step 8). From this analysis, a series of sites likely to have conservation values and threatened species were identified and mapped using GIS.

Step 2. Ground-Truthing of Potential BAP Sites
Involved surveying of the zone from the roadside, to compare desktop analysis data with the on-ground sites in regards to presence, type of vegetation and condition.

Step 3. Field Survey BAP Sites
Sites were prioritised for survey as per GBCMA in prep method (Appendix 6). One hundred of the sites requiring ground-truthing were field surveyed (on-site or from the nearest public land), by,
3.1) Bird Surveys - Undertaken in accordance with the Birds of Australia - Atlas Search Method 'Area Search'
This covered the same area (1 hectare) as per the Vegetation Quality Assessment, for a period of 20 minutes (Birds Australia 2001).
3.2) Vegetation Quality Assessment (VQA) (DSE 2004) – Site-based habitat and landscape components were assessed against a pre-determined 'benchmark' relevant to the vegetation type being assessed (ie. grasslands, wetlands, plains grassy woodlands) (Refer to Appendix 7).
3.3) Threat Identification – Whilst undertaking the Vegetation Quality Assessment, a list of threatening processes (ie. pest plants and animals) on the priority sites, were recorded.

Step 4. Prioritise BAP Sites
The 326 sites were given a ranked value of very high (VH), high (H), medium (M) or low (L), based on a range of factors (conservation status of the EVC, presence of threatened species, size, VQA score). Sites not surveyed, nor automatically ranked (as per Appendix 6), were given a ranked value to the lesser of the available options until surveying occurs.

Step 5. Generate Focal Species List
The focal species approach (Lambeck 1997) uses the habitat requirements of a particular species, or group of species, to define the attributes that must be present in a landscape for these species to persist. For example, if a species that requires the largest remnant size is selected, then fulfilling the needs of that species may result in the conservation of all species with smaller remnant size

requirements. The factors used in this plan to select focal species were remnant size and isolation distance (GBCMA in prep).

Step 6. Generate Key Biodiversity Asset List

The identified environmental features, including flora and fauna species, were categorised into a series of 'nested' environmental assets. For example; similar species or environmental features may be located in ‘nested assets’ such as; creeklines or ecological vegetation classes.

Step 7. Develop Actions for Key Biodiversity Assets

Involved development of a list of actions aimed at protecting and enhancing the biodiversity values in the Zone, by reducing the identified threats for each Key Biodiversity Asset. Available information (eg. Actions for Biodiversity Conservation (ABC) database) (DSE 2005a) and the SIR North Landscape Plan (Ahern et al 2003) were also used to compile the actions.

Step 8. Landscape Context Analysis

To achieve long-term viability of the priority sites, they need to be linked together to form a viable, functioning landscape. The Landscape Context Model (LCM) (Ferwerda 2003) uses a model of "known habitat" (based on mapping for tree cover, wetland, and major watercourses) to identify large remnants, key remnant clusters and the key linkages between them. However, because of potential limitations of the input data, areas of conservation significance (particularly grasslands and sparse woodlands) may not be identified. Similarly, areas with minimal conservation significance may be included because habitat quality data is not included in the model. In the case of the Chesney Landscape zone, Lake Mokoan has not been included in the Landscape Context Analysis and therefore appears on the maps as a low probability of additional sites. As with grasslands this is a limitation and not a true reflection of the importance of Lake Mokoan (Winton Swamp) as habitat.

The LCM identifies areas that have the highest (or least) probability of containing additional sites of conservation interest (as per Step 1). The model is useful in identifying the areas of the landscape that should be used to link and strengthen a network of conservation sites, and create a sustainable landscape. The model can be used to further determine the major linkages between the priority sites. The Chesney Landscape Zone priority sites and Landscape Context overlay are shown in Appendix 8.

4.0 IDENTIFYING PRIORITY SITES

In the Chesney Landscape Zone 326 sites have been identified as Biodiversity Action Planning priority sites for conservation management. These sites are termed BAP sites. They contain remnant vegetation and vary greatly from a stand of paddock trees to large forested areas such as the Warby Ranges. One hundred of these BAP sites have been ground-truthed and surveyed (refer to Section 5.0 for further information on surveying).

In order to identify the BAP sites, each site was assigned a number that identifies its location (maps) and the associated data (attribute table). This unique number has been calculated using the map-index number (1:25,000 map) and a site number (ie. 1-326). An example of the site identification numbering system (how the site(s) are identified, using the site number system) is illustrated below (Figure 5). An example of the data that is contained in the database (attribute table), for each BAP site is detailed below (Figure 6). The location of all of the 326 BAP sites (in map form) is available, by contacting DSE, Benalla.

The location of all of the 326 BAP sites (in map form) is available, in hard copy (general map) and electronic form (CD - specific maps) (Appendix 11). Information relating to each site (eg. site number, asset type, conservation status, EVC, focal species), a bird list for every site and asset maps is also provided (refer to Appendix 11).

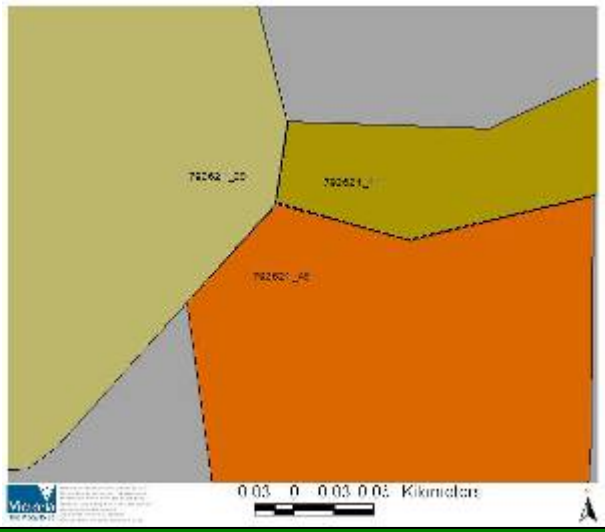

Figure 5– An example of the site identified numbering system

Site Number:	792623_1
Biodiversity Asset	Plains Woodland (Section 6.0)
Conservation Status	Very High
Management Action	Protect
EVC	55 (Section 2.2)
EVC status	E (Endangered)
Focal Species	Bush-Stone Curlew (*Burhinus grallarius*) (Section 6.1)
Threatened Spp Record?	Yes (Y) (and name included)
Buffered for Focal Species?	No (N)
Vegetation Quality Score	16/20 (Section 5.1)
Management	Private
Threats	Pest plants, land clearance

Figure 6– An example of the data contained in the database (attribute table)

5.0. SUMMARY OF PRIORITY SITE SURVEYING

5.1. VEGETATION QUALITY ASSESSMENTS

All of the 326 BAP sites were assessed based on habitat features of, 1) Large trees, 2) Canopy Cover, 3) Understorey, 4) Weediness, 5) Recruitment, 6) Organic Litter, 7) Logs and Landscape Component Scores of, 8) Size, 9) Neighbourhood and 10) Core Area. They were scored out of a maximum score of 20 (intact habitat). An example of the assessment sheet is provided in Appendix 7. Graphical illustration of the results is also provided in Appendix 9.

The sites in the Chesney Landscape Zone scored between 3 and 17 (Appendix 10). The site with the highest score was Mount Meg Nature Reserve on the western side of Lake Mokoan. The lowest scoring site occurred on an isolated corridor near the town of Thoona.

The graphical results (Appendix 9) highlight some of the challenges for biodiversity conservation in the Chesney Zone. In summary, the assessments identified that:

- 37% of sites scored the highest for large trees (more than 7 Large trees/ha)
- 2% of the sites scored the highest for canopy cover (more than 50% of benchmark cover)
- 15% of sites scored adequate understorey (more than 75% understorey cover and more than three forms)
- 15% of sites scored less than 25% weed cover,
- 2% of sites have adequate regeneration (10% or more of each woody species population)
- 81% of sites have adequate organic litter covering the ground (more than 5% cover),
- 44% of sites have adequate number of logs (25m of logs/ha),
- 37% of sites were larger than 10 hectares and 28% between 2-10 hectares
- 30% of sites had more than 50% vegetation cover in the surrounding landscape (to 1 km radius) were surrounded (1km radius) by more than 50% vegetation
- 1% of sites were less than 1km from a block of native vegetation greater than 50-hectares.

(Note: Sites were scored in relation to Ecological Vegetation Class Benchmarks, for each EVC Refer to Appendix 7 for further information on surveying).

Over the entire zone, the surveys show that there is: very little understorey or regeneration, a high percentage of pest plants, a lack of connectivity, small sized remnants (2-10 hectares) and a limited number of large trees. These habitat elements should be targeted within the zone.

The VQA scores for each of the sites provide a valuable monitoring system that can be repeated over time.

5.2 BIRD SURVEYS

Of the 326 priority BAP sites 36 have had bird surveys completed. 58 birds were identified in the zone (Appendix 10). Information on birds located at each of the 36 sites is provided in Appendix 11 (this list is not intended to represent the entire population of birds in the Chesney Zone).

5.3 CONSERVATION THREATS

Threats to the conservation values for the Chesney Landscape Zone were identified, as:

- Land Clearance – (removal of native vegetation),
- Habitat Fragmentation – (isolation of remnants and species due to land clearance),
- Elevated competition by Noisy Miners,
- Changes in hydrology (inappropriate wetting/drying/flow regimes),
- Inappropriate management of grazing (by introduced animals),

- Removal of habitat (eg. firewood collection, 'cleaning' up),
- Pest Plants,
- Pest Animals (including soil disturbance),
- Salinity (high watertable), and
- Adjacent Land Use Practices (eg. irrigation, laser grading).

Whilst some of the identified threats (eg. land clearance, habitat fragmentation, changes in hydrology and salinity) are primarily a result of historical activities (wide spread clearing, dredging, construction of meander cut-offs), they continue to have impacts on the biodiversity in the zone.

Land clearance (a key threatening process under the *EPBC Act* 1999) (Wierzbowski et al 2002) continues to be a threat to conservation values within the zone. Laser grading and cropping threatens wetlands and natural depression values. For example, further clearing occurred during the recent dry years, when depressions and wetlands were more accessible and were able to be sown to crops. Less than 25% of wetlands identified to occur prior to European settlement were evident in the field. This is due to laser grading, cropping and grazing.

Habitat fragmentation (a potentially threatening process for fauna in Victoria under the *FFG Act* 1988 (Wierzbowski et al 2002)), is usually the result of land clearance. A range of species such as the Superb Parrot (*Polytelis swainsonii*) and Grey-crowned Babbler (*Pomatostomus temporalis)* are detrimentally affected by habitat fragmentation, as it affects their ability to source food and suitable habitat required for their survival. Habitat fragmentation also favours species such as Noisy Miners (*Manorina melanocephala*) (Simpson et al 1993).

Elevated competition from aggressive species threatens biodiversity in the area, by the exclusion of less aggressive species (eg. Grey-crowned Babbler (*Pomatostomus temporalis*) from remnants.

Changes in hydrology (eg. wetting/dry/flow regimes) are a threat for native vegetation, particularly for wetlands, which have evolved to function with the natural cycles of flood and drought. Alteration to natural flow regimes of rivers and streams is listed as a threat to Victorian waterways under the *FFG Act* 1988 (Wierzbowski et al 2002). A change in water regimes can dramatically alter wetland and waterway appearance and functioning, disrupt natural productivity cycles and cause changes in vegetation and habitat, which in turn affects fauna that rely on wetlands (ie. for resources and breeding) (Howell 2002). The reduction in numbers of Brolga (*Grus rubicunda*) from the zone has been attributed to the loss of breeding habitat, pest animals and changes in hydrology.

Inappropriate Management of Grazing by introduced animals affects biodiversity conservation, through, soil compaction; removal of vegetation (ie. regeneration); changed nutrient levels in and around native vegetation. It contributes to tree dieback; and results in competition for fodder by native animals and small mammals that require tussocky grass for shelter (Wilson & Lowe 2002). A large percentage (more than 80%) of remnants (both fenced and unfenced) within the landscape are grazed, often resulting in minimal shrub or ground cover (only 3% of BAP sites had adequate understorey). A large number of isolated trees in paddocks are stressed and showing signs of dieback (ie. dead limbs, loss of trunk bark and compacted soils around bases), particularly in highly irrigated paddocks, most likely the result of inappropriate wetting regimes (eg. waterlogging) and compaction from grazing.

