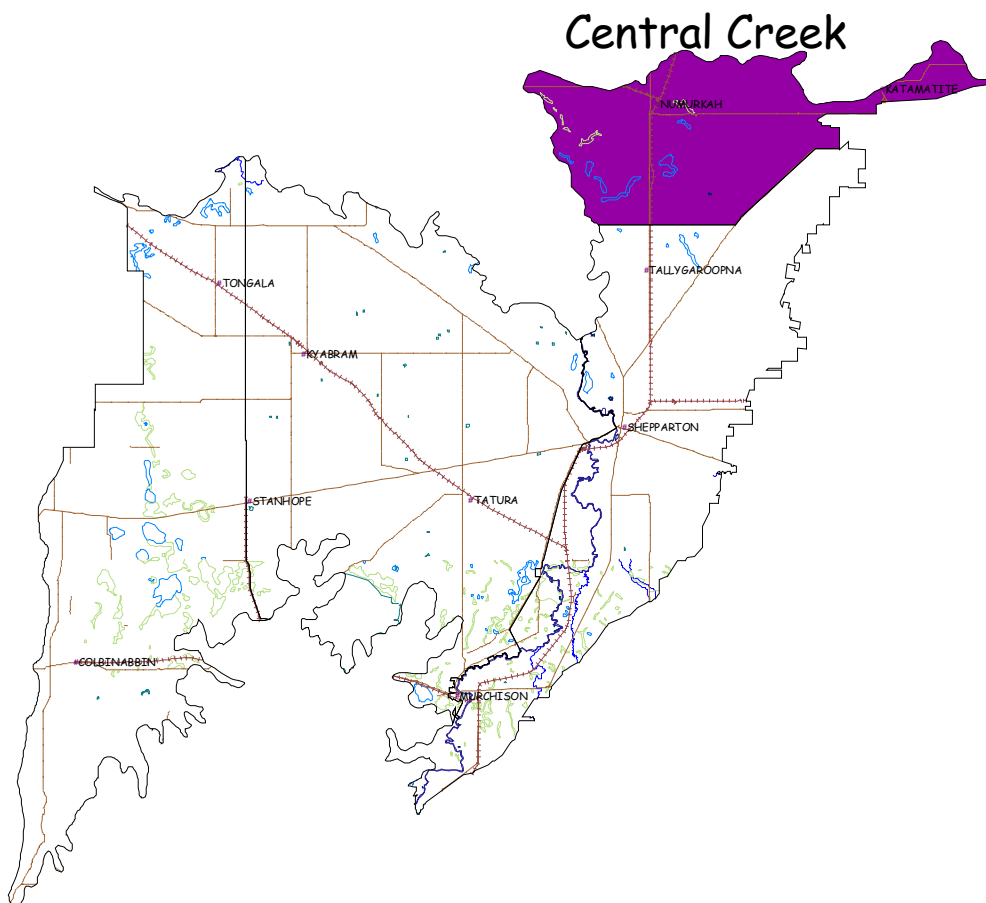


# 6. Central Creek Landscape Zone



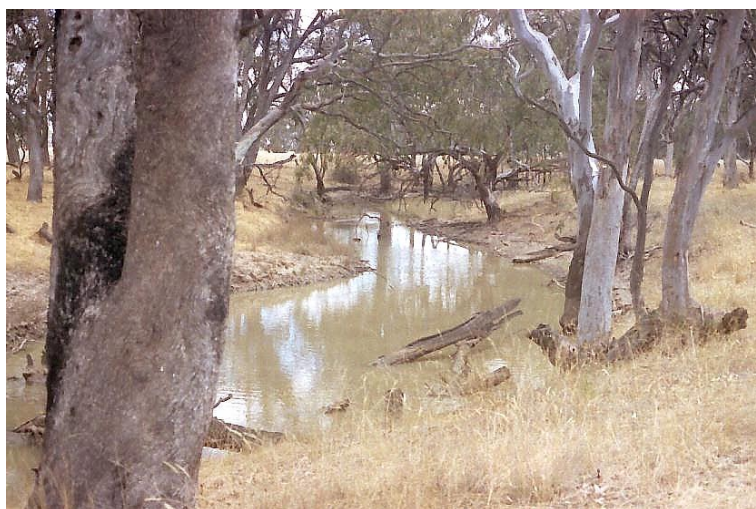
## 6. Central Creek Landscape Zone

### 6.1 Central Creek Landscape Zone description

Central Creek zone (41,171 ha; 6.8% of the plan area) is bordered in the north by Murray Fans bioregional boundary, running roughly east-west from Boosey to near Waaia; in the west by Murray Fans bioregional boundary, running from near Waaia south-east to near Bunbartha; in the south by Boundary Road; and in the east by Katamatite–Shepparton Road, a section of channel, and a line from Katamatite to Boosey. Numurkah and Katamatite are the main townships. The zone lies within the Local Government Area of Moira (Map 11).

Central Creek zone is contained within the Broken River Basin (LCC 1989). The drainage system which characterises the zone is formed by the meanderings of Broken Creek and Nine Mile Creek.

These streams diverge from a single location (at what is now the terminal point of East Goulburn Main Channel, north of Invergordon North), looping north (through Numurkah) and south (through Wunghnu), respectively, to reunite near Walsh's Bridge Road as Broken Creek. Stream condition is moderate to poor (Map 16).



