BUNGENDORE PARK
STRATEGIC DIRECTIONS

CITY OF ARMADALE

September 2009

CITY OF Armadale

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1.0 Executive Summary

Study Area

Bungendore Park (Reserve 4561) (the Park) is located in Bedfordale on the Darling Scarp 30 km southeast of Perth, within the City of Armadale. It is a 498 hectare bushland reserve vested in the City of Armadale for management as "Parkland".

The Park is considered part of the Wungong Regional Park, formally the Darling Range Regional Park, which also includes Department of Environment and Conservation (DEC) managed land and Armadale Settlers' Common Reserve.

Surrounding land uses include rural, rural/residential properties, a school, roads and Regional Park, all of which have the potential to impact on the values of the Park.

Biophysical Environment

The Park consists of a dramatic landscape, including undulating plateau, steep rocky outcrops and native bushland with a diversity of vegetation.

The Park has a Mediterranean climate characterised by hot dry summers and cool wet winters, with an annual average rainfall of 1139mm. The Park is part of a natural unit formed by an isolated element of the Darling plateau, with the Darling Scarp fault line determining the western boundary of the Park. The Park is characterised by a gently undulating plateau from the eastern edge to just over half of its width to the west.

The soil of the Park varies from the entire lateritic profile remaining substantially intact, to areas of the profile being truncated by erosion with superficial deposits of secondary worked materials. Slopes, at first gentle then steepening, occur at the edges of the lateritic plateau. Inclusions by streams on the western edge of the Park gives rise to a sequence of spurs and gullies and to local variations on aspect with some south-facing and north facing slopes. The variations in soil depth, slope aspect, and slope angle mean that the range of plant communities is greatest on the Scarp face of the Park.

A watershed runs through the Park from the north-west to the east, dividing the Park into two water catchment areas. All of the freshwater creeks in the Park are seasonal, flowing May to November. Cooliabberra Spring is the main waterbody flowing through the Park, and it also has some associated damp areas adjacent to its drainage lines.

The Darling Scarp is a significant scenic resource for people living in the region amongst the bushland environment and people living on the Swan Coastal Plain who can view the vegetated scarp face. A large portion of the Park is classified as high scenic quality. The Bungendore Park Management Committee has made significant progress over the last 27 years to revegetate areas of low scenic quality and track alignments through the Park are revised on an ongoing basis in order to minimise activities that could be detrimental to areas of high scenic quality.

The Park is connected with lands of the Wungong Gorge to the south which are a part of the Wungong Regional Park, which is again connected with water catchment areas and State Forest. To the north bushland corridors link with Armadale Settlers' Common Reserve and private lands adjacent to the Park in rural and residential properties provide valuable habitat links for fauna species with large home ranges.

Heritage Values

Surveys have indicated that there are two recorded sites of ethnographic significance to living Aboriginal people within the Park. No archaeological sites have been recorded, however, a scattering of quartz artefacts have been recorded within 5 km of the survey area. The main use of the Park by European settlers was a resource for materials such as timber and gravel.

Biodiversity Values

The native vegetation found in the Park consists of open Jarrah-Marri forest with smaller areas of Wandoo woodland and heath surrounding granite outcrops. The dominant vegetation complex is Upland Jarrah Forest. The Cooliabberra Spring area has been identified as having the highest conservation value of all the vegetation communities within the Park. A Landscape Protection Area has been established around the spring to assist with the protection of the environmental values of the area. The Park is also listed as a Perth Region plant biodiversity project Jarrah Forest reference site (JF5).

A total of 351 plant species from 63 families, representing 44% of the total species occurring in the Jarrah Forest of the South West of Western Australia have been recorded within the Park. Two declared rare and two priority flora species have been found in the Park; *Thelymitra stellata* (R), *Diuris micrantha* (R), *Pithocarpa corymbulosa* (P2) and *Calothamnus rupestris* (P4). Surveys concentrating on the plateau in the Jarrah Marri upland forest community have collected and identified 45 species of fungi.