The removal of fallen timber (or 'cleaning up') was evident along roadsides and within private remnants (see photograph above). Fallen timber provides shelter for regenerating seedlings; protection from fire and hollows for ground mammals, and a wide variety of smaller organisms that provide food for mammals and birds. Removal of fallen timber results in a loss of habitat and food on which many animals rely. The Bush-stone Curlew (*Burhinus grallarius*), is just one of the species that is severely impacted upon by timber removal, as this species requires fallen timber for camouflage for protection for chicks and habitat (DSE 2005a).

Pest Plants (Weeds) are a major threat to biodiversity because they compete for space, light and nutrients with native species. Invasion of native vegetation by environmental weeds is listed as a

potentially threatening process under the *FFG Act* 1988 (Wierzbowski et al 2002). Some of the weeds evident in the zone include Paterson's Curse (*Echium plantagineum*), Horehound (*Marrubium vulgare*), Olives (*Olea europaea*), Peppercorns *(Schinus molle*), Boxthorn (*Lycium ferocissimum*), Bridal Creeper (*Myrsiphyllum asparagoides*), African Love-grass (*Eragrostis curvula*), Willows (*Salix spp*) and Poplars (*Poplar spp*). Weeds are especially evident on roadsides, where edge effects and machinery create disturbance and vehicles spread weed seed, and adjacent to farmland where agricultural weeds invade remnants.

Photo: Firewood Collection in remnant vegetation (EMP 2006)

Pest Animals are a major threat to the conservation values of the area. Predation of native wildlife by the cat (*Felis catus*) and by the introduced Red Fox (*Vulpes vulpes*) is listed as potentially threatening processes under the *FFG Act* 1988 (Wierzbowski et al 2002). Species such as the Bush-stone Curlew are preyed upon by these species. The European Rabbit *(Oryctolagus cuniculus*) and European Hares (*Lepus europaeus*) compete for habitat, remove native vegetation and disturb soil structure. Noisy miner (*Manorina melanocephala)* competition was also evident in the zone. They were often seen chasing other bird species, such as Grey-crowned Babblers.

Salinity is a potential threat to the area as a result of high watertables (DSE 2005b). In 1996, watertable depths in the zone ranged from 0-1 metres (northern and south-eastern areas) to more than 3 metres (most of the zone) (CGDL 2005). Remnant vegetation on the lower-lying parts of the landscape is especially at risk from a rising watertable. Further loss of vegetation and biodiversity in the zone (especially in the southern sections) will degrade the capacity of the natural ecosystem to support essential landscape functions (DSE 2005b). If not managed appropriately increases in salinity are also a potential threat to biodiversity.

Adjacent land use practices such as irrigation and inappropriate earthworks[4] are a threat to remnant vegetation, as they can lead to the colonisation of areas by weeds, waterlogging of vegetation, high watertable depths, nutrient run-off and an increase in sediment input to rivers and streams (DPI 2005).

[4] The term inappropriate earthworks in this sense refers to the purposeful movement of soil and vegetation without consideration of the natural landscape functions such as water flow

6.0 CONSERVATION ASSETS

6.1 FOCAL SPECIES

Research shows that different species have different types of responses to landscape change. The focal species approach therefore uses the habitat requirements of a particular species or group of species, to define the attributes that must be present in a landscape, for these species to persist. Broadly, the focal species are predicted to be the most sensitive species (in a given landscape) to a threat or ecological process. Such that, their conservation should also conserve other less-sensitive species found in the same vegetation type. Therefore, focal species are a way of defining and guiding targets (eg. patch size and connectivity) for our landscape restoration strategies (Lambeck 1997).

Additional benefits of a focal species approach are that it allows for the monitoring of actions (eg. can undertake regular surveys to establish if focal species are becoming more common and using new sites). It also provides the community and organisations implementing on-ground works, with an 'iconic/focal' species (if they don't already have one), which can enhance enthusiasm for implementing works.

The 7 focal species identified in the Chesney Zone, and their ecological requirements (thresholds[5]) are identified below (Table 2). Definitions of the ecological terms used include:

- Minimum patch size (patch size threshold) – refers to the minimum patch size of vegetation required, for the species to maintain viable populations,
- Critical distance between habitat patches (isolation threshold) – refers to the size of the gap between habitats, beyond which, on a daily basis, the animal doesn't generally cross (GBCMA *in prep.*),
- Dispersal threshold – refers to the distance (km) for which the species has been known to travel (eg. for breeding, migration), but generally does not on a daily basis,
- Ecological Vegetation Class (EVC) – the vegetation community that the species prefers, and
- Other requirements – identifies some other known requirements (not comprehensive) for the species to survive, or to inhabit an area.

It is envisaged that community groups and agencies may target one, or a combination of, the focal species identified (Table 2), for planning and implementation of on-ground works in the Zone. The focal species are only a suggestion of species to focus on-ground works. Other species may also be the focus for on-ground works, given new information and community desire to implement works for another species. If these species are catered for, a number of other species will also be protected as well as working towards the overall vegetation cover targets for the catchment.

[5] Thresholds refer to the point at which relatively rapid change occurs (eg loss of species). Therefore, these should be used as a minimum target only.

Table 2: Focal Species and their Habitat Requirements – Chesney Zone

	**Squirrel Glider (*Petaurus norfolcensis*)**	
	Minimum patch size (threshold)	2 ha
	Critical distance between patches	50m
	Dispersal threshold	1 km
	Ecological Vegetation Class	Box Ironbark, Grassy Woodland
	Some other requirements (general)	fox/cat control, feral bee control
	**Jacky Winter (*Microeca fascinans*)**	
	Minimum patch size (threshold)	10 ha
	Critical distance between patches	<500m
	Dispersal threshold	<2 km
	Ecological Vegetation Class	Box Ironbark, Grassy Woodland
	Some other requirements (general)	Noisy miner control and increase remnant widths
	**Grey-crowned Babbler (*Pomatostomus temporalis*)**	
	Minimum patch size (threshold)	>2ha, >1km of continuous roadside
	Critical distance between patches	<500m form known site
	Dispersal threshold	<2km, very few records >10km
	Ecological Vegetation Class	Grassy Woodland
	Some other requirements (general)	Mature trees, shrubs, corridors, Noisy miner control and increase remnant widths
	**Rufous Whistler *(Pachycephala rufiventris)***	
	Minimum patch size	10 ha
	Critical distance between patches	1 km
	Dispersal threshold	2 km
	EVC used	All EVC types
	**Brown Tree Creeper (*Climacteris picumnus*)**	
	Minimum patch size (threshold)	30 Ha
	Critical distance between patches	500m
	Dispersal threshold	1 km
	Ecological Vegetation Class	Box ironbark, Grassy Woodland, Wetland EVCs, 40 tons/ha of fallen timber
	**Latham's Snipe (*Gallinago hardwickii*)**	
	Minimum patch size (threshold)	Estimate: <1 Ha
	Critical distance between patches	Not relevant
	Dispersal threshold	Not relevant
	Ecological Vegetation Class	Wetlands
	Some Other requirements (general)	Important habitats are dry areas in light shrubbery with dense undergrowth and agricultural land, including rough pastures and young tree plantations. Feeding occurs on un-vegetated open mud or on firm mud between patches of sparse Eleocharis or Juncus. (Todd 2000)

Focal Species and their Habitat Requirements – Chesney Zone (Continued)

Inland Carpet Python (*Morelia spilota metcalfei*)	
Minimum patch size (threshold)	Average 70ha. Python home ranges overlap extensively.
Critical distance between patches	Can move more than 500m per day.
Dispersal threshold	Unknown
Ecological Vegetation Class	Heathy Dry forest, Granitic Hills Woodland, Grassy Woodland, Plains Grassy Woodland, Valley Grassy Forest, Box Ironbark Forest/Grassy Woodland Complex.
Some Other requirements (general)	Fox control, awareness by road users, rabbit burrow destruction in winter only, rodent baiting in winter only, landholders to leave 'python ladders' (branches leaning from the tree and touching the ground), protection of ground and understorey layer, retention of logs/hollows that are raised above the ground level 2-10 metres,

Habitat Requirement Source: Variety of Sources in GBCMA in prep
Photo Credits: Squirrel Glider (John Seedbeck) Jacky Winter (Wendy Opie), Black-chinned Honeyeater (Graeme Chapman), Rufous Whistler, Brown Treecreeper (Ian McCann)

6.2 KEY BIODIVERSITY ASSETS

The identification of the appropriate biodiversity assets to focus conservation effort, is the most critical part of the BAP process. The approach of using 'Key Biodiversity Assets' has been used, to group together the birds, animals and plants that use the same type of habitat. For example, by choosing 'Wetlands' as a key biodiversity asset, it incorporates all of the species that live in, and use a wetland, as well as the individual species (eg. Brolga (*Grus rubicunda*), Barking Marsh Frog (*Limnodynastes fletcheri*), Small Spike-rush (*Eleocharis pusilla*)) (GBCMA in prep).

There have been six Key Biodiversity Assets identified for the Chesney Landscape Zone (Table 3). The 326 priority sites have been categorised in one of these Key Biodiversity Assets (Figure 7) (Appendix 11).

The benefit of this approach is that specific actions (Section 7.0), based on the requirements of each asset (to counter the threats and improve the status of the asset), can be developed. Planning and implementation of on-ground works and actions that specifically target each of these assets can then occur.

Table 3: Key Biodiversity Assets – Chesney Zone

Key Biodiversity Assets	Examples of Locally Significant Species per Asset
(1*) Granitic Hills Woodlands The most extensive vegetation type remaining, including some very large remnants (>500ha) that support populations of higher order predators such as Inland Carpet-python, Powerful Owl and Barking Owl Includes Granitic Hills Woodland, Heathy Dry Forest, and Springsoak Woodland.	Narrow Goodenia, Common Fringe-sedge, Purple Diuris Spur-wing Wattle, Northern Sandalwood, Yellow Hyacinth Orchid, Inland Carpet Python, Powerful Owl, Regent Honeyeater, Swift Parrot, Speckled Warbler, temperate woodland birds community, Squirrel Glider
(2) Major Creeklines The most extensive habitat remaining in the Riverina bioregion of the Chesney Zone. Major bioregional and local habitat links for terrestrial fauna. Hollands Creek is recognised as a priority stream, with significant populations of threatened fish	Macquarie Perch, Golden Perch, Crimson-spotted Rainbow Fish
(3) Wetlands Distinctive ecosystem, including Lake Rowan. Lake Mokoan (8,000ha), which impounded Winton Swamp (3,000ha) has been included as it provides habitat for waterbirds	Three bioregionally significant wetlands; Brolga, Australasian Bittern, White-bellied Sea-eagle, Growling Grass Frog
(4) Box-ironbark Forest Historically one of the most widespread EVCs in the Northern Inland Slopes bioregion. Critical habitat for two nationally endangered nectarivores; Regent Honeyeater and Swift Parrot; includes two of the eleven areas considered nationally significant for Regent honeyeater (Menkhorst 1997)	Regent Honeyeater, Swift Parrot, Painted Honeyeater, Squirrel Glider. Tree Goanna, Brush-tailed Phascogale, and Speckled Warbler.
(5) Plains Grassy Woodland Was historically the dominant vegetation type in the Victorian Riverina landscape; now the vegetation type requiring the largest increases in extent 7 EVCs including Alluvial Terraces Herb-rich Woodland, Grassy Woodland, Grassy Woodland, Gilgai Plain Woodland/Wetland Mosaic, Plains Grassy Woodland and Pine Box Woodland/Riverina Plains Grassy Woodland Mosaic.	Small Scurf-pea, Leafy Templetonia, Plump Windmill Grass, Grey-crowned Babbler, Tree Goanna, Bush Stone-curlew, Squirrel Glider, Red-chested Button-quail, temperate Woodland bird community

* The numbering of the Key Biodiversity Assets (1-5) is only intended to assist with the identification of the assets throughout the remainder of the report.