Remnant *creepline grassy woodland* (Grey Box, River Red Gum) on Public Land Water Frontage along Broken Creek, near Katamatite. A0148



Relict Buloke, Grey Box and White Cypress-pine on laser-levelled irrigated grazing land on Dip Bridge Road, Dunbulbalane. A0149

The zone is comprised of Quaternary alluvial sediments, with the more recent deposits loosely associated with the course of the present creek system, but diverting south of Numurkah (rather than following Broken Creek to the west). The riverine plain land system is relatively well-drained in the north and west of the zone, with leveed streams and some channels and depressions. However,

the landform further east, around Marungi, Drumanure and Invergordon North, is that of a slightly raised flat plain with few surface features (LCC 1983).

## 6. Central Creek Landscape Zone

### 6.1 Central Creek Landscape Zone description (cont'd)

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Pre-1750 vegetation cover over most of the zone, in association with the meandering creek system, was *plains grassy woodland / gilgai plains woodland / wetland mosaic* (e) (Map 29). This vegetation was dominated by Grey Box, but also included Yellow Box, White Box, Black Box, River Red Gum, White Cypress-pine and Buloke, with grasses and chenopods common in the understorey (LCC 1983). Along the streambeds themselves were *creekline grassy woodland* (e), *creekline grassy woodland / redgum wetland mosaic* (e), or *drainage line complex* (e). These EVCs comprised pure River Red Gum, or a mix with Yellow Box, Grey Box or Black Box (LCC 1983). On better-drained parts of the plain, in the south-east and south-west of the zone, *pine box woodland / riverina plains grassy woodland mosaic* (e) and *plains grassy woodland* (e) EVCs (Grey Box, White Cypress-pine) were extensive. As is the case across much of the wider plan area today, the main refuge of remnant native vegetation is basically the stream frontage (Robinson 1998b), with roadside remnants, where they persist, tending to be poorly connected and having highly disturbed understorey (Map 30). Native vegetation is virtually absent from private land in this zone, other than as individual trees or small, usually degraded scraps of woodland (Map 31).

Land use in the zone is quite varied. Irrigated orchards around Invergordon North produce berries and stone or pome fruits. Further south around Marungi, irrigated dairying and mixed farming occurs. In other parts of the zone, dryland areas support mainly mixed cropping and cattle grazing, while low intensity irrigation and mixed farming occurs where landform and infrastructure permit (LCC 1983).

Detailed maps showing the locations of Pre-1750 EVCs (Map 29), Current EVCs (Map 30), EVC conservation status and public land (Map 31), threatened flora (Map 33), threatened fauna (Map 32) and 1A threatened species and management actions (Map 34) are at the end of this document.

For Threatened Biodiversity Assets, the codes used in brackets are:

- Conservation status Victoria - lower case, Australia - upper case; followed by
- BNA priority / risk rankings for threatened taxa (1A, 2A, 2B, etc., or NR – not ranked).

## 6. Central Creek Landscape Zone

### 6.1 Central Creek Landscape Zone description (cont'd)

**Table 10. Total area of pre-1750 and extant EVCs in the Central Creek Landscape zone**

EVC Group	EVC Number	EVC Bioregional Conservation Status	EVC Name	Pre-1750 Area (ha)	Current Area (ha)
14	294	E	Plains Grassy Woodland/Gilgai Plains Woodland/Wetland Mosaic	27628	453
14	867	E	Pine Box Woodland/Riverina Plains Grassy Woodland Mosaic	5556	13
14	55	E	Plains Grassy Woodland	4584	85
15	68	E	Creekline Grassy Woodland	622	161
14	868	E	Pine Box Woodland	616	6
19	125	E	Plains Grassy Wetland	564	5
19	333	E	Red Gum Wetland/Plains Grassy Wetland Mosaic	538	19
15	168	E	Drainage Line Complex	535	27
19	292	E	Red Gum Wetland	239	8
19	74	E	Wetland Formation	183	1
15	869	E	Creekline Grassy Woodland/Red Gum Wetland Mosaic	96	27
14	260	E	Gilgai Plain Woodland/Wetland/Shrubby Riverina Plains Grassy Woodland Mosaic	7	0
19	300	V	Reed Swamp	3	0
<b>TOTAL</b>				<b>41171</b>	<b>805</b>
99	997	NA	Private Land No Tree Cover	0	40366

**Table 11. Total area and number of current EVCs in each conservation status in the Central Creek Landscape zone.**

EVC Bioregional Conservation Status	Hectares	Number of EVCs
Endangered	805	11
Vulnerable	0	0
Depleted	0	0
Rare	0	0
Least Concern	0	0
Presumed Extinct	0	0

## 6. Central Creek Landscape Zone

### 6.1 Central Creek Landscape Zone description (cont'd)

**Table 12. List of current threatened flora and their conservation status in the Central Creek Landscape zone (as at December 2002, NRE 2002c).**