There are 131vertebrate fauna species that potentially occur in the Park. This includes 84 bird species, 49 reptile and amphibian species, and 28 mammal species, including 6 introduced species. However, these species lists have not been comprehensively updated since the 1997 Management Plan. Fauna species that may occur in the Park are typical of the western edge of the Jarrah Forest and its plateau, but benefit from the inclusion or near proximity of additional habitat types such as Wandoo heath shrub, Dryandra thickets, and cleared areas. Four species of Threatened or Priority fauna have been observed occurring in the Park. These are Baudin's Cockatoo (*Calyptorhynchus baudinii*), Carnaby's Cockatoo (*Calyptorhynchus latirostris*), Forest Red-Tailed Black Cockatoo (*Calyptorhynchus banksii naso*), and Chuditch (*Dasyurus geoffroii*).

Social environment

The primary objectives for the provision of visitor opportunities is to protect conservation values and 'sense of place' values of the Park and secondarily to meet the needs of visitors for nature based activities. Management measures promoting recreation and tourism pursuits in the area are based on assumptions of what values the Park offers to its visitors and what aspects of the Park these visitors most value. The Park is currently used by the local community for walking, exercising pets, bird

watching, nature appreciation, picnicking, horse riding, mountain bike riding and off road vehicle use, the latter two which are not permitted in the Park.

Key Threats

Dieback was first identified in the Park in 1993 and it is known to occur in 57% of the Park, however the impact from dieback varies across the Park. The potential impacts of dieback include death of up to 40% of the flora species diversity, death of species susceptible to changes in biophysical environments, change and impacts from changes to vegetation structure and diversity, loss of heritage and landscape values, and higher water table elevations. Dieback treatment works have been ongoing and two management responses, reducing further spread of the disease and treatment of areas with the highest risk of spread are proposed. (See Appendix 5 – Bungendore Park *Phytophthora cinnamomi* Management Plan 2009 – 2018).

To date, 34 species of weeds are known to occur in the Park. The majority of the Park is weed free with smaller areas densely populated with weeds. These areas, along with outside influences such as edge effects from neighbouring properties and inappropriate use, pose a threat to the rest of the Park. The control of weeds in Bungendore Park should occur using best practice weed management approaches and should be considerate of potential off-target damage and safety.

Bushfires have historically been part of the Australian environment, with wildfires occurring in the Park throughout its history. Documented control burns have occurred since 1977 and fire safety operations have been undertaken by the Bedfordale Volunteer Fire Brigade from this date. The priority for fire management objectives primarily should consider the protection of life and property followed by reducing the incidence of unplanned fires, minimising the spread of weeds and diseases by fire operations and maintaining existing diversity, composition of vegetation and wildfire habitats. Due to the ease of access to the Park, ignition points by arson are widespread. Over the past ten years, a number of fires considered to be arson occurred in the Park. The topography of the Park, with steep rocky slopes on its western side and undulating bushland on its eastern side, makes wildfires difficult and dangerous to control. (See Appendix 6 – Bungendore Park Fire Management Plan 2009 – 2018).

Feral and domestic animals that occur in the Park can damage native plants and habitats by grazing digging and trampling, competing for food and habitat, and predating on native animals. The 7 species of introduced animals that occur in the Park are the house mouse (*Mus musculus*), black rat (*Rattus rattus*), rabbit (*Oryctolagus cuniculus*), fox (*Vulpes vulpes*), feral cat (*Felis catus*), feral pig (*Sus scrofa*) and European Honey Bee (*Apis mellifera*). Various feral birds are also known to exist within the Park. Further research on the population dynamics of feral animals in the Park and the threats they pose on the Park's conservation values are needed in order to implement necessary measures for control.