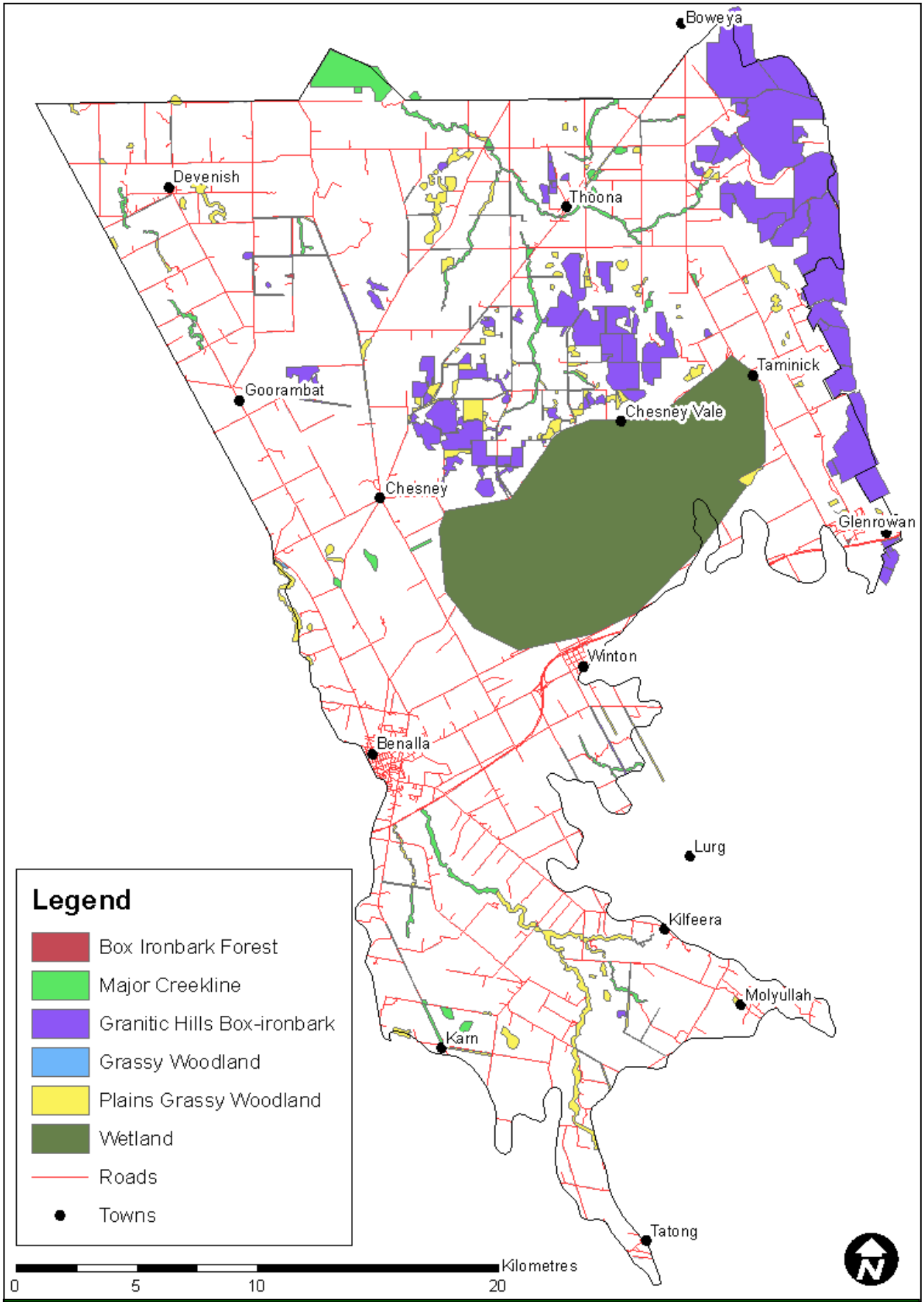

Figure 6 – Location of Key Biodiversity Assets – Chesney Landscape Zone

7.0 PRIORITY ACTIONS FOR KEY BIODIVERSITY ASSETS

For each of the seven Key Biodiversity Assets (1-5), the following pages identify:
A) An introduction to the Asset in the Chesney Landscape Zone
B) Photographic example of the Asset in good condition in the zone
C) The Actions for each of the Assets in the zone (broader actions are also identified for the Chesney Landscape Zone in Ahern et al 2003).

Priority actions for the Chesney Landscape Zone have been developed and grouped based on each 'Key Biodiversity Asset' (refer to section 6.2 and Table 3). Priority actions for the key biodiversity assets were developed based on the following factors: size/extent, condition and landscape processes (eg. habitat connectivity, appropriate water regimes). The condition section was also further split in relation to education/extension, on-ground works, threatened species and pest plants and animals. For example, and action relating to the condition of a remnant, due to rabbits, can be found under 'Condition' – 'Pest plants and animals'.

It is proposed that the community and agencies in the Chesney Landscape Zone investigate options for implementing these actions in to existing projects/polices. For example, actions in each asset type, should be targeted in order of priority (Very High, High, Medium to Low) in relation to these actions (where applicable). This priority system forms the basis of BAP, where the very high value sites, that require less cost for long-term protection, will provide the highest prospect for conservation (GBCMA in prep). The location of the Assets (maps) and the photographic examples of the condition of the Assets will assist with the planning and implementation of the actions.

1) KEY BIODIVERSITY ASSET – GRANITIC HILLS WOODLAND

1A) Introduction – Granitic Hills Woodland:

Not surprisingly Granite Hill Woodland occurs on granite country with outcropping rocks and sandy to sandy-clay soils which typically have low water holding capacity. They occur at elevations between 150-450m, with an annual rainfall of 400-750mm. Rocky Outcrop Shrubland / Herbland is often interspersed amongst this vegetation community. The low woodland overstorey is usually dominated by Blakely's Red Gum, with Red Stringybark, Red Box and Long-leaf Box. The dense shrub layer is often dominated by Common Fringe-myrtle and includes species such as Drooping Sheoak, Lightwood, Box-leaf Wattle and Varnish Wattle. White Cypress-pine can also be found in this vegetation community, usually in uncleared and fire sheltered rock areas. Ground layer species include Nodding Blue Lily, Austral Carrot, Raspwort, Cotton Fire-weed, Green Rock Fern and Austral Stonecrop.

High value Granitic Hills in the Chesney zone are located in the Warby Ranges.

More than 56% of Granitic Hills Woodlands in the Goulburn Broken Catchment have disappeared since European invasion. Many of the plants and animals that rely on this habitat are now also threatened, and some are extinct. As 18% of the remaining Granite Hills Woodlands within the Goulburn Broken Catchment is on private land, landowners should be encouraged to protect and revegetate remnants on their properties. The actions identified below should be implemented in conjunction with the Management plans for the Warby Ranges, Mt Meg Plan and Lake Mokoan

1B) Photographic Example – Granitic Hills Woodland:

Example of a Granitic Hills Woodland BAP Site of Good Condition - Chesney Zone

The Warby Range State Park is a large park containing a wide diversity of habitats, some of which are more degraded than others. This site in the northern section of the park exhibits features of Granitic Hills Woodland in good condition with areas of bare granite and a thick and diverse understorey of grasses and shrubs.

Photo: Granitic Hills Woodland – A Key Biodiversity Asset - Chesney Landscape Zone (Debbie Coulborne

1C) Actions – Granitic Hills Woodland:

Size/Extent:

- **Encourage** landholders to increase the size of existing remnants, to establish new areas of indigenous species of trees and shrubs, and to retain or revegetate to establish buffer zones or unimproved, uncultivated pasture around granite outcrops.
- **Increase connectivity** (through revegetation) by linking areas of remnant granitic hills vegetation.

Condition:

Education/Extension

- **Encourage** (eg. community education activities) landholders to leave all rocks, fallen branches and woody debris on the ground.
- **Promote** the benefits/uniqueness and management requirements of diverse granite country vegetation

On-ground Works

- **Maintain** all rocks as structural habitat.
- **Minimise disturbance** at high value sites to prevent erosion and minimise weed invasion.
- **Restore structural diversity** by revegetating patches trees with indigenous shrubs and ground cover.
- **Improve habitat quality** by leaving fallen timber, logs and branches on the ground and by leaving dead trees standing as they provide hollows used by many wildlife species.
- **Exclude grazing** to protect remaining patches of trees and native vegetation and encourage regeneration.
- **Encourage all landholders** to protect sites for the long-term (e.g. covenants)
- **Support** landholders and community groups in the protection of all sites (e.g. Environmental Incentives, extension).

Pest Plants and Animals

- Continue ongoing **control of foxes and feral cats** for the protection of threatened species and focal species such as Brush-tailed Phascogale, Sugar Gliders and Diamond Firetails.
- Undertake active **weed control** at all BAP sites.

Landscape Processes (ie. hydrological regime, habitat connectivity):

- **Link high value sites** with roadsides. Investigate the linking sites by the creation of corridors between sites.
- **Important reserves** to enhance and manage include: Mt Meg and the Wary Ranges. These reserves should be linked up to other vegetation and managed to protect and enhance their biodiversity values.

2) KEY BIODIVERSITY ASSET – MAJOR CREEKLINES

2A) Introduction – Major Creeklines:

These Creeklines also form major habitat links in the bioregion as well as providing habitat for most of the threatened species within the zone. These areas are priority for protection due to their extent, connectedness, the high priority vegetation types and threatened flora and fauna that they contain.

The Major Creeklines in the zone include Blind Creek, Boosey Creek, Broken Creek, Holland Creek and Sam Creek.

The actions identified below should be implemented in conjunction with the Management plans for the Warby Ranges, Mt Meg Plan and Lake Mokoan

2B) Photographic Example – Major Creeklines:

This is an example of a Creekline in relatively good condition, there are large hollow bearing trees for habitat and since the fencing of the site, there has been a regeneration of shrubs and grasses. There are no logs in the creek, which was dry in 2006 however the exposed roots could be used as shelter for aquatic animals when the water does flow in the future.

Photo: Major Creeklines – A Key Biodiversity Asset – Chesney Landscape Zone. Photo Tobi Edmonds

2C) Actions – Major Creeklines:

Size/Extent:

- **Revegetate** those remnant sites that are lacking understorey and native grasses or herbs.
- **Encourage** landowners to revegetate adjacent to Major Creekline reserves as a way of increasing the area of remnants and providing a buffer to weed invasion.
- **Create buffers** around Major Creeklines to manage cattle impacts on banks and vegetation

Condition:

Education/Extension

- Produce a site **management plan** for all Major Creeklines in the zone
- Provide opportunities for **education** of landholders and school children regarding the benefits of healthy creeks
- Provide extension to all landholders with land adjoining creeklines in the zone, to assist with recognition of the benefits of healthy creeklines on their properties and to assist with **identification of plants and animals**.
- Identify a **demonstration site** (show casing a very high value site) for educational purposes.

On-ground Works

- Liaise with Parks Victoria, committees of management and adjacent landholders, regarding current **management** of the Major Creekline reserves.
- Through incentive schemes such as the water ways grants (for more information about waterways grants contact the GBCMA – Shepparton) fence off and **regenerate** the riparian vegetation.
- Install **solar pumps** and off stream watering points to reduce the impacts of stock
- **Encourage or replant** native Water-milfoils (*Myriophyllum* spp.) which help filter out suspended sediments and nutrients.

Threatened Species

- Major Creeklines form important habitat for threatened fauna therefore protection and restoration of these sites are essential

Pest Plant and Animals

- Remove weeds such as Willows, Parrot Feather and Arrow Head
- Encourage the removal of Carp

Landscape Processes (ie. hydrological regime, habitat connectivity):

- Where ever possible the above actions should be applied upstream so that the benefits can flow downstream and improve the health of the whole zone.

3) KEY BIODIVERSITY ASSETS – WETLANDS

3A) Introduction – Wetlands:

Wetlands and waterways are interconnected systems and therefore any changes in one, such as reduced flows or salinity, will affect the other.

Within the Chesney Landscape Zone wetlands are amongst the most important, productive and valuable ecosystems. They perform vital functions including water purification, nutrient processing, flood management and maintenance of the watertable.

There are a number of threats affecting wetlands in the zone, such as land clearing, changed hydrological regime, adjacent land use practices and pest plants and animals. The actions identified below are intended to assist in the protection of the remaining wetlands within the Chesney Landscape Zone. However, these actions are specific to the zone and are by no means comprehensive for the region. Other strategies (eg. Draft Wetlands Strategy for the GB) (GBCMA 2003), provide a framework for protecting wetlands in the catchment, and are overarching strategies for the area.