Latin Name	English Name	Australian Status	Victorian Status	FFG Listed	FFG Action Statement Number	Recovery Plan	BNA Assessed	Species number
<i>Allocasuarina luehmannii</i>	Buloke			L			Un	678
<i>Alternanthera nodiflora</i>	Common Joyweed		k				Un	185
<i>Atriplex spinibractea</i>	Spiny-fruit Saltbush		e				Un	4608
<i>Austrostipa setacea</i>	Corkscrew Spear-grass		r				Un	3292
<i>Brachyscome chrysoglossa</i>	Yellow-tongue Daisy		v	L				3654
<i>Brachyscome muelleroides</i>	Mueller Daisy	V	e	L				465
<i>Cardamine moirensis</i>	Riverina Bitter-cress		r				Un	5032
<i>Eryngium paludosum</i>	Long Eryngium		v					1238
<i>Eulalia aurea</i>	Silky Browntop		r				Un	1328
<i>Hakea tephrosperma</i>	Hooked Needlewood		v				Un	1572
<i>Haloragis glauca f. glauca</i>	Bluish Raspwort		k					3766
<i>Hypoxis exilis</i>	Swamp Star		v				Un	3777
<i>Leiocarpa panaetioides</i>	Woolly Buttons		r				Un	1945
<i>Lepidium pseudohyssopifolium</i>	Native Peppercress		k				Un	1908
<i>Maireana aphylla</i>	Leafless Bluebush		v				Un	2096
<i>Minuria integerrima</i>	Smooth Minuria		r				Un	2201
<i>Myoporum montanum</i>	Waterbush		r				Un	2240
<i>Myriophyllum gracile var. lineare</i>	Slender Water-milfoil		e				Un	4517
<i>Panicum decompositum</i>	Australian Millet		k				Un	2403
<i>Panicum laevinode</i>	Pepper Grass		v				Un	4808
<i>Panicum queenslandicum var. queenslandicum</i>	Coolibah Grass		e				Un	4806
<i>Poa fordeana</i>	Forde Poa		k				Un	2593
<i>Ranunculus sessiliflorus var. pilulifer</i>	Annual Buttercup		k				Un	4911
<i>Sclerolaena muricata var. muricata</i>	Black Roly-poly		k				Un	4974
<i>Sida trichopoda</i>	Narrow-leaf Sida		r				Un	3147
<i>Templetonia stenophylla</i>	Leafy Templetonia		r				Un	3341
<i>Triglochin dubium</i>	Slender Water-ribbons		r				Un	5010
<i>Tripogon loliiformis</i>	Rye Beetle-grass		r				Un	3455

## 6. Central Creek Landscape Zone

### 6.1 Central Creek Landscape Zone description (cont'd)

**Table 13. List of current threatened fauna and their conservation status in the Central Creek Landscape zone (as at December 2002, NRE 2002d).**

English Name	Latin Name	Australian Status	Victorian Status	FFG Listed	FFG Action Statement Number	Recovery Plan	BNA Assessed	Species number
Apostlebird	<i>Struthidea cinerea</i>		v					675
Australasian Shoveler	<i>Anas rhynchotis</i>		v				Un	212
Black Falcon	<i>Falco subniger</i>		e					238
Brolga	<i>Grus rubicunda</i>		v	L				177
Bush Stone-curlew	<i>Burhinus grallarius</i>		e	L	78			174
Diamond Firetail	<i>Stagonopleura guttata</i>			L			Un	652
Eastern Curlew	<i>Numenius madagascariensis</i>		l				Un	149
Freckled Duck	<i>Stictonetta naevosa</i>		e	L	105			214
Glossy Ibis	<i>Plegadis falcinellus</i>		v					178
Great Egret	<i>Ardea alba</i>		e	L				187
Hardhead	<i>Aythya australis</i>		v				Un	215
Intermediate Egret	<i>Ardea intermedia</i>		c	L				186
Little Bittern	<i>Ixobrychus minutus</i>		e					195
Little Egret	<i>Egretta garzetta</i>		c					185
Magpie Goose	<i>Anseranas semipalmata</i>		e				Un	199
Musk Duck	<i>Biziura lobata</i>		v				Un	217
Nankeen Night Heron	<i>Nycticorax caledonicus</i>		v					192
Red-backed Kingfisher	<i>Todiramphus pyrrhopygia</i>		v				Un	325
Royal Spoonbill	<i>Platalea regia</i>		v					181
Superb Parrot	<i>Polytelis swainsonii</i>	V	e	L	33			277
Swift Parrot	<i>Lathamus discolor</i>	E	e	L	169	Y		309
Tree Goanna	<i>Varanus varius</i>		i				Un	2283
Whiskered Tern	<i>Chlidonias hybridus</i>		l				Un	110
White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>		e	L	60			226

## **6. Central Creek Landscape Zone**

### **6.2 Central Creek Landscape Zone priorities**

#### **6.2.1 Summary of priority biodiversity actions for Central Creek Landscape zone**

- Protect and enhance native vegetation communities within Black Swamp (Nine Mile Creek) Wildlife Reserve (C19) and Bushland Reserves H26, 27, 32, 33 and H40; and conserve threatened flora and fauna taxa which these reserves support.
- Prevent further decline in biodiversity values of native vegetation due to domestic grazing on public land by removal of stock, and fencing of relevant reserves where needed. Give priority to Black Swamp Wildlife Reserve; Bushland Reserves H26, 27, 32, 33 and H40; all Public Land Water Frontage (K1) and Streamside Reserve (K10-12) on Broken, Nine Mile and Boosey Creeks; significant roadside on Katamatite–Nathalia Road, Dunbulbalane; and Numurkah Rifle Range
- Fully protect high-quality roadsides including on Katamatite–Nathalia Road, Dunbulbalane.
- Give priority to protection and management of all Public Land Water Frontage (K1) and Streamside Reserve (K10-12) on Broken, Nine Mile and Boosey Creeks.
- Identify localised sites of high biodiversity value and provide appropriate protection and management. Select the most strategic sites around which to develop Local Area Plans, where appropriate. These plans would use vegetation restoration to expand and extend existing remnants across tenures, for the most effective biodiversity outcome. Priority sites include Black Swamp Wildlife Reserve and BRs H26, 27, 32, 33 and H40, on Broken–Boosey Creek system; all Public Land Water Frontage (K1) and Streamside Reserve (K10-12) on Broken, Nine Mile and Boosey Creeks; Numurkah–Nathalia Railway Reserve, near Numurkah; significant roadside on Katamatite–Nathalia Road, Dunbulbalane; Numurkah Rifle Range; and significant freehold remnants at Mundoona.