The occurrence of rubbish and vandalism within the Park diminishes visitor's feelings of the 'sense of place' and the aesthetic values of the Park. Rubbish also poses a threat to flora and fauna. Ongoing efforts to restrict entry to the Park by unauthorised vehicles have significantly reduced the incidences of rubbish dumping. Vandalism is an ongoing and costly problem which is repaired by volunteers of the Bungendore Park Management Committee and the local scout groups, and major repairs are

undertaken by the City of Armadale. Fire wood collection has been documented in the past, this activity is not permitted in the Park. Any rubbish should be removed, and incidences of vandalism should be repaired or as a priority.

Areas of historic gravel extraction are significantly less vegetated than the remainder of the Park. Bungendore Park Management Committee has made significant progress over the last 27 years to revegetate degraded areas. The need to revegetate areas that have suffered vegetation loss as a result dieback infection will also be important to supplement ecosystem losses and to ensure the landscape and scenic qualities of the Park are not diminished.

The steep face of the scarp to the west of the Park and the network of tracks traversing the Park are a source of erosion which can lead to silting of watercourses, the undermining of vegetation and track damage. Erosion along tracks has been controlled by the installation of culverts and the creation of contour banks. Steeply sloping tracks have been realigned and allowed to regenerate.

The current and projected future changes in climate, such as changes to ambient temperature, rainfall, winds and extreme events, have the potential to have direct effects on the Park and its species and ecosystems. Indirect effects on species and ecosystems are likely by altering important factors, and the interplay between factors, such as fire frequency and behaviour, the spread and intensity of disease such as dieback, competition and predation and resource availability. It is difficult to predict the future climate conditions and the effects this may have on species and ecosystems.

2.0 Introduction

Bungendore Park, hereafter referred to as 'the Park' is a 498 hectare bushland reserve located on the Darling Scarp adjacent to Albany Highway. The Park is vested in the City of Armadale for management as "Parkland".

In 1997, the City of Armadale commissioned Hames Sharley to develop a management plan for the Park. The Bungendore Park Management Plan was endorsed by Council in 1997 for a management period of ten years.

In 2007, the City of Armadale and the Bungendore Park Management Committee commenced a review of the 1997 management plan and drafted a new document to guide the management of the Park. Much of the information presented in this document is derived directly from the 1997 Bungendore Park Management Plan as prepared by Hames Sharley for the City of Armadale.

This document known as the *Bungendore Park Strategic Directions Document*, aims to document the values of Bungendore Park, identify threats to these values, and guide management that ensures the ongoing conservation and protection of the Park.

Sections one through nine of this document provides an overview of the values of Bungendore Park. Sections 10 and 11 consider management approaches, threats and proposed actions to respond to threats.

Management visions are detailed through out this document, providing a vision for managing key values of the Park. More detailed actions provide direction in achieving management visions is provided in the form of strategic directions (Section 12).

Subsequent sections of this document consider key threats to the biodiversity values of Bungendore Park. For threats such as dieback and fire, more detailed plans have been developed to guide management of the Park. Two plans, the Bungendore Park Phytophthora Management Plan 2009 – 2019 and the Bungendore Park Fire Management Plan 2009 - 2019 appear as appendices of this document.

This Strategic Directions document is not a costed plan and responsibilities and time lines for the implementation of actions has not been identified.

It is intended that the City of Armadale guide the overall implementation of this document in conjunction with stakeholders such as the Bungendore Park Management Committee.

2.1 Location

Bungendore Park is located on the edge of the Darling Scarp in Bedfordale Western Australia. It is approximately 30 km southeast of Perth and approximately 5 km south of central Armadale (Figure 1).

The 498 hectare park is bound by Albany Highway in the north and in part by Admiral and Nelson Roads in the east. The southern edge of the Park is adjacent to the Wungong Gorge.

Bungendore Park, titled Reserve 4561 is part of the Darling escarpment making it visually prominent from the Swan Coastal Plain. The Park forms a network of bushland along the scarp face, much of which is part of a wider Regional Park.