3B) Photographic Example – Wetlands:

Example of a Wetland BAP Site of Good Condition – Chesney Zone

Lake Rowan is very variable in its quality as sheep and cattle graze certain areas, illegal firewood collection takes place and there is Phalaris and Bathhurst Burr present at some sites.

Photo: Wetlands (Lake Rowan)– A Key Biodiversity Asset – Chesney Landscape Zone (Photo: Debbie Colbourne)

3C) Actions – Wetlands:

Size/Extent:

- **Create buffers** around all identified wetlands (as far out beyond the rim of the basin as possible) and protect and maintain vegetative cover on inflow paths (eg. revegetate Surface Water Schemes).
- **Protect** natural wetlands from grazing (while wet) and earthworks.
- If feasible **design reuse dams** to include areas for water birds to feed and breed.
- **Create artificial wetlands** designed to attract particular species of birds in areas where no wetlands or native vegetation currently exist.

Condition:

Education/Extension:

- Produce a site **management plan** for all high value wetlands and encourage incentives for other wetlands in the zone.
- Provide opportunities for **education of landholders** and school children regarding the benefits of wetlands on the farm, including the provision of an extension campaign on the productive value of intact wetlands, rather than for agricultural pursuits.
- Provide **extension** to all landholders with wetlands in the zone, to assist with recognition of the benefits of wetlands on their properties and to assist with identification of plants and animals.
- **Identify** a demonstration site (show casing a very high value site) for educational purposes.

On ground works:

- **Protect** (via incentives) all identified wetlands in the zone, commencing with very high value sites (Lyon et al 2002)
- **Provide** off-stream, watering points for private wetlands through the Environmental Incentives program
- **Reduce** the use of chemicals and other water contaminants on farms and within local communities
- In consultation with the Waterwatch program, enhance **monitoring** of wetlands and encourage the community to adopt new wetland monitoring sites

Threatened Species:

- **Manage grazing** to exclude grazing when wet, or prior to being wet, to allow flowering and seed-set of native plants (such as Milfoil). Graze under management only when dry to prevent seed set of weeds. Monitor growth of cane grass and other nesting habitat, to ensure that grazing does not remove habitat for bird species such as Brolga (*Grus rubicunda*) (eg. allow time for growth of rush/sedges/grasses prior to Brolga and other birds searching for breeding sites).

Pest plants and animals:

- **Undertake fox control** programs around Lake Mokoan and other wetlands, for the benefit of all species.
- Ensure that the Lake Mokoan management plan (BECCA 2006) is followed and that weeds are controlled after the lake has been decommissioned

Landscape Processes (ie. hydrological regime, habitat connectivity):

- Give priority for protection to wetlands that are currently in close proximity to one another, or in close proximity to a high value site, to **form clusters of wetlands** if size cannot be extended
- Liaise with Goulburn-Murray Water and landholders, to restore and deliver natural hydrological regimes to all identified wetlands, for the benefit of flora and fauna – especially to Lake Mokoan
- Re-evaluate and **negotiate hydrological recommendations** along the Muckatah Depression and monitor wetting/drying regimes
- **Prevent** further **removal** of wetlands, through education and legislation where required.

4) KEY BIODIVERSITY ASSET – BOX IRONBARK FOREST

4A) Introduction – Box Ironbark Forest:

Box Ironbark Forests are open forests that occur on low hills at altitudes between 150-230m, with an annual rainfall between 500-650mm. The skeletal sandy loam to clay loam soils are often gravely, and are of low fertility with a poor moisture holding capacity. The overstorey is dominated by Red Box, Red Stringybark (*Eucalyptus macrorhyncha*), Long-leaf Box, and Yellow Box, Red Ironbark (E. tricarpa). The understorey is a scattered shrub layer which includes Golden Wattle, Spreading Wattle, Daphne Heath (*Brachyloma daphnoides*), Grey Everlasting (*Ozothamnus obcordatus*) and Sweet Bursaria (*Bursaria spinosa*). The sparse ground layer includes Wallaby Grasses, Spear Grasses, Red Anther Wallaby Grass (*Joycea pallida*), Black Anther Flax Lily (*Dianella revoluta*), Shiny Everlasting (*Bracteantha viscosa*) and Chocolate lily.

Over 60% of Box Ironbark Forests in the Goulburn Broken Catchment have disappeared since European invasion. Of the 40% that remain, most have been disturbed at some stage and are degraded. Many of the plants and animals that relied on this habitat are now also threatened, and some are extinct. Over 18% of the remaining Box Ironbark forests in the Goulburn Broken Catchment remain on private land. Therefore, the support of private landholders is essential for the ongoing conservation of Box Ironbark Forests (DSE 2005c). Many of the areas in the zone that once contained Box Ironbark forest have been cleared for agriculture. Other threats include Adjacent Land Use Practices, Grazing, Pest Plants and Pest Animals. The actions identified below are intended to assist in the protection of the remaining remnants within the zone. However, these actions are specific to the Chesney Landscape Zone and are by no means comprehensive for the region.

4B) Photographic Example – Box Ironbark Forest:

Example of a Box Ironbark Forest BAP Site of Good Condition – Chesney Zone

The Site (792511-13) pictured below is an example of a Northern Plains Grassland BAP site in good condition. The Naringaningalook Grassland is a Trust for Nature owned property and is listed on the Register of National Estate. It contains a large diversity of grassland species and is highly endangered.

Photo: Box Ironbark Forest – A Key Biodiversity Asset - Chesney Landscape Zone (Photo: Debbie Colbourne)

4C) Actions – Box Ironbark Forest:

Size/Extent:

- **Encourage landholders to increase the size** of existing remnants, to establish new areas of indigenous species of trees and shrubs, and to retain or establish buffer zones with revegetation or fence out and allow regeneration around Box Ironbark forest.
- **Protect significant roadsides** such as the Hume Highway, Back Mountain Roads and the Melbourne – Albury Rail Reserve.

Condition:

Extension/Education

- **Organise community education activities** relating to the importance of Box Ironbark Forests and associated flora and fauna species, specifically targeting high priority remnants in paddock environments.
- Further **promote** the benefits of protecting and enhancing remnant patches through extension and voluntary programs, such as Environmental Management Incentives and Land for Wildlife.
- **Encourage** retention of fallen timber in privately owned Box Ironbark Forest sites.

On-ground Works

- **Maintain and improve condition** of all identified high value sites by encouraging the retention of fallen timber and hollow bearing trees, and manage regionally listed weeds.
- **Exclude all grazing** to allow trees, shrubs and native ground cover regenerate.
- **Restore structural diversity** by revegetating degraded remnants with indigenous shrubs and ground cover, if regeneration has not occurred following fencing (eg. no existing seed source).
- **Protect** clusters or individual specimens of large, hollow-bearing trees are retained and protected throughout the zone.
- **Leave any dead standing trees**. Install nest boxes where natural hollows are in short supply to increase the number of nesting hollows for animals such as Brush-tailed Phascogales.

Pest Plant and Animals

- **Minimise disturbance** at high value sites to prevent erosion and minimise weed invasion.
- **Continue ongoing contro**l of foxes and feral cats for the protection of threatened species and focal species including Brush-tailed Phascogale and Sugar Gliders.

Landscape Processes (i.e. hydrological regime, habitat connectivity):

- **Increase connectivity to important reserves and remnants** such as the Warby Range State park
- **Identify and prioritise potential sites** for habitat expansion and improved connectivity as identified by the landscape context model and maps provided in this document.

4) KEY BIODIVERSITY– PLAINS GRASSY WOODLANDS

4A) Introduction – Plains Grassy Woodland:

The Key Biodiversity Asset Plains Grassy Woodland is comprised of the EVC Group 14. These were historically the dominant vegetation types in the riverine plain part of the Chesney landscape, but are now endangered. The majority of Plains Grassy Woodland in the zone occurs on private land, roadsides and edges of larger public land. These remnants serve many important functions, including water conservation, aesthetic values, habitat values, sources of native seed and sources of food, shelter and nesting sites for a range of woodland birds and mammals (Lunt 1998).

This asset is scattered throughout the Chesney Landscape Zone. Many of the areas in the zone that once contained these vegetation types have been cleared for agriculture resulting in fragmented pockets of Plains Grassy Woodland. Other threats include Adjacent Land Use Practices, Grazing, Pest Plants and Pest Animals. The actions identified below are intended to assist in the protection of the remaining remnants within the zone. However, these actions are specific to the Chesney Landscape Zone and are by no means comprehensive for the region.

4B) Photographic Example – Plains Grassy Woodland:

Example of a Box Ironbark BAP Site in Good Condition – Hughes Creek Zone
This site exhibits most of the characteristics of a Plains Grassy Woodland site with an overstorey of Grey Box, River Red Gum and Buloke. The understorey shrubs are sparse but it contains a diverse ground layer of grasses, herbs and lilies.

Photo: Plains Grassy Woodland – A Key Biodiversity Asset - Hughes Creek Landscape Zone. (Photo: Debbie Colbourne)

5C) Actions – Plains Grassy Woodland:

Size/Extent:

- **Create buffers**, through revegetation, on freehold land abutting roadside remnants or reserves to widen the habitat.
- **Increase connectivity** to remnants and reserves along roadsides and the riparian areas.
- **Expand** patch size and improve connectivity of isolated or partly disconnected patches

Condition:

Education/Extension

- **Encourage** landholders to increase the size of existing remnants, to establish new areas of indigenous species of trees and shrubs, and to retain or establish buffer zones of revegetation or unimproved, uncultivated pasture around woodland.
- **Liase** with Parks Victoria, DSE, Trust for Nature, committees of management and adjacent landholders, to establish the best practice for reserve management.
- **Encourage protection** (fencing) of all remnants and manage grazing practices to benefit the grassy woodland (such as exclude all domestic grazing stock in remnants to allow plants to set seed and regenerate. Manage stock grazing to benefit the native vegetation once plants have set seed).
- Organise **community education** activities relating to the importance of Plains Grassy Woodlands and associated flora and fauna species, specifically targeting high priority remnants in paddock environments.
- Further **promote** the benefits of protecting and enhancing remnant patches through extension and voluntary programs, such as Environmental Management Incentives.
- **Educate** landowners on the need to retain fallen in privately owned sites and making sure that fallen timber is not removed illegally from public land.

On-ground Works

- **Minimise disturbance** at high value sites to prevent erosion and minimise weed invasion.
- **Ensure** clusters or individual specimens of large, hollow-bearing trees and dead standing trees are retained and protected throughout the zone.
- **Enhance** high value sites with shrubs and other species if regeneration has not occurred following fencing (eg. no existing seed source).
- **Identify** additional native grassland paddocks for protection and restoration, where artefact grasslands were once grassy forests.

Threatened Species

- **Install nest boxes** where hollows are deficient to increase the number of nesting hollows for woodland birds and Squirrel Gliders.

Pest Plant and Animals

- Continue ongoing **control of foxes and feral cats**.
- Irradicate **feral Bee** populations to allow the hollows to be used for native animals.
- Control regionally listed **weeds** and environmental weeds from sites.

Landscape Processes (ie. hydrological regime, habitat connectivity):

- **Identify and prioritise potential** sites for habitat expansion and improved connectivity as identified by the landscape context model and maps provided in this document.

8.0 FURTHER INFORMATION - PRIORITY SITES

Priority Site Data:
Information on the 326 priority BAP sites within the Chesney Landscape Zone has been derived using the Geographical Information System - Arcview 3.3. It is intended that the priority site information and other information detailed in this plan, will allow groups and staff (ie. extension staff and community groups) to:

- Be pro-active in targeting sites,
- Act as a basis for informed management of the site,
- Provide a rationale for applying incentives,
- Provide a tool for landholders and the wider community,
- Provide a tool to show how a site fits into the wider landscape, and
- Provide a benchmark against which future improvements in management can be monitored.