## 6. Central Creek Landscape Zone

### 6.3 Private Land

#### **Land Tenure Details:**

This tenure type includes all private land in the zone, with associated creeklines, and occupies at least 90% of the total zone area. Farmland tends to be extensively cleared in both dryland and irrigated sites, with any remnant woodland being generally small (< 1 ha) and lacking native understorey. Some larger patches are found where freehold abuts the main creeklines, but these are usually grazed, sometimes to the water edge. It is difficult to infer, on many sites, whether pasture-grass invasion from freehold onto creeklines and water frontages has been the cause or the consequence of domestic grazing. Todd (1999) identified private land (70 ha) close and adjacent to Broken Creek (on junction with Nine Mile Creek) at Mundoona as 'a priority area for protection and establishment of protected areas'.

#### **Land Manager:**

Private landholders

#### **Stakeholders:**

Key Lc, LGA, DSE, DPI, PV, CMA

Other TFN, LFW, BG, GAV, CVA, GNP, FNC, VAA, VFF

**Threatened Biodiversity Assets** (in brackets: Cons status Vic - lower case, Aust - upper case; followed by BNA priority / risk rankings for threatened taxa = 1A, 2B, etc., or un - unassessed):

**EVCs:** Vegetation types formerly supported on land in this tenure included primarily *plains grassy woodland / gilgai plains woodland / wetland mosaic* (e), with lesser areas of *plains grassy woodland* (e), *pine box woodland / riverina plains grassy woodland mosaic* (e) and *pine box woodland* (e). River Red Gum, often with Grey Box, dominated wetter sites and drainage lines, while Grey Box, Yellow Box and White Cypress-pine featured on the better-drained plains. The best remnants today are close to the main creeklines, but generally have highly degraded understorey communities. Freehold identified by Todd (1999) at Mundoona supports *creekline grassy woodland* (e) and *plains grassy woodland / gilgai plains woodland / wetland mosaic* (e), with Buloke and White Cypress-pine still present in the overstorey.

**Threatened flora:** Bluish Raspwort (k, 1B), Long Eryngium (v, 1B), Mueller Daisy (Ve, 3A), Pin Sida (v, 3B), Ridged Water-milfoil (Vv, 1B), Yellow-tongue Daisy (v, 1B).



*Eryngium paludosum* (Photo: John Eichler)

## 6. Central Creek Landscape Zone

### 6.3 Private Land (cont'd)

**Threatened fauna:** Apostlebird (v, 3B), Brolga (v, 2B), Bush Stone-curlew (e, 1A), Glossy Ibis (v, 3B), Great Egret (e, unr), Intermediate Egret (cen, 1A), Little Bittern (e, 1A), Nankeen Night Heron (v, 1B), Royal Spoonbill (v, 1B), Superb Parrot (Ve, unr), White-bellied Sea-eagle (e, unr).



Apostlebird (Photo: DSE/McCann)

#### Recommended actions:

##### Protection of existing remnants:

- Determine priorities for protection of freehold remnants throughout the zone and apply voluntary programs, incentives and/or planning controls, as appropriate. In particular, encourage and assist the owner of priority remnants at Mundoona (see **Land tenure** above) to protect and maintain existing biodiversity values.
- Assist Landcare groups and LFW proponents and extension officers to inform landholders of their potential role in conserving biodiversity, and to coordinate their involvement for the best possible outcome.
- Investigate the potential of freehold remnants to complement remnant native vegetation on Public Land Water Frontage and Streamside Reserves along the Broken–Boosey Creek system, conservation reserves and other public land.
- Adhere strictly to native vegetation retention controls.
- Ensure that Shire staff know locations and importance of freehold remnants having biodiversity values.
- Assist Shire to incorporate into roadside conservation plans any priority freehold remnants having strategic connective value or potential.

**Management to enhance remnants for threatened taxa** (BNA response level in brackets: 4 = full commitment, 3 = substantive participation, 2 = opportunistic action, 1 = watching brief):

- Enhance flow regimes on drainage lines, wetlands and floodplains to provide more natural environmental conditions for Little Bittern (4), Intermediate Egret (4), Bush Stone-curlew (4), Royal Spoonbill (3), Ridged Water-milfoil (3), Great Egret (2), White-bellied Sea-eagle (2) and Glossy Ibis (1).
- Exclude grazing around wetlands to benefit Intermediate Egret (4), Ridged Water-milfoil (3) and Brolga (2), ensuring that fencing does not exclude Brolga chicks from receding wetlands (Arnol *et al.* 1984).
- Exclude woodland grazing to benefit Apostlebird (1) and Pin Sida (1).
- Modify stocking levels as necessary to benefit Little Bittern (4), Bluish Raspwort (3), Long Eryngium (3) and Yellow-tongue Daisy (3).



Brolga (Photo: DSE/McCann)

## 6. Central Creek Landscape Zone

### 6.3 Private Land (cont'd)

- Increase abundance of mature (box-gum) woodland, conserve native understorey trees and shrubs, and retain fallen timber and litter, to benefit Bush Stone-curlew (4), Superb Parrot (2) and Apostlebird (1).
- Control introduced predators to benefit Bush Stone-curlew (4), Brolga (2) and Apostlebird (1).
- Supplement shallow-water feeding areas, with dense tree-clumps for roosting, to benefit Nankeen Night Heron (3) near wetlands and streams; and with reeds, shrubs or trees as nesting habitat for Royal Spoonbill (3).
- Control weeds to benefit Long Eryngium (3), Mueller Daisy (3), Bluish Raspwort (3) and Pin Sida (1).
- Control introduced herbivore and macropod levels to benefit Mueller Daisy (3).
- Remove water contaminants to benefit Ridged Water-milfoil (3).
- Consider reintroduction of Yellow-tongue Daisy (3) to suitably secure sites.