3.0 Stakeholders & Consultation

This Strategic Directions Document was prepared by the City of Armadale in consultation with the Bungendore Park Management Committee and other stakeholders.

Primary stakeholders identified as having a role in the implementation of the Bungendore Park Management Plan include the City of Armadale, the Bungendore Park Management Committee, the Department of Environment and Conservation and the Bedfordale Volunteer Fire Brigade.

Other stakeholders include park neighbours, local indigenous groups, recreational users, apiarists and the local community.

The table below illustrates at what stages of the development of this Strategic Directions Document stakeholders where engaged.

ACTION
Seek Council support for the proposed review process
Research and review Bungendore Park Management Plan 1997-2007 in consultation with relevant stakeholders.
Compile information and prepare draft strategic directions document.
Refer draft Strategic Direction Documents to Council and recommend it be advertised for public comment.
Compile comments on Draft Strategic Direction Documents. Circulate amongst stakeholders.
Comments on Draft Strategic Directions Document considered by Bungendore Park Management Committee.
Amendments made following review of public submissions to draft Strategic Directions Document.
Prepare Council item seeking endorsement of document.

Fourteen submissions to the six week public consultation period were received. These were summerised and provided to Council at its 14 September 2009 meeting where this Strategic Directions Document was endorsed (T75/9/09).

4.0 Governance

GOVERNANCE VISION
All stakeholders participating in the management of Bungendore Park in a cooperative, coordinated and adaptive management approach.

Prior to 1981, the then Armadale-Kelmscott Council was receiving complaints about the misuse of the reserve, through the dumping of rubbish and car bodies as well as firewood collection, shooting.

The Council decided to set up a committee to oversee the future management of the Park. In 1981, the Bungendore Park Management Committee was formed under the provision of Section 180 of the previous *Local Government Act 1960*, and work began clearing rubbish, rehabilitating gravel pits, erecting signs and interpretive information, as well as erecting operational access gates.

The Committee made a point of involving the local community and user groups in the management of the Park, thereby giving a sense of ownership to the local community.

In February 2005 Terms of Reference were established for the Bungendore Park Management Committee, consistent with the *Local Government Act 1995* (Appendix 1). The purpose of the Committee is to assist in the conservation and management of Bungendore Park as a conservation reserve for low-impact usage by:

a. Assisting with, and advising on, the preparation and review of a Management Plan for Bungendore Park for consideration by Council. The Management Plan is to be prepared with regard to the objectives of the Committee and with the benefit of public consultation.
b. Assisting with implementation of the Management Plan for Bungendore Park.
c. Seeking grant funds to achieve the Management Plan and Terms of Reference objectives as determined by the Committee and Manager Parks to be appropriate, having due regard to the ability of the City, Committee and volunteers to implement and administer such grants.
d. Encouraging community involvement in the management and appropriate use of Bungendore Park.
e. Liaising with the Bushcare and Environmental Advisory Committee on matters that fall within the role of the Bushcare and Environmental Advisory Committee.
f. Providing a means of communication between the City of Armadale and users of Bungendore Park.
g. Advising Council on this Committee's opinion and attitude on matters arising in respect to Bungendore Park.

Since the Committee's inception in 1981 the group has attracted in excess of $207,178 in external grant funding (funds not provided by the City of Armadale). On average Bungendore Park Management Committee members and other Park volunteers undertake in excess of 1,500 hours per annum with in excess of 9,000 volunteer hours recorded over a six year period.

In addition, in excess of 94,000 seedlings have been planted in the Park since 1982 (See Figure 2).

5 awards have been won by the Committee, including the Inaugural John Tonkin Award (Community Group) in 1985, the Banksia Award (Community Group) in 1992, the John Tonkin Gold Greening Award in 1994.