How To Use The Data Provided:
The data provided is intended for use by a range of organisational, agency and community groups, to assist with biodiversity conservation in the zone. It is particularly targeted towards agency extension officers. For example, it is anticipated that prior to or following a site visit, an extension officer will investigate the data associated with their site, including:

- The Ecological Vegetation Class of the site?
- How does the site fit in to the wider landscape?
- Are there any management agreements or incentives for the site (ie. covenant, bush tender)?
- Are there threatened or significant species recorded at the site or nearby?
- What is the BAP rating of the site and those near it (ie. Very high, high, medium or low)?
- What is the overarching management recommendation for the site (ie. protect or restore)?
- What are the actions recommended for the site (ie. pest plant management)? (Negotiations need to occur to get the best possible outcome for all involved).
- What are the options available to the landholders to fulfil these actions (ie. fencing incentive)?
- What are the options for joining the site to public land (ie. widening roadsides to provide a corridor/link)?
- Using the Landscape Context Map (Appendix 8), determine where possible linkages (revegetation) may be of the most benefit – think about the landscape, what we could do to help the area.
- It is also important to remember that sites with scattered trees are still a vital link in the landscape and especially in an area where much of the original vegetation has given way to agriculture. Officers need to determine on site, where the best possible linkages could occur, and often this should include scattered vegetation, as although they generally have not been identified as a site in this plan, they form an important element for providing links between the identified sites.

Keeping the Data Current:
The data contained in this report is by no means 'comprehensive', as this process relies on the regular updating of information, to keep it accurate and timely. Therefore this plan is adaptive, to enable management actions and information to be modified in response to further information, including monitoring actions. The plan will also be reviewed when necessary to ensure that it remains a 'living' document. In order for the data and associated maps to remain as up to date and relevant as possible, it is important that site data continue to be added to the database. For example, the Department is not always aware of sightings of flora and fauna by individual landholders or community groups and there are still a number of sites that require Vegetation Quality Assessments and Bird Surveys.

Further Information or To Provide Data:
For clarification of information or to provide further data, please contact the Environmental Management Program, Department of Sustainability and Environment, Benalla on (03) 5761 1611.

9.0 ASSISTANCE AVAILABLE FOR LANDHOLDERS

There is a range of assistance available to landholders in regards to planning for biodiversity conservation, and implementing works, on their properties. This section is designed to provide an overview of some of the property planning, management tools and incentives available to landholders and the community, within the Shepparton Irrigation Region. Also included are some of the programs within the community that will benefit from the information provided in this plan.

LOCAL AREA PLANS	WHOLE FARM PLANS
Biodiversity Action Planning Conservation Plans will provide an extra resource for Local Area Planning groups, in relation to their Local Area Plans. It can assist groups with both implementation and further information for conducting biodiversity planning in their area.	Protecting biodiversity on a farm is an important element when developing and implementing a Whole Farm Plan. Biodiversity Action Planning can inform the process and provide extra information for landholders.

Advice and Information:
Please contact your local Department of Primary Industries/Department of Sustainability and Environment Office, the Goulburn Broken Catchment Management Authority or the Goulburn Murray Landcare Network, for further information on biodiversity conservation. There are extension officers within these organisations who can provide advice on a range of aspects such as; whole farm planning, irrigation design, groundwater management, revegetation and protection of remnant vegetation, threatened species protection and best management practices.

Incentives for On-Ground Works:
There is a range of incentives available for landholders for catchment works within the Mid Goulburn Broken Catchment; including,

- Environmental incentives to assist with the protection and/or enhancement of remnant vegetation, including wetlands and grasslands,
- Tree Growing incentives to assist with the re-establishment of native vegetation,
- Whole Farm Plan incentives, to assist with the development of Whole Farm Plans,
  For the above points, contact the Department of Primary Industries, Tatura.
- Waterways Incentives – for on-ground works along rivers and creeks.
  For the above point, contact the Goulburn Broken Catchment Management Authority, Shepparton.

Management Arrangements:
Programs such as Carbon Tender, Bush Returns, EcoTender and Bush Broker, may provide incentives and advice, for long-term conservation management on properties. *Contact the Goulburn Broken Catchment Management Authority, Shepparton or Benalla office for further information.*

Permanent Protection:
A Conservation Covenant permanently protects sites for conservation. It may provide assistance for rate relief, tax concessions and incentives for the costs of on-ground works. *Trust for Nature (Vic) is the managing organisation in regards to Conservation Covenants; visit the website at www.tfn.org.au*

Other Assistance:

- Goulburn Murray Landcare Network Shepparton – offers Landcare related advice.
- Land for Wildlife – a voluntary scheme aiming to encourage and assist landholders to protect and enhance biodiversity values on their properties. *Managed by the Department of Sustainability and Environment – for further information visit internet site at* www.dse.vic.gov.au.
- Local Government (Rural city of Benalla Shire) – managing authority for native vegetation statutory planning requirements.

10.0 Further Requirements (Monitoring and Research)

Monitoring is a fundamental component of all management activities and an important tool, which can be used to enhance the knowledge of biodiversity assets and manage for their on-going protection (Robinson in prep.).

The following table (Table 4) provides a basis for monitoring in the Chesney Landscape Zone. Where possible, this information will feed into the various Goulburn Broken Catchment monitoring programs. It identifies a general monitoring outline, including actions that may be conducted to determine progress towards achieving catchment biodiversity targets. It identifies the key biodiversity asset, key indicators for monitoring and the suggested frequency/intensity of monitoring.

It is important to note that many of the monitoring activities listed below are already taking place, through a variety of mechanisms (e.g. collection of data via local/catchment and Statewide databases and processes). Where existing mechanisms are already in place, they will continue to be used. However, there are other monitoring activities that are needed to provide useful information and allow for accurate assessment of the Catchments progress, towards meeting the Biodiversity Resource Condition Targets (RCTs).

A wide variety of monitoring actions are listed below. However this does not result in a binding commitment of those organisations (e.g. time or funding), to undertake all of the monitoring. Rather, this table is intended to be a source of ideas for agency staff and community groups (e.g. community groups may be interested in conducting future surveys). Interested persons can contact the Goulburn Broken Catchment Management Authority, Shepparton, or the Department of Primary Industries and Department of Sustainability and Environment Offices, Tatura, to discuss ideas and to ensure a coordinated approach (refer to Section 9.0 for contact information).

Whilst Table 4 outlines monitoring actions, evaluation of the BAP process also needs to occur to evaluate the effectiveness of the BAP process (e.g. in engaging people and prioritising works). An evaluation plan is therefore being developed to provide an overarching evaluation process for BAP in the Goulburn Broken Catchment.

Table 4 Monitoring - Chesney Landscape Zone			
Biodiversity Asset	**Indicator**	**Methodology**	**Frequency**
Granitic Hills Woodlands	Changes in extent	Remote sensing comparisons; CAMS inputs	Every 5 years
	Changes in condition – assumption based (area protected)	CAMS; TFN reporting; PV reporting; Shire reporting	Every 5 years
	Changes in condition based on VQA at sites	Site-based assessments of protected and unprotected sites	Every 5 years
	Changes in landscape context	Remote sensing comparisons, LCAT comparisons	Every 5 years
	Changes in the matrix – land use, % native pasture, abundance of scattered trees	Remote-sensing	Every 5 years
	Changes in landscape functionality	Site-based assessments using LFA or likely fauna-response groups (e.g. woodland birds, terrestrial invertebrates)	Every 5 years
Major Creeklines	Changes in condition and functionality (assumption-based) – area/number fenced; area/number with restored flows; area/number with added woody debris	CAMS inputs; ISC assessments	Every 5 years
	Changes in extent	Remote sensing; CAMS inputs	Every 5 years
	Changes in native fish community	Site-based surveys based on Monash University's current set of sampling sites	Every 5 years
Wetlands	Changes in landscape functionality of the riparian zone	Site-based assessments using LFA or likely fauna-response groups (e.g. woodland birds, terrestrial invertebrates)	Every 5 years
	Changes in extent	Remote-sensing comparisons	Every 5 years
	Changes in condition (assumption-based) – area/number fenced; area/number with restored flows	CAMS; GBCMA reporting	Every 5 years
	Changes in condition – site-based	ISC-type assessments of a set of managed and unmanaged wetlands	Every 5 years
Box Ironbark Forest	Changes in extent	Remote sensing comparisons; CAMS inputs	Every 5 years
	Changes in condition – assumption based (area protected)	CAMS; TFN reporting; PV reporting; Shire reporting	Every 5 years
	Changes in condition based on VQA at sites	Site-based assessments of protected and unprotected sites	Every 5 years
	Changes in landscape context	Remote sensing comparisons, LCAT comparisons	Every 5 years
	Changes in the matrix – land use, % native pasture, abundance of scattered trees	Remote-sensing	Every 5 years

	Changes in landscape functionality	Site-based assessments using LFA or likely fauna-response groups (e.g. Carpet Python, terrestrial invertebrates)	Every 5 years
Plains Grassy Woodland	Changes in extent Changes in condition – assumption based (area protected) Changes in condition based on VQA at sites Changes in landscape context Changes in the matrix – land use, % native pasture, abundance of scattered trees Changes in landscape functionality	Remote sensing comparisons; CAMS inputs CAMS; TFN reporting; PV reporting; Shire reporting Site-based assessments of protected and unprotected sites Remote sensing comparisons, LCAT comparisons Remote-sensing Site-based assessments using LFA or likely fauna-response groups (e.g. woodland birds, terrestrial invertebrates)	Every 5 years Every 5 years Every 5 years Every 5 years Every 5 years Every 5 years

* Five yearly refers to five times per year

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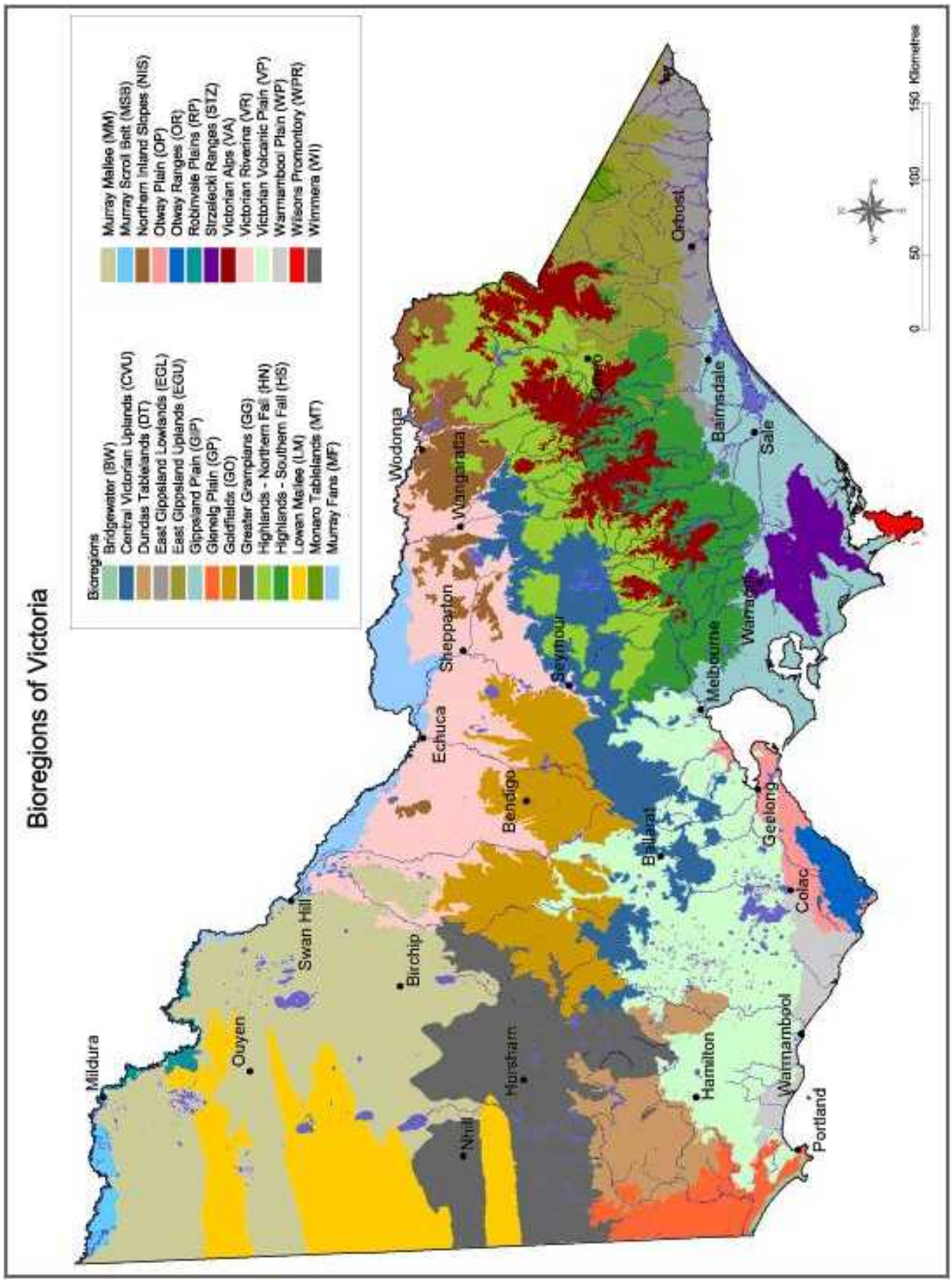
12.0 APPENDICES