*Brachyscome muelleroides*  
(Photo: John Eichler)

#### Restoration of strategic vegetation blocks or linkages:

- Encourage and assist landholders of freehold remnants to restore and expand available habitats, and improve connectivity to any nearby remnants on freehold, road reserves or other tenure. Give priority to significant remnants at Mundoona (see **Land tenure** above).
- Arrange (in consultation with licensees) to fence out key unused roads (of which there are many associated with this tenure) and creeklines.
- Urge and assist Landcare groups and LFW extension officers to inform landholders of their potential role in conserving biodiversity, and to coordinate their involvement for the best possible outcome.
- Co-ordinate restoration and revegetation initiatives to assist landholders and the Shire in consolidating local remnants.
- In consultation with CMA, develop habitat management plans for streamsidelines on freehold, with particular emphasis upon protecting and expanding habitat nodes (e.g. creekline-roadside intersects).

## 6. Central Creek Landscape Zone

### 6.3 Private Land (cont'd)

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**EXISTING POLICIES, PLANS OR PROGRAMS** supporting one or more of the recommended actions:

- FFG Action Statement – Superb Parrot (33).
- FFG Action Statement – Predation by Red Fox (44).
- FFG Action Statement – White-bellied Sea-eagle (60).
- FFG Action Statement – Bush Stone-curlew (78).
- FFG Action Statement – Predation by Cat (80).
- CAMBA – Glossy Ibis, Great Egret, White-bellied Sea-eagle.
- JAMBA – Great Egret
- Management Plan – Brolga (Arnol et al. 1984).
- Management Plan – Superb Parrot (Webster & Ahern 1992).

## 6. Central Creek Landscape Zone

### 6.4 Public Land Water Frontage

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#### **Land Tenure Details:**

Nearly all creekline on Broken and Nine Mile Creeks (and a short segment of Boosey Creek, around Katamatite) within this zone is Public Land Water Frontage (K1) or Streamside Reserve (K10—31 ha; K11—3 ha; K12—476 ha). K10 is former Water Reserve and K11 a former Plantation Reserve, both on Broken Creek. K12 comprises portions of reserved and unreserved Crown Land, containing significant woodlands of River Red Gum and Grey Box and providing valuable waterbird habitat (LCC 1985). Robinson (1998b) proposed that all of the above frontage be included in a Broken–Boosey–Nine Mile Creek system which he recommended as a 'priority for conservation reservation and management in the eastern northern plains'. Todd (1999) identified the section of K1 on Broken Creek between Dip Bridge and Katamatite (100 ha) as 'a priority area for protection and establishment of protected areas' in the context of 'Riverina' bioregion, based on its flora values and its importance as a corridor. The connectivity of riparian habitat on public land tenure along the creek enhances biodiversity values of this and adjoining land tenures. K12 is especially noted for its biodiversity values, which include extensive River Red Gum and Grey Box stands, native grasses and waterbird habitat (LCC 1985). Except for the section of Broken Creek between Numurkah and Dunbulbalane, both frontages (K1, K12) are unusually wide (often over 100 m) and, in some places (e.g. near Drumanure), relatively weed-free. On the other hand, various locations remain grazed to the water's edge (e.g. Broken Creek near Kaarimba) and are consequently degraded.

#### **Land Manager:**

Land Victoria

#### **Stakeholders:**

Key CMA, DSE, DPI, Private

Other LGA, Lc, WAG, RAG, LFW, GAV, CVA, GNP, VFF, VAA

**Threatened Biodiversity Assets** (in brackets: Cons status Vic - lower case, Aust - upper case; followed by BNA priority / risk rankings for threatened taxa = 1A, 2B, etc., or un - unassessed):

**EVCs:** Pre-1750 vegetation associated with these frontages was *creekline grassy woodland* (e) or *drainage line complex* (e) flanked by *plains grassy woodland / gilgai plains woodland / wetland mosaic* (e). Near Numurkah township, this flanking woodland included *pine box woodland / riverina plains grassy woodland mosaic* (e) and, near K10 and Dunbulbalane, *plains grassy woodland* (e). Dominant tree species were River Red Gum or Grey Box, sometimes with other box species or White Cypress-pine. The frontages today retain good tree cover and some native understorey elements, however the flanking plains vegetation is mostly lost. K1 on Broken Creek (between Dip Bridge and Katamatite) supports remnants of *creekline grassy woodland* (e) flanked by *plains grassy woodland / gilgai plains woodland / wetland mosaic* (e), including specimens of Buloke and White Cypress-pine (Todd 1999).

## 6. Central Creek Landscape Zone

### 6.4 Public Land Water Frontage (cont'd)

**Threatened flora:** Bluish Raspwort (k, unr), Yellow-tongue Daisy (v, 4B).

**Threatened fauna:** Bush Stone-curlew (e, unr), Great Egret (e, unr).

#### Recommended actions:

##### Protection of existing remnants:

- Protect and enhance status of Public Land Water Frontage in the zone, giving priority to all Public Land Water Frontage (K1) and Streamside Reserve (K10-12) on Broken, Nine Mile and Boosey Creeks within the zone. Protection should include monitoring the status and condition of all frontages, especially with respect to fencing and grazing, and ensuring that existing values are maintained.
- Exclude domestic stock grazing throughout the tenure, to protect fauna habitats and permit regeneration of remaining native vegetation.
- Ensure firewood harvesting is excluded from the tenure, in order to conserve habitat resources for woodland fauna.
- Exclude desnagging or flow improvement works in streams within the tenure.