Numerous flora, fauna, insect and fungi studies such have been undertaken, including work with the University of Western Australia, the WA Museum and surveys published in the WA Naturalist.

Governance: Strategic Direction

- *Governance 1: Annually report on the activities and achievement of the Bungendore Park Management Committee with reference to the Terms of Reference. Review the Terms of Reference as required.*
- *Governance 2: Manage Bungendore Park in cooperation with adjacent landholders including land managers of the wider Wungong Regional Park.*
- *Governance 3: Incorporate monitoring and review into all management activities within the Park and ensure adequate records of management actions within the Park are retained.*
- *Governance 4: Support ongoing flora, fauna and fungi research in Bungendore Park and consider findings of studies in an adaptive approach to park management.*
- *Governance 5: Continue community education efforts to raise the profile of Bungendore Park's flora, fauna, fungi and recreational values.*

5.0 Park History

HISTORY VISION
The natural history and management history of Bungendore Park is captured in perpetuity and considered when making management decisions.

Bungendore Park has a history of timber and gravel extraction, firewood and honey production, and is now an area managed for its conservation and passive recreational values.

In the 1890s, reports of gold found in the Armadale region, around Bedfordale and the Wungong Gorge created a minor gold rush. Soon after, gold findings petered out, and clay and gravel became the most useful commercially viable soil resources of the district (D Pompham, 1980).

On 8 October 1897, Reserve A4561, now know as Bungendore Park, was gazetted as a 1,500 acre (607 hectare) reserve for the purpose of 'Timber'. Eight years later in 1905, the reserve was reduced to 1,400 acres and, along with some other cancelled reserves, enabled the town site of Bedfordale to be established on the Perth-Albany Road.

Three years following, in 1908, the reserve was classified as an 'A' Class Reserve and the vesting purpose was changed from 'Timber' to 'Parklands'.

In 1921, tenders were called for the leasing of the reserve for grazing purposes at a minimum rate of £3 per 1,000 acres (approximately $6 per 404 hectares). It is unknown if any tenders were offered.

In 1965, Reserve A4561 was vested in the then Armadale-Kelmscott Shire, now the City of Armadale. Five years following in 1970 and again in 1972, 4 acres 1 rood and 3 perches and 1.3583 hectares were sold to GA & NV Raschella for $1,900 apiece.

In 1973 the reserve was officially named 'Bungendore Park' and in 1976 an area of 5.5 hectares of adjacent land (Reserve 847) was added to the Park. An additional area and a previous gravel reserve of 1.8 hectares was then added in 1984.

In January 1989, vacant Crown land to the north-east of the Park was added to the reserve increasing the area of the park to approximately 498 hectares (K Sarti, 1993). Bungendore Park is now recognised as an area of regional importance within the wider Darling Range Regional Park.

In July 1999, the then Department of Conservation and Land Management (CALM) accepted the role of coordinating the management of Darling Range Regional Park. In 2001, the State Government policy, '*Protecting our old-growth forests'*, was introduced and some areas of the former Darling Range Regional Park in public ownership became National Parks. Whilst Bungendore Park remained Regional Park, the added complexities of managing the Darling Range Regional Park as one entity when it comprised of disjoint land parcels ranging in tenure and management responsibility was identified, and a proposal to manage the lands as different regional parks was formed. In 2008, the parks of the Darling Range Regional Park were renamed. Bungendore Park is part of the Wungong Regional Park along with Jarrahdale State Forest (part), Wungong Valley, Churchman's Bushland, and Armadale Settlers' Common.

Two trigonometric points are located within the Park within their own reserves (Reserves 40609 and 40610) and are vested in the Department for Planning and Infrastructure.

A management history of Bungendore Park is maintained on City of Armadale central files. Information relating to the activities of volunteers within the Park are recorded in the minutes of the Bungendore Park Management Committee and in the Committee's Annual Report. The Annual Report addresses their achievements in implementing management actions of the current management plan and fulfilling their roles as described in the Committee's Terms of Reference. Both of these documents are regularly forwarded to the City for its records.