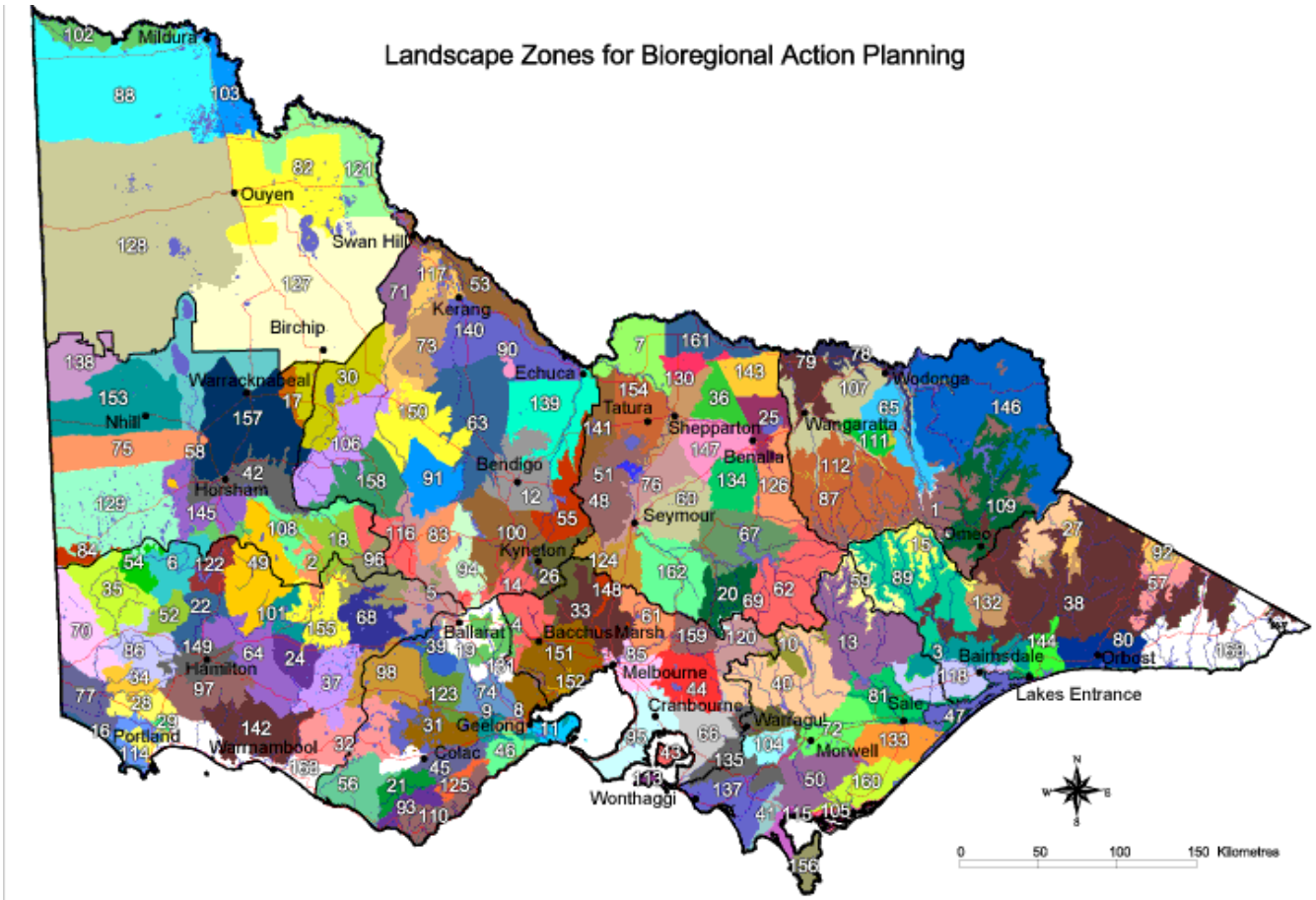
APPENDIX 1 – VICTORIAN BIOREGIONS

Source: www.dse.vic.gov.au



APPENDIX 2 – VICTORIAN LANDSCAPE ZONES

Source: www.dse.vic.gov.au



1. Alpine
2. Ararat Hills
3. Bairnsdale foothills
4. Ballan
5. Ballarat
6. Balmoral
7. Barmah Murray Fan
8. Barrabool
9. Barwon
10. Baw Baw
11. Bellarine
12. Bendigo
13. Black Range
14. Blackwood
15. Bogong
16. Bridgewater
17. Brim Lawler
18. Bulgara
19. Buninyong
20. Buxton
21. Carlisle
22. Cavendish
23. Central Creek
24. Chatsworth
25. Chesney
26. Cobaw
27. Cobbera
28. Cobboboonee
29. Codrington
30. Corack
31. Corangamite East
32. Corangamite West
33. Craigieburn
34. Crawford River
35. Dergholm
36. Dookie
37. Dundonnel
38. East Gippsland Uplands
39. Enfield
40. Erica
41. Fish Creek
42. Flat Grey Plains
43. French Island
44. Gembrook
45. Gerangamete
46. Gherang
47. Gippsland Lakes
48. Goldfields
49. Grampians
50. Grand Ridge
51. Graytown
52. Gringegalgona
53. Gunbower
54. Harrow
55. Heathcote
56. Heytesbury
57. Highlands - Far East
58. Hindmarsh
59. Howitt
60. Hughes Creek
61. Hurstbridge
62. Jamieson/Bulla
63. Jarklin
64. Karabeal
65. Kiewa
66. Koo Wee Rup
67. Lake Elidon
68. Lake Goldsmith
69. Lake Mountain
70. Lake Mundi
71. Lalbert
72. Latrobe
73. Leaghur
74. Leigh
75. Little Desert
76. Longwood
77. Lower Glenelg
78. Lower Kiewa
79. Lower Ovens
80. Lower Snowy
81. Macallister
82. Manangatang
83. Maryborough
84. Meerlieu
85. Melbourne
86. Merino
87. Mid King
88. Millewa - Carwarp
89. Mitchell
90. Mitiamo
91. Moliagul
92. Monaro Tableland
93. Moomowroong
94. Moorookyle
95. Mornington
96. Mount Cole
97. Mount Eccles
98. Mount Elephant
99. Mt Talbot
100. Muckelford
101. Muirhead
102. Murray Scroll Belt
103. Nangiloc - Colignan
104. Narracan
105. Nooramunga
106. North Central
107. North East
108. Northern Footslopes
109. Omeo
110. Otway
111. Ovens
112. Ovens & King
113. Phillip Island
114. Portland
115. Prom Plain
116. Pyrenees
117. Quambatook
118. Red Gum Plain
119. Reedy Lake
120. Reefton
121. Robinvale - Nyah
122. Rocklands
123. Rokewood
124. SW Goulburn
125. Sabine
126. Samaria/Lake Nillahcootie
127. South East Mallee
128. South West Mallee
129. South West Wimmera
130. Southern Goulburn
131. Steiglitz
132. Stirling
133. Stradbroke
134. Strathbogie
135. Strzelecki West
136. Tanjil
137. Tarwin/Powlett
138. Telopea Downs
139. Tennyson
140. Terrick
141. Timmering Dryland
142. Tower Hill
143. Tungamah
144. Tyres
145. Undulating Alluvial
146. Upper Murray Mitta
147. Violet Town
148. Wallan
149. Wannon
150. Wedderburn
151. Werribee
152. Werribee South
153. West Wimmera Plain
154. Western Goulburn
155. Willaura
156. Wilsons Promontory
157. Wimmera Plains
158. Wingallok
159. Yarra
160. Yarram
161. Yarrawonga Murray Fan
162. Yea
163. unnamed

APPENDIX 3 – GOULBURN BROKEN CATCHMENT TARGETS

This Appendix is intended to provide a summary of the Goulburn Broken Regional Catchment Strategy targets and priorities for biodiversity conservation. For further information please refer to GBCMA 2003.

The Goulburn Broken Catchment Management Strategy identifies the following biodiversity resource condition targets for native vegetation in the catchment:

1. Maintain the extent of all native vegetation types at 1999 levels in keeping with the goal of 'Net Gain' listed in Victoria's Biodiversity Strategy 1997,
2. Improve the quality of 90% of existing (2003) native vegetation by 10% by 2030,
3. Increase the cover of all endangered and applicable vulnerable Ecological Vegetation Classes to at least 15% of their pre-European vegetation cover by 2030,
4. Increase 2002 conservation status of 80% threatened flora and 60% threatened fauna by 2030,
5. Maintain the extent of all wetland types at 2003 levels where the extent (area and number) has declined since European settlement, and
6. Improve the condition of 70% of wetlands by 2030, using 2003 as the benchmark for condition (GBCMA 2003 p11).

Priorities for action to conserve biodiversity in the Goulburn Broken are driven by the conservation significance of the biodiversity asset. Regional investments in biodiversity conservation in the Goulburn Broken Catchment are driven by the following goals (in order of priority):

1. Protecting existing viable remnant habitats and the flora and fauna populations they contain (ie through reservation, covenants, management agreements, fencing and statutory planning),
2. Enhancing the existing viable habitats that are degraded (management by controlling threats such as pest plants and animals, grazing, salinity, promotion of natural regeneration and/or revegetation with understorey), and
3. Restoring under-represented biodiversity assets to their former extent by revegetation (to create corridors, buffers, patches of habitat) (GBCMA 2003).

APPENDIX 4 – THREATENED FLORA

List of threatened flora and their conservation status in the Chesney Landscape Zone (NRE 2002c). Table from Ahern et al 2003.

Common Name	Scientific Name	Australian Status	Victorian Status	FFG Listed	FFG Action Statement No	BNA Assessed (VR)	BNA Assessed (NIS)	Species number
Western Silver Wattle	*Acacia decora*		v			Un		27
Purple Wire-grass	*Aristida personata*		e			Un	Un	4795
Dookie Daisy	*Brachyscome gracilis*		v	L		Un		495
Plump Windmill Grass	*Chloris ventricosa*		v				Un	757
Small Scurf-pea	*Cullen parvum*	E	e	L	31	Un	Un	2773
Umbrella Grass	*Digitaria divaricatissima*		v					1045
Yellow Hyacinth-orchid	*Dipodium hamiltonianum*		e	L	82	Un		1067
Purple Diuris	*Diuris punctata var. punctata*		v	L				1084
Pale Spike-sedge	*Eleocharis pallens*		v				Un	1143
Common Fringe-sedge	*Fimbristylis dichotoma*		v			Un	Un	1368
Narrow Goodenia	*Goodenia macbarronii*	V	v	L	72	Un		1513
Swamp Star	*Hyposis exilis*		v			Un	Un	3777
Slender Club-sedge	*Isolepis congrua*		v	L		Un	Un	1773
Northern Sandalwood	*Santalum lancelatum*		e	L	75	Un		3005
Red Swainson-Pea	*Swainsona plagiotropis*	V	e	L			Un	3324
Mountain Swainson-pea	*Swainsona recta*	E	e	L		Un	Un	3326
Downy Swainson-pea	*Swainsona swainsonioides*		e	L			Un	3328

APPENDIX 5 – THREATENED FAUNA

List of threatened fauna and their conservation status in the Chesney Landscape Zone (NRE 2002d). Table from Ahern et al 2003.