Great Egret (Photo: Viridans Biological Databases)

**Management to enhance remnants for threatened taxa** (BNA response level in brackets: 4 = full commitment, 3 = substantive participation, 2 = opportunistic action, 1 = watching brief):

- Enhance flow regimes and supplement riparian vegetation to benefit Great Egret (2).
- Control weeds and exclude domestic grazing to benefit Bluish Raspwort (2) and Yellow-tongue Daisy (1), notably on K12.
- Supplement open woodland habitats, retaining fallen timber and litter, and control introduced predators, to benefit Bush Stone-curlew (2).



*Brachyscome chrysoglossa* (Photo: John Eichler)

#### Restoration of strategic vegetation blocks or linkages:

- Initiate restoration and revegetation to consolidate riparian habitat, working from existing habitat and linking to adjacent remnants on freehold, roadsides or sections of unreserved creekline. Give priority to K1 on Broken Creek between Dip Bridge and Katamatite, SRs K10 & 12, other K1 and SR11.
- Encourage (through incentives and voluntary programs) similar restoration and revegetation works on intervening stream sections which are currently unreserved.

## 6. Central Creek Landscape Zone

### 6.4 Public Land Water Frontage (cont'd)

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**EXISTING POLICIES, PLANS OR PROGRAMS** supporting one or more of the recommended actions:

- FFG Action Statement – Predation by Red Fox (44).
- FFG Action Statement – Bush Stone-curlew (78).
- FFG Action Statement – Predation by Cat (80).
- CAMBA – Great Egret.
- JAMBA – Great Egret.
- ECC (2001) recommendation to redesignate some K1 (along with K11) on Broken Creek as Natural Features Reserve and incorporate some of the remaining K1 into Numurkah Nature Conservation Reserve (▼D59); redesignate K10 on Broken Creek as Nature Conservation Reserve (▼D59); and incorporate K1 and K12 on Nine Mile Creek upstream of Wunghnu into Broken–Boosey SP (▼B2). However, this recommendation so far as it relates to creating sites of Nature Conservation Reserve on Broken Creek has more recently been commuted by the Government to Natural Features Reserve throughout (VG 2002).

## 6. Central Creek Landscape Zone

### 6.5 Other State Government

#### **Land Tenure Details:**

The tenure includes all unused roads, Numurkah–Nathalia and Shepparton–Cobram Railway Reserves, the Goulburn Valley Highway easement, and a Recreation Reserve (O4) on Broken Creek, upstream of Numurkah. Some useful remnants occur on these various reserves, however continuity of tree cover is seldom sustained for greater than a few hundred meters.

#### **Land Manager:**

Land Victoria, Public Transport Corporation, VicRoads

#### **Stakeholders:**

Key DSE, DPI, CMA

Other VAA, BG, TSN, GNP, FNC, LGA, Private

**Threatened Biodiversity Assets** (in brackets: Cons status Vic - lower case, Aust - upper case; followed by BNA priority / risk rankings for threatened taxa = 1A, 2B, etc., or un - unassessed):

**EVCs:** Pre-1750 vegetation formerly on land traversed by railway and highway reserves in this tenure was predominantly *plains grassy woodland / gilgai plains woodland / wetland mosaic* (e) or, near Numurkah township, *pine box woodland / riverina plains grassy woodland mosaic* (e). In places, *drainage line complex* (e) or *creepline grassy woodland* (e) was crossed. Dominant tree species were Grey Box, sometimes with other box species, River Red Gum or White Cypress-pine.

**Threatened flora:** Long Eryngium (v, unr).

**Threatened fauna:** None recorded.

#### **Recommended actions:**

##### **Protection of existing remnants:**

- Identify and monitor sites of biodiversity significance, and ensure that existing levels of habitat protection are adequate. In particular, exclude grazing from all reserves with remnant native vegetation.
- Monitor status of Long Eryngium on Numurkah–Nathalia Railway Reserve, near Numurkah, and assist PTC to ensure that the resource is adequately protected. Determine whether a Public Authority Management Agreement is necessary.
- Assess remnant value across the tenure and prioritise protection of reserves accordingly.
- In consultation with licensees, review status of unused roads and, where habitat values (or potential values) exist, assess fencing, grazing exclusion, and regeneration to ensure habitat protection.
- Ensure that all fenced and ungrazed (or simply 'less disturbed') unused roads remain so.



Eryngium paludosum (Photo: David Parkes)

## **6. Central Creek Landscape Zone**

### **6.5 Other State Government (cont'd)**

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**Management to enhance remnants for threatened taxa** (BNA response level in brackets: 4 = full commitment, 3 = substantive participation, 2 = opportunistic action, 1 = watching brief):

- Control weeds and modify domestic stocking levels to best benefit Long Eryngium (2), notably on Numurkah–Nathalia Railway Reserve.

**Restoration of strategic vegetation blocks or linkages:**

- Initiate regeneration or revegetation works as necessary to restore and expand habitat on Numurkah–Nathalia Railway Reserve supporting Long Eryngium, and on other existing or potential habitat patches in the tenure.
- Encourage and assist adjacent land managers to retain or restore connecting remnants.
- In consultation with licensees, improve habitat quality and connectivity of unused roads.