All GIS mapping in the Park is recorded and stored by the City of Armadale GIS office.

History: Strategic Direction

- *History 1: Maintain communication between the City of Armadale and Bungendore Park Management Committee to ensure information about the management history of the Park is captured in the City of Armadale central record systems.*
- *History 2: Consider opportunities as they arise to further research and document the history of the Park.*

6.0 Adjacent lands

ADJACENT LANDS VISION
A consistent approach to the management of Bungendore Park and the wider proposed Wungong Regional Park.

Figure 3 illustrates the surrounding land use zoning of Bungendore Park, as defined in the Town Planning Scheme 4.

Surrounding land uses can have significant impacts and influences on the values of Bungendore Park As a general principle, the greater the area of the reserve in proportion to the edge, the increase in the ability of the reserve to withstand 'edge effects' (a concept referred to as perimeter to area ratio). Edge effects can be minimised by promoting 'buffering' land uses which border the reserve.

The Park boundaries are defined by Albany Highway and some rural and residential properties to the north. Under the City of Armadale Town Planning Scheme 4, properties to the north of the Park are zoned Rural Living 2.

To the east, the Park boundaries are defined by rural and rural residential properties, Nelson and Admiral Roads and the Armadale Christian College. Properties to the east of the Park are generally zoned Rural Living 1 or Rural Living 2.

To the west the Park, boundaries are defined by a mixture of larger private rural (zoned Rural Living 4 and Rural Living 10 under Town Planning Scheme 4) and rural residential (zoned Rural Living 1 under Town Planning Scheme 4).

The surrounding rural and residential properties may have current and future management implications for the Park, such as the influences listed below.

- Unauthorised access including by foot, horseback or by vehicle.
- Fire management in relation to life and property.
- Dieback management.
- Predation by feral animals and domestic pets.
- Increased probability of weed invasion.
- Visual effect on the Park.

Currently, unauthorised entry from adjacent properties is a key management concern due to the possible further spread of *Phythothora* Dieback throughout the Park. This is further considered in Section 11.1 Disease & Dieback. Weed invasion is also an important issue as non-native and potentially weedy vegetation planted on the Park's boundaries has, in the past, lead to weed proliferation throughout the Park. Weed spread from adjacent lands is further considered in Section 11.2 Weeds.

Future land use changes should consider these potential impacts on the park during the early stages of planning.

The south of the Park is primarily bounded by Crown lands part of a wider park formerly known as the Darling Range Regional Park, and is zoned Regional Parks and Recreation under the overarching Metropolitan Regional Scheme and the City of

Armadale Town Planning Scheme 4. The southern boundary of the park provides a link to the Wungong Gorge and is managed by the Department of Environment and Conservation (DEC).

Recently the boundaries of the Darling Range Regional Park as a wider entity were revised, and what was the Darling Range Regional Park became a mixture of National Park vested in the Conservation Commission of Western Australia and Regional Park broken into smaller units. Bungendore Park and the DEC managed land stretching to the south, as well as the Armadale Settlers' Common Reserve on the northern side of Albany Highway, are now recognised as a separate Regional Park, named the Wungong Regional Park as a collective unit. A management plan for this area is in the early stages of development by DEC.

Future management of Bungendore Park should endeavour to be consistent with the wider Wungong Regional Park management plan when it is completed.

The City of Armadale and the Bungendore Park Management Committee has strived to engage the local community and surrounding landowners to take a cooperative approach to the management of the Park and adjacent properties. Initiatives such as delivering brochures to surrounding landowners and engaging local media sources to promote issues of key importance to the Park have been undertaken. Surrounding landowners have also been encouraged to participate in the activities of the Bungendore Park Management Committee.