Common Name	Scientific Name	EPBC Status	Victorian Status	FFG Listed	CAMBA listed	JAMBA listed	Species Code
Australasian Shoveler	*Anas rhynchotis*		v				212
Black Falcon	*Falco subniger*		v				238
Black-chinned Honeyeater	*Melithreptus gularis*		n				580
Black-eared Cuckoo	*Chrysococcyx osculans*		n				341
Blue-billed Duck	*Oxyura australis*		e	L			216
Brolga	*Grus rubicunda*		v	L			177
Brown Quail	*Coturnix ypsilophora*		n				10
Brown Treecreeper	*Climacteris picumnus*		n				555
Bush Stone-curlew	*Burhinus grallarius*		e	L			174
Carpet Python	*Morelia spilota metcalfei*		e	L			2969
Crimson-spotted Rainbowfish	*Melanotaenia fluviatilis*		dd	L			4060
Diamond Firetail	*Stagonopleura guttata*		v	L			652
Eastern Bearded Dragon	*Pogona barbata*		dd				2177
Freckled Duck	*Stictonetta naevosa*		e	L			214
Glossy Ibis	*Plegadis falcinellus*		n		Y		178
Golden Perch	*Macquaria ambigua*		v				4095
Great Egret	*Ardea alba*		v	L	Y	Y	187
Grey-crowned Babbler	*Pomatostomus temporalis*		e	L			443
Growling Grass Frog	*Litoria raniformis*	V	e	L			3207
Hardhead	*Aythya australis*		v				215
Hooded Robin	*Melanodryas cucullata*		n	L			385
Latham's Snipe	*Gallinago hardwickii*		n		Y	Y	168
Macquarie Perch	*Macquaria australasica*	E	e	L			4096
Murray Cod	*Maccullochella peelii peelii*	V	e	L			4094
Musk Duck	*Biziura lobata*		v				217
Pained Honeyeater	*Graniella picta*		v	L			598
Pied Cormorant	*Phalacrocorax varius*		n				99
Red-chested Button-quail	*Turnix pyrrhothorax*		v	L			19
Regent Honeyeater	*Xanhomyza phrygia*	E	cr	L			603
Royal Spoonbill	*Platalea regia*		v				181
Southern Myotis	*Myotis macropus*		n				1357
Speckled Warbler	*Chthonicola sagittata*		v	L			504
Squirrel Glider	*Petaurus norfolcensis*		e	L			1137
Swift Parrot	*Lathamus discolor*	E	e	L			309
Tree Goanna	*Varanus varius*		v				2283
Turquoise Parrot	*Neophema pulchella*		n	L			302
White-bellied Sea-Eagle	*Haliaeetus leucogaster*		v	L	Y		226

Definitions – C: CAMBA listed (China-Australia Migratory Bird Agreement); J: JAMBA listed (Japan-Australia Migratory Bird Agreement); V: vulnerable in Australia; E: Endangered in Australia; e: endangered in Victoria; v: vulnerable in Victoria; n: near threatened in Victoria; L: listed under FFG; dd: data dificiant in Victoria; cr: critically endangered in Victoria.

APPENDIX 6 – SITE PRIORITISATION METHOD

To determine the conservation significance and the need for ground-truthing (surveying), sites were prioritised according to the following table (GBCMA in prep). If ground-truthing was required and no survey was completed (eg. more than 100 sites required survey), the minimum priority status was applied. *LCM refers to the Landscape Context Model.

Conservation status of EVC	Potential habitat within known dispersal range of threatened taxon or focal species, or within priority areas as identified by LCM*	EVC Patch Size	Ground-truthing required to confirm priority rank on basis of vegetation condition	Priority Status: Very High, High, Medium, Low
Endangered	Y	<5ha	Ground-truthing needed	VH or H
E	N	<5ha	Ground-truthing needed	VH or H
E	Y	5-10ha	Ground-truthing needed	VH or H
E	N	5-10ha	Ground-truthing needed	VH or H
E	Y	11-40ha		VH
E	N	11-40ha		VH
E	Y	>40ha		VH
E	N	>40ha		VH
Vulnerable	Y	<5ha	Ground-truthing needed	M, H or VH
V	N	<5ha	Ground-truthing needed	M or H or VH
V	Y	5-10ha	Ground-truthing needed	M, H or VH
V	N	5-10ha	Ground-truthing needed	M or H or VH
V	Y	11-40ha		VH
V	N	11-40ha	Ground-truthing needed	H or VH
V	Y	>40ha		VH
V	N	>40ha		VH
Rare	Y	<5ha	Ground-truthing needed	M, H or VH
R	N	<5ha	Ground-truthing needed	M or H or VH
R	Y	5-10ha	Ground-truthing needed	M, H or VH
R	N	5-10ha	Ground-truthing needed	M or H or VH
R	Y	11-40ha		VH
R	N	11-40ha	Ground-truthing needed	H or VH
R	Y	>40ha		VH
R	N	>40ha		VH
Depleted	Y	<5ha	Ground-truthing needed	M or H
D	N	<5ha	Ground-truthing needed	L or M
D	Y	5-10ha	Ground-truthing needed	M or H
D	N	5-10ha	Ground-truthing needed	L, M or H
D	Y	11-40ha		H
D	N	11-40ha	Ground-truthing needed	M or H
D	Y	>40ha		VH
D	N	>40ha		VH
Least Concern	Y	<5ha		M
LC	N	<5ha		L
LC	Y	5-10ha		M
LC	N	5-10ha	Ground-truthing needed	L or M
LC	Y	11-40ha	Ground-truthing needed	M or H
LC	N	11-40ha	Ground-truthing needed	L or M
LC	Y	>40ha	Ground-truthing needed	H or VH
LC	N	>40ha	Ground-truthing needed	H or VH

APPENDIX 7 –VEGETATION QUALITY ANALYSIS (VQA) ASSESSMENT FORM

There are four survey forms for vegetation types in the Chesney Landscape Zone (eg. grassland, wetland, plains grassy woodlands or forests and riverine woodlands or forests). This example is the plains grassy forests or woodland sheet. Refer to DSE 2004 for further information.

ASSESSMENT OF HABITAT QUALITY – Self-assessment method

Site score sheet 12. Plains Grassy FORESTS or WOODLANDS

Component & Benchmark	Observations	Quality Range		Score
LARGE TREES Defined as trunk diameter or circumference at breast height. Apply to both WOODLANDS and FORESTS: **Diameter** 80 cm **(Circumference)** (250 cm)	**Number of large trees /ha (100m x 100m)**	*no large trees*	0	
		up to	7 LARGE TREES /ha in WOODLANDS 12 LARGE TREES /ha in FORESTS 1	
		more than	7 LARGE TREES /ha in WOODLANDS 12 LARGE TREES /ha in FORESTS 2	
CANOPY COVER Defined as the tallest stratum of native trees greater than 5m tall. Apply as: Plains Grassy WOODLANDS 10% benchmark Plains Grassy FORESTS 30% benchmark	% canopy cover **% cover/benchmark x 100**	*less than*	25% CANOPY COVER 0	
		between	25 – 50% CANOPY COVER 0.5	
		more than	50% CANOPY COVER 1	
UNDERSTOREY **(B)** Tick appropriate boxes for PRESENCE of native vegetation (i.e. different life forms) Tree >5m; Large herb >1m; Grass or grasslike <1m; Other; Shrub 1-5m; Small herb <1m; Fern; Small shrub <1m; Grass or grasslike >1m; Moss or lichen	**(A) % cover of native species**	*minimal*	COVER *less than* 10% 0	
		low	COVER *between* 10% – 25% 2	
		reduced	COVER *between* 25% - 75% AND *less than* 4 boxes ticked for WOODLANDS *less than* 5 boxes ticked for FORESTS 3 OR 4 or *more* boxes for ticked WOODLANDS 5 or *more* boxes ticked for FORESTS 4	
		adequate	COVER *more than* 75% AND *less than* 4 boxes for ticked WOODLANDS *less than* 5 boxes ticked for FORESTS 4 OR 4 or *more* boxes for ticked WOODLANDS 5 or *more* boxes ticked for FORESTS 5	
WEEDINESS	**% weed cover**		50% *or more* WEED COVER 0	
		between	25% - 50% WEED COVER 1	
		between	5% - 25% WEED COVER 2	
		less than	5% WEED COVER 3	
RECRUITMENT A woody species is considered to be recruiting when the number of immature plants (i.e. not flowering or fruiting) of an individual woody species is at least 10% of the total population of that species	(A) Number of *woody species* present (B) Number of *woody species* recruiting **% recruitment = B/A x100**	*less than*	30% woody species RECRUITING 0	
		between	30% -70% woody species RECRUITING 1	
			70% *or more* woody species RECRUITING 2	
ORGANIC LITTER Defined as small branches (less than 10cm diameter), twigs, leaves and other fallen or dead organic matter	**% cover of organic litter**	*less than*	5% ORGANIC LITTER for WOODLANDS 10% ORGANIC LITTER for FORESTS 0	
		more than	5% ORGANIC LITTER for WOODLANDS 10% ORGANIC LITTER for FORESTS 1	
LOGS Defined by length of stumps, fallen trees or branches at least 10 cm diameter (30 cm circumference)	Length of logs greater than 10 cm dia in 50m x50m (i.e. 0.25 ha) **Logs (m) x 4 (i.e. m/ha)**	*no logs*	0	
		less than	25m LOGS/ha 0.5	
		more than	25m LOGS/ha 1	
SIZE Defined by the size of the area being assessed **AND** any adjoining native vegetation		*less than*	2 ha 0	
		between	2 – 10 ha 1	
		more than	10 ha 2	
NEIGHBOURHOOD Defined by the % area covered by native vegetation within 1 km of the site being assessed		*less than*	10% area covered 0	
		between	10% - 50% area covered 1	
		more than	50% area covered 2	
CORE AREA Defined by the distance of the site being assessed from a block of native vegetation greater than 50ha		*1 km or more*	from 50 ha block of native vegetation 0	
		less than 1 km	from 50 ha block of native vegetation 1	

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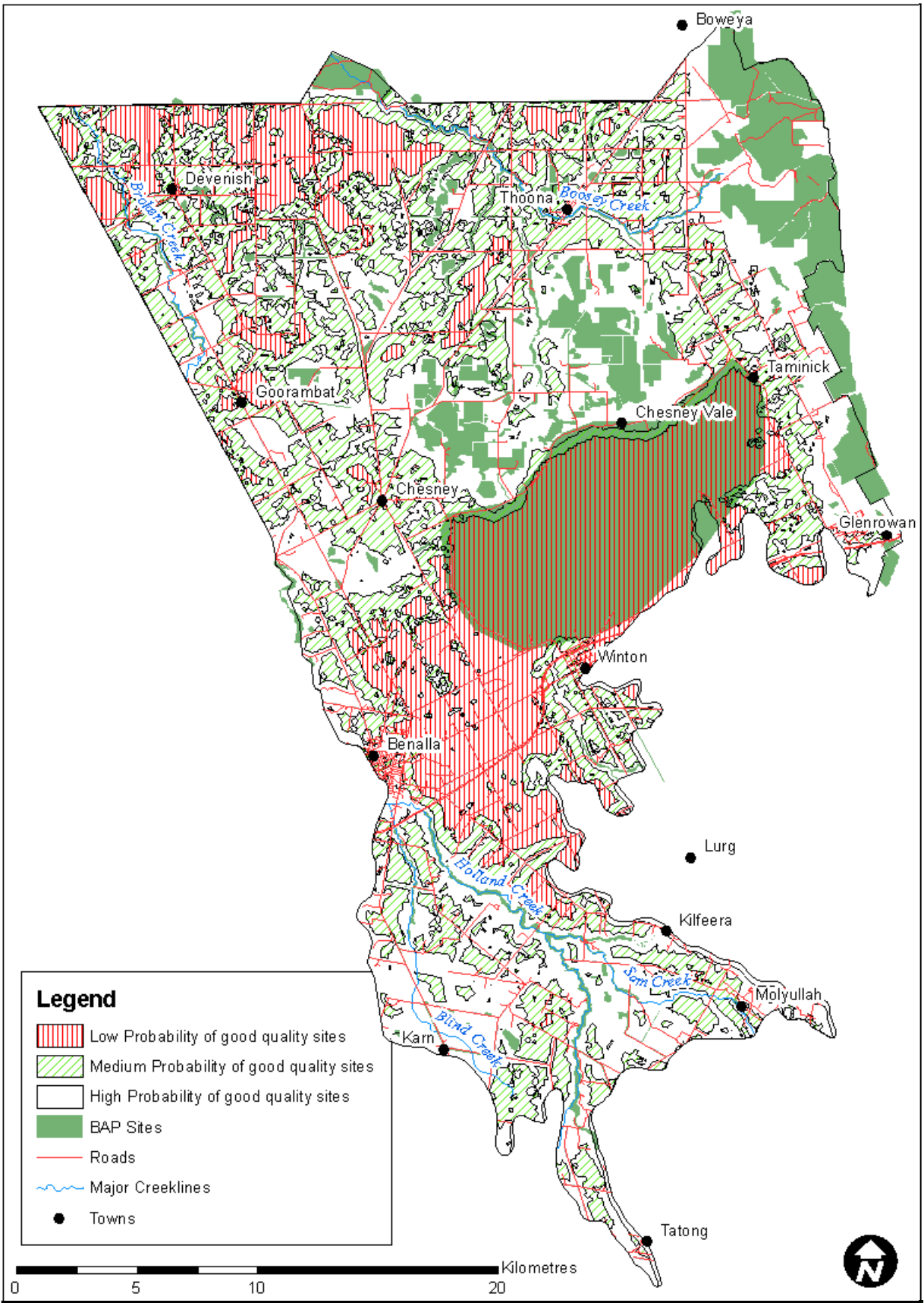
Assessment of Habitat Quality (total)