**EXISTING POLICIES, PLANS OR PROGRAMS** supporting one or more of the recommended actions:

- ECC (2001) recommendation to incorporate O4 (Broken Creek) into Numurkah Nature Conservation Reserve (D59).

## 6. Central Creek Landscape Zone

### 6.6 Local Government

#### **Land Tenure Details:**

The tenure includes municipal roadsides throughout the zone and township land (T1) at Numurkah, Katamatite and Wunghnu. Roadsides in the zone generally have few substantial linear remnants, with those that remain comprising mostly Grey Box, and sometimes River Red Gum, Yellow Box or White Cypress-pine. One native grassland site in this zone (Site 26), identified by Cook (1997) as a roadside of high significance, occurs on Hester and Katamatite–Nathalia Roads, Dunbulbalane, between Carrick and Larissa Roads, and adjacent to sections of both Broken and Boosey Creek. Todd (1999) identified Numurkah Rifle Range land (10 ha; AMG 605045) near Broken Creek as 'a priority area for protection and establishment of protected areas' in the context of 'Riverina' bioregion, based on its flora values.

#### **Land Manager:**

Local Government Authority

#### **Stakeholders:**

Key DSE, DPI, CMA, PV

Other Private, BG, LFW, FNC, CVA, GAV

**Threatened Biodiversity Assets** (in brackets: Cons status Vic - lower case, Aust - upper case; followed by BNA priority / risk rankings for threatened taxa = 1A, 2B, etc., or un - unassessed):

**EVCs:** Vegetation formerly supported on this tenure was mostly *plains grassy woodland / gilgai plains woodland / wetland mosaic* (e), with some patches of *plains grassy woodland* (e) or *pine box woodland / riverina plains grassy woodland mosaic* (e). Most are now highly fragmented, with good-quality roadsides occurring mainly only in association with the main creeklines. Such is the case with Cook's (1997) Site 26, a high-quality site extending for some 5 kms and which supports Grey Box and River Red Gum, as well as a wide range of native flora (including the rare species Smooth Minuria [*Minuria integerrima*]). Numurkah Rifle Range supports remnant *plains grassy woodland / gilgai plains woodland / wetland mos:*

**Threatened flora:** Bluish Raspwort (k, unr), Mueller Daisy (Ve, unr), Pin Sida (v, unr), Ridged Water-milfoil (Vv, unr), Long Eryngium (v, 3B), Yellow-tongue Daisy (v, 4B).

**Threatened fauna:** Apostlebird (v, unr), Brolga (v, unr), Bush Stone-curlew (e, unr), Glossy Ibis (v, unr), Great Egret (e, unr), Intermediate Egret (cen, unr), Little Bittern (e, unr), Nankeen Night Heron (v, unr), Royal Spoonbill (v, unr), Superb Parrot (Ve, unr), White-bellied Sea-eagle (e, unr).



*Brachyscome  
chrysoglossa* (Photo:  
John Eichler)



Brolga (Photo:  
DSE/McCann)

## 6. Central Creek Landscape Zone

### 6.6 Local Government (cont'd)

#### Recommended actions:

#### Protection of existing remnants:

- Protect existing roadside and township remnants, giving priority to those identified by Todd (1999) and Cook (1997) above, and to any others having mature or hollow trees and relatively intact understorey and ground layers.
- Provide fencing and sign-posting of all high-quality remnants.
- Assist Shires to develop roadside conservation plans and encourage integration with voluntary efforts on adjacent freehold. Promote voluntary programs (e.g. LFW) and planning overlays, as tools to assist Shires in protecting and managing roadsides.
- Identify in Shire roadside conservation plans known and likely sites of Grey-crowned Babbler as well as fire-sensitive threatened flora taxa, and advise CFA to avoid or limit control burning of these sites.
- Prevent removal from roadside habitats of ground litter, fallen timber, logs or dead-standing trees, which provide valuable shelter and forage sites for Bush Stone-curlew and Apostlebird.
- Ensure that Shire staff (especially road maintenance) are aware of significant roadsides.
- As far as possible, discourage and exclude domestic grazing from the tenure.

**Management to enhance remnants for threatened taxa** (BNA response level in brackets: 4 = full commitment, 3 = substantive participation, 2 = opportunistic action, 1 = watching brief):

- Enhance flow regimes to wetland areas, and improve available habitat, to benefit Glossy Ibis (2), Great Egret (2), Intermediate Egret (2), Little Bittern (2), Nankeen Night Heron (2) Royal Spoonbill (2) and White-bellied Sea-eagle (2).
- Enhance flow regimes to benefit Ridged Water-milfoil (2).
- Exclude domestic grazing to benefit Apostlebird (2), Intermediate Egret (2), Pin Sida (2) Ridged Water-milfoil (2) and Superb Parrot (2).
- Modify domestic grazing levels to best benefit Little Bittern (2), Bluish Raspwort (2), Yellow-tongue Daisy (1) and Long Eryngium (1).
- Supplement township and roadside habitats by increasing abundance of mature (box-gum) woodland, conserving natural shrubby and grassy understorey, retaining fallen timber and litter, and enhancing connectivity to benefit Apostlebird (2), Bush Stone-curlew (2) and Superb Parrot (2).
- Initiate control of introduced predators to benefit Apostlebird (2), Bush Stone-curlew (2) and Brolga (2).



*Eryngium paludosum* (Photo: John Eichler)

## 6. Central Creek Landscape Zone

### 6.6 Local Government (cont'd)

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- Control weeds to benefit Bluish Raspwort (2), Mueller Daisy (2), Pin Sida (2), Long Eryngium (1) and Yellow-tongue Daisy (1).
- Control introduced herbivore and macropod numbers to benefit Mueller Daisy (2).
- Install signage on sites with Long Eryngium (1).