A City of Armadale officer has been appointed to the Darling Range Regional Park Advisory Committee (consisting of community and government representatives) to provide a communication link between those with an interest in the management of Bungendore Park and the wider Wungong Regional Park.

Adjacent Land Use: Strategic Direction

- *Adjacent Lands 1: Liaise with landowners to encourage land uses on adjoining land that are sympathetic with Bungendore Park values.*
- *Adjacent Lands 2: Maintain 'low profile' access to trigonometric points.*
- *Adjacent Lands 3: Consider the impact of future land use changes on Bungendore Park during the early stages of planning.*
- *Governance 2: Manage Bungendore Park in cooperation with adjacent landholders including land managers which form part of the wider Wungong Regional Park.*

7.0 Biophysical Environment

BIOPHYSICAL ENVIRONMENT VISION

- Management decisions and actions undertaken in Bungendore Park consider the need to adapt to climate change.
- Protection of natural geological and hydrological processes within Bungendore Park.
- Protection and enhancement of landscape and scenic values of Bungendore Park.

7.1 Climate

Bungendore Park experiences hot dry summers and cool wet winters classified as Mediterranean.

Annual average rainfall is around 1139mm. Between May and August the highest amount of rainfall occurs which tends to increase immediately east of the Scarp and then progressively decreases further eastward. Due to the Park's position on the Darling Range Scarp face, and its undulating microclimate, variations occur in relation to scope and aspect.

Maximum and minimum temperatures vary from 30 degrees Celsius in February to 15 degrees Celsius in July.

Human induced Climate change is a recognised threat to Western Australia's Biodiversity (Draft – A Biodiversity Conservation Strategy for Western Australia See: http://www.greenhouse.gov.au/science/guide/pubs/chapter4.pdf).

The potential impacts of climate change on the values of Bungendore Park have not previously been considered and were not identified in the 1997 Bungendore Park Management Plan.

Studies suggest that biological systems are likely to come under significant pressure from climate change, which is likely to progress at a rate that will exceed their natural adaptive capacities (Australian Government, 2005). Consistent with global trends, Australia has warmed approximately 0.8^0C over the last century (Hughes, 2003). CSIRO projections for future climate change indicate that a decrease in rainfall in the south west of Western Australia and an annual increase in temperature of 0.4 to 2^0C is expected by 2030 (Hughes, 2003). Potential impacts of future changes in temperate and rainfall on Bungendore Park are further considered in section 11.10 Climate Change.

7.2 Geomorphology

Bungendore Park is part of a natural unit formed by an isolated element of the Darling Plateau. To the west, it is cut off by the fault line of the Darling Scarp. The other boundaries of the element have been determined by stream erosion; the Neerigen Brook along the southern boundary and, less incisively, along the western boundary streams running north and south into the Neerigen and Wungong Brooks respectively.

The Park mainly occupies the upland plateau of this element, gently undulating land above about the 250m contour. The Park boundary falls short of the steep slopes of the Wungong Brook gorge to the south. To the west, gentle slopes give way to the steeper slopes of the Scarp face, with the park boundary following the upper third of the face. In the north-western extension of the park, more of the scarp face is included. To the north, the plateau gives way to gentler slopes forming the north-facing slope of the valley cut by the Neerigen Brook.

Bungendore Park is characterised by a gently undulating plateau from its eastern edge to just over half of its width to the west. The main slopes of the Park associated with the Darling Scarp are then encountered and steepen in a westerly direction. Gentler slopes characterise the northern edge of the Park. Incision of drainage lines on the western edge, and, to a lesser degree, on the northern edge, give rise to a sequence of spurs and gullies on the western boundary, and the western end of the northern boundary of the Park.

The soils of Bungendore Park are derived from secondary working of the deep lateritic weathering of the Darling Plateau, itself based mainly on granites and gneisses with some basic intrusions.