APPENDIX 8 – LANDSCAPE CONTEXT MODEL

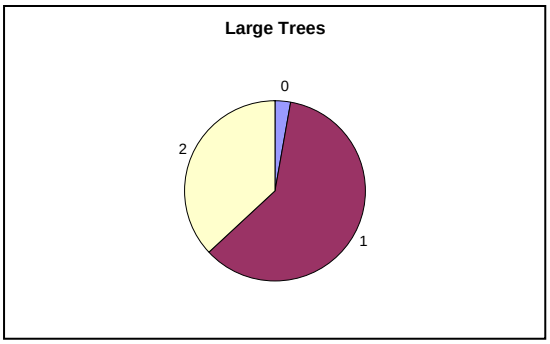
The Landscape Context Model Mapping is now also contained on the BAP CD (Version 1, January 2008)* or on the GBCMA website (www.gbcma.vic.gov.au). This mapping can be used in conjunction with the BAP mapping and this Conservation Plan.

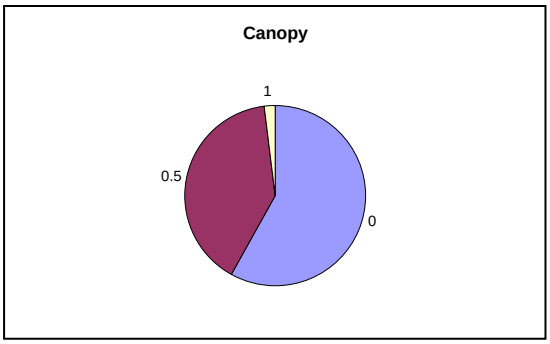


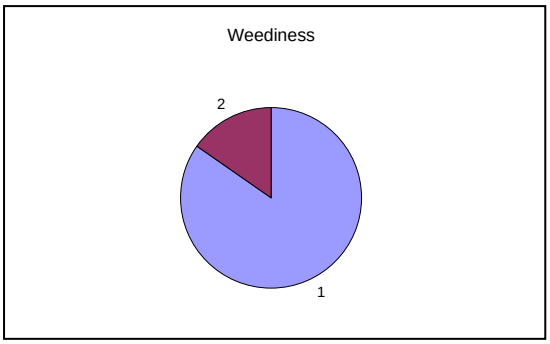
CHESNEY LANDSCAPE ZONE LANDSCAPE CONTEXT MODEL

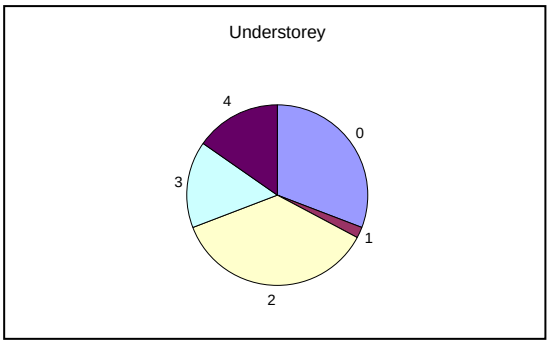
* To obtain copies of the BAP CD (Version 1, January 2008), or for further information on BAP, please contact bap@gbcma.vic.gov.au OR the Biodiversity Action Planning Officer, Department of Sustainability and Environment (DSE) Benalla at Ph: (03) 57 611 611

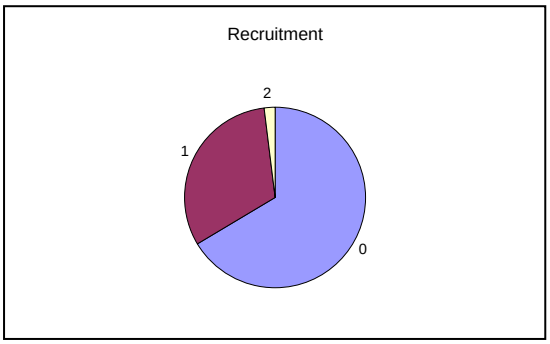
APPENDIX 9 – VEGETATION QUALITY ASSESSMENT RESULTS

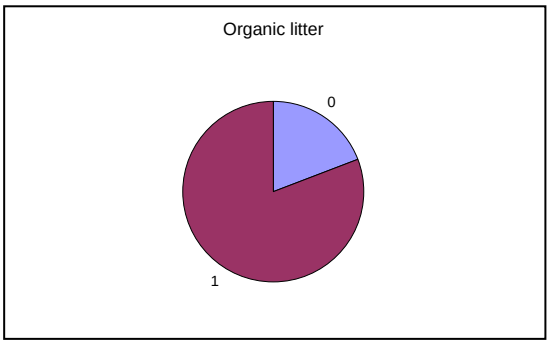


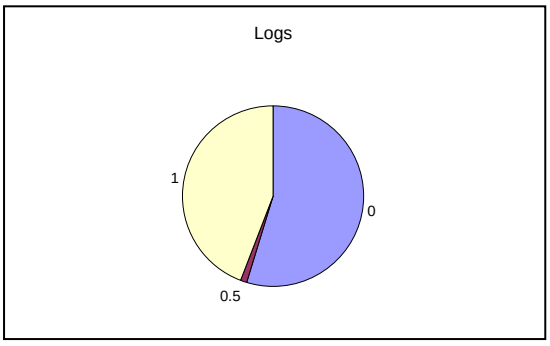


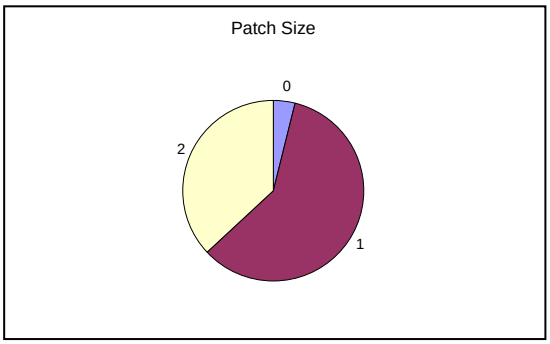


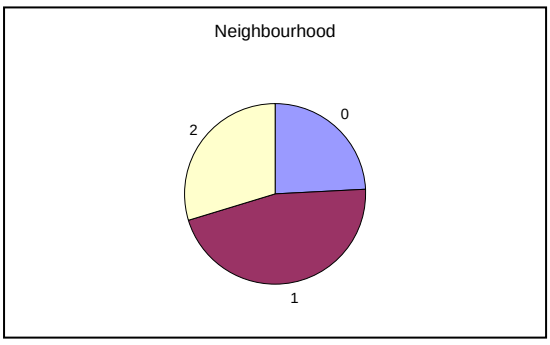


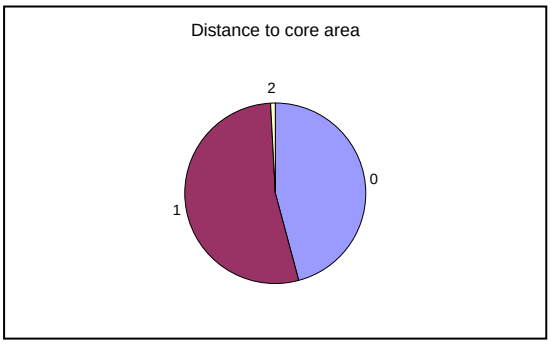












APPENDIX 10 – BIRD LIST

* List includes birds surveyed during 92 site (20 minute) surveys. It is not intended to represent the entire bird population in the Chesney Landscape Zone. For further information on birds surveyed at each site refer to Appendix 11 (CD).

Species	Totals
Australian Magpie	21
White-Plumed H/E	18
Eastern Rosella	17
Willie Wagtail	15
Striated Pardalote	14
Noisy Miner	13
Red-Rumped Parrot	12
Sulphur-Crested Cockatoo	12
Australian Raven	10
Black-Faced Cuckoo-Shrike	8
Dusky Woodswallow	8
Galah	8
Brown Treecreeper	7
Tree Martin	7
White-Winged Chough	7
Laughing Kookaburra	5
Peaceful Dove	5
Rufous Whistler	5
Brown Thornbill	4
Grey Faintail	4
Magpie-Lark	4
Rainbow Bee-Eater	4
Welcome Swallow	4
Common Bronzewing	3
Common Starling*	3
Little Corella	3
Restless Flycatcher	3
Rufous Songlark	3
Yellow-Rumped Thornbill	3
Crested Pigeon	2
Diamond Firetail	2
Grey Butcherbird	2
Grey Shrike-Thrush	2
Masked Lapwing	2
Superb Fairy-Wren	2
Australian White Ibis	1
Black-Tailed Native Hen	1
Brown Goshawk	1
Brown Songlark	1
Common Blackbird*	1
Crested Shrike-Tit	1
European Goldfinch*	1

Species	Totals
Grey Teal	1
Hooded Robin	1
House Sparrow*	1
Little Friarbird	1
Little Pied Cormorant	1
Little Raven	1
Pacific Black Duck	1
Red Wattlebird	1
Richard's Pipit	1
Sacred Kingfisher	1
Sparrowhawk	1
Wedge-Tailed Eagle	1
White-Faced Heron	1
White-Necked Heron	1
Yellow Billed Spoonbill	1
Yellow-Tufted Honeyeater	1

APPENDIX 11 – PRIORTY SITE INFORMATION (MAPPING):

Mapping and accompanying information for each of the 'priority BAP sites' is now contained on the BAP CD (Version 1, January 2008) or on the GBCMA website (www.gbcma.vic.gov.au). This mapping data is designed to be used in conjunction with this Conservation Plan to assist users to obtain further information on priority sites.

HOW TO OBTAIN INFORMATION FROM THE BAP CD:

1. Locate the available mapping data by clicking on the 'BAP Mapping' hyperlink#.
2. Click on the hyperlink relating to the Zone of interest under the 'BAP Mapping' subheading' (e.g. 'Barmah').
3. This will lead to a map identifying priority BAP sites within the chosen Zone.
4. On this map, locate the area/site of interest by clicking on the area.
5. Zoom in or out to the areas/sites of interest, using the North, South, East, West arrows.
6. Click on a BAP site to view the Attribute Table information for that site.
7. Refer to the list of birds surveyed at each site (where available).
8. An explanation of the data provided in the Attribute Table, is provided in the 'Attribute Table Definition' document under the BAP Mapping Subheading
9. For further information to assist with the identification of opportunities to link the BAP sites, refer to 'BAP Mapping', 'Landscape Context Model Maps' and choose the relevant Zone name hyperlink(e.g. 'Barmah').
10. To access the data via the Geographical Information System (GIS) (where available) select 'BAP Mapping',
11. 'GIS data' then either 'BAP GIS layer' or 'LCM GIS layer'.

Note: Mapping data for each Landscape Zone can also be located by clicking on the 'BAP Zones' hyperlink and choosing the Landscape Zone of interest from the map of the Goulburn Broken Catchment.

To obtain copies of the BAP CD (Version 1, January 2008), or for further information on BAP, please contact bap@gbcma.vic.gov.au OR the Biodiversity Action Planning Officer, Department of Sustainability and Environment (DSE) Benalla at Ph: (03) 57 611 611