#### **Restoration of strategic vegetation blocks or linkages:**

- Encourage and assist regeneration and consolidation of woodland habitat, especially at habitat nodes on creek-crossings or intersections, or near adjacent stands on freehold, giving priority to those sites identified by Todd (1999) and Cook (1997) above.
- Liaise with landholders on adjacent properties to establish habitat strips by which to broaden roadside habitat, or to take other measures to supplement connectivity and patch size.
- Also liaise with landholders to fence across paddock corners at key intersections of roadside tree lines, to maximise habitat availability for fauna (Robinson & Davidson, in prep.).

#### **EXISTING POLICIES, PLANS OR PROGRAMS** supporting one or more of the recommended actions:

- FFG Action Statement – Superb Parrot (33).
- FFG Action Statement – Predation by Red Fox (44).
- FFG Action Statement – White-bellied Sea-eagle (60).
- FFG Action Statement – Bush Stone-curlew (78).
- FFG Action Statement – Predation by Cat (80).
- CAMBA – Glossy Ibis, Great Egret, White-bellied Sea-eagle.
- JAMBA – Great Egret.
- Management Plan – Brolga (Arnol et al. 1984).
- Management Plan – Superb Parrot (Webster & Ahern 1992).
- ECC (2001) recommendation to incorporate Wunghnu township land (T1) blocks in Broken-Boosey SP (▼B2).

## 6. Central Creek Landscape Zone

### 6.7 Parks and Reserves

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#### **Land Tenure Details:**

The tenure includes Black Swamp (Nine Mile Creek) Wildlife Reserve (C19; 34 ha) and Bushland Reserves H26 (19 ha), H27 (33 ha), H32 (9 ha), H33 (1 ha) and H40 (17 ha). All except H40 are situated on, or abut, Broken or Nine Mile Creeks. H40, in Katamatite township, is close to Boosey Creek. C19 is a shallow freshwater wetland supporting reedbeds, formerly with River Red Gum (now dead), and used for ibis breeding (LCC 1885). Connectivity provided between these reserves by the creek system greatly enhances their strategic value for biodiversity. Robinson (1998b) proposed all of the above conservation reserves except H33 be included in a 'Broken–Boosey–Nine Mile Creek system' which he recommended as a 'priority for conservation reservation and management in the eastern northern plains'.

#### **Land Manager:**

Parks Victoria

#### **Stakeholders:**

Key DSE, DPI, CMA

Other ECC, VNPA, VAA, TSN, BG, GNP, FNC, Private, LGA

**Threatened Biodiversity Assets** (in brackets: Cons status Vic - lower case, Aust - upper case; followed by BNA priority / risk rankings for threatened taxa = 1A, 2B, etc., or un - unassessed):

**EVCs:** Pre-1750 vegetation associated with these reserves was *creepline grassy woodland* (e) flanked by *plains grassy woodland* / *gilgai plains woodland* / *wetland mosaic* (e). Dominant tree species were River Red Gum or Grey Box, sometimes with other box species or White Cypress-pine. These reserves still retain useful elements, though the flanking plains vegetation is mostly cleared.

**Threatened flora:** None recorded.

**Threatened fauna:** Great Egret (e, 2A), Intermediate Egret (cen, unr), Royal Spoonbill (v, 3B).



Intermediate Egret (Photo: Mike Carter)

## 6. Central Creek Landscape Zone

### 6.7 Parks and Reserves (cont'd)

#### Recommended actions:

#### Protection of existing remnants:

- Assess condition and habitat values on all reserves within the tenure, and ensure that protection of biodiversity values is adequate and effective. Give priority to C19 and others recommended by Robinson (1998b) for inclusion in his proposed 'Broken–Boosey–Nine Mile Creek system' (that is, all except H33).
- Ensure complete removal of domestic grazing from the tenure, in order to maximise the viability and security of existing biodiversity values.
- Manage flooding regimes through the tenure (and associated habitats) so as to equate, as far as possible, with pre-European volumes, frequencies and durations.

**Management to enhance remnants for threatened taxa** (BNA response level in brackets: 4 = full commitment, 3 = substantive participation, 2 = opportunistic action, 1 = watching brief):

- Supplement riparian habitat and exclude human disturbance to benefit Great Egret (3).
- Supplement riparian vegetation or trees (for roosts / nests) to benefit Royal Spoonbill (1).
- Enhance flow regimes (instream and in shallow wetlands, notably at C19) to benefit Great Egret (3), Intermediate Egret (2) and Royal Spoonbill (1).
- Exclude domestic grazing to benefit Intermediate Egret (2).



Royal Spoonbill (Photo: Peter Menkhorst)

#### Restoration of strategic vegetation blocks or linkages:

- Promote regeneration and revegetation of degraded areas within the tenure, giving priority to sites identified by Robinson (above) and to EVCs according to bioregional conservation status.
- Investigate with neighbouring landholders or land managers options for collaboration in bolstering connectivity adjacent to BRs and Wildlife Reserve C19.

**EXISTING POLICIES, PLANS OR PROGRAMS** supporting one or more of the recommended actions:

- CAMBA – Great Egret.
- JAMBA – Great Egret.
- ECC (2001) recommendation to incorporate H32 into Numurkah Nature Conservation Reserve (D59), redesignate H26 and C19 as Natural Features Reserves, and incorporate H27 in Broken–Boosey SP (B2).