The secondary working has included some fretting and colluvial movement on the Scarp face and on the valley sides, and alluvial movement of materials along drainage lines. Thus, in places, the entire lateritic profile remains substantially intact while elsewhere the profile has been truncated by erosion and may have superficial deposits of the secondarily worked materials as described above. Where the lateritic profile remains largely unmodified by erosion, three main horizons can be distinguished, a frequently indurated, iron and bauxite uppermost horizon referred to as a duricrust; a zone of mottle kaolinite clay beneath, which merges, at depth, into the third horizon of pallid kaolinite clay. This laterite profiles occurs over most of Bungendore Park from its eastern margins to more than half its width to the western boundary. Reworking (stripped) of the laterite profile produces gravels, sands and light clays which are redistributed in the landscape and together with the residual of the stripped laterite profile, constitute the remaining soils of the area. The most extreme form of reworking is when the laterite profile is stripped of bedrock and no redistributed materials have come to rest on the bedrock. Then, basement rocks outcrop.

Slopes, gentle at first, then steepening, occur at the edges of the laterite plateau. By far the most important slopes of Bungendore Park are those associated with the Scarp face on the western boundary. These vary in soil depth from several metres to no soil where basement rocks outcrop. The general aspect of the slopes is westerly with consequently higher than average temperature in the late afternoon. Incisions by streams on the western edge of Bungendore Park gives rise to local variations in aspect with some south-facing (cooler) and north facing (warmer) slopes. These variations, in soil depth, slope aspect and slope angle, mean that the greatest range of plant communities in Bungendore Park occur on the Scarp face. The marginally gentler slopes of the north western extension of Bungendore Park do not have the same vegetation richness because the slopes are associated with a spur (water shedding), not a gully, and have been subjected to considerable weed invasion with strong evidence of grazing use. The soils on the north-west extension also do not have the same range of depth, with no basement rock outcrops occurring. Nevertheless, communities of Jarrah and Marri forest, Wandoo woodland and open meadow occur in close proximity to that spur.

The other main slope area is to the north of the north-facing slopes of the valley of Neerigen Brook. While the duricrust extends to the Park boundary, in several places on this slope, drainage lines consisting of gravels, sands (rare) and clays are found. These vary in depth with some small occurrences of coarse gravels over shallow soils. The warm northerly aspect, variation in soil depth and availability of water along

drainage lines, benefit a good range of plant communities. Good transitions are exhibited where progressively sparser Marri gives way to treeless shrubland as soil depth decreases.

Much of the plateau of Bungendore Park (above the 250m contour) is the entire laterite profile, mostly with duricrust.

Significant extensions occur below that contour on the north-north-west aligned spurs into the north-west extension of Bungendore Park, and on to the south-facing slopes of the valley at Neerigen Brook. The laterite profile is truncated to all depths of bedrock on the Scarp face with the residual clay horizons not far beneath the veneer of superficial (reworked) material. Greater depths of gravel, and, to a much lesser extent, clays and sands (rare) occur in three north-west aligned drainage lines and their flanks, the most westerly of which covers a substantial part of Bungendore Park. Other gravel dominated areas tend west and south.

Trails and firebreaks within Bungendore Park have been developed and signposted on-site (for more information see: 10.2.7 Access for management).

Four named walk tracks are on the plateau on eastern side of park where the aspect is less steep. The steeper parts of the Park fall within the 'Landscape Protection Area' – a zone established within the park as a part of the 1997 Bungendore Park Management Plan where the most diverse range of plant communities occur and where access is limited. Only a minimal number of fire access tracks occur within this area (namely one which borders the Landscape Protection Area) and no named or maintained walking tracks occur.

Tracks are inspected on regular walks of the park by Bungendore Park Management Committee members. Firebreak condition is also annually inspected by the City of Armadale. Soil erosion is known to occur on a fire track that was cleared without authorisation on the western boundary. This area is now being left to regenerate naturally. A recently installed firebreak on the eastern boundary is beginning to show signs of erosion. Action to minimise track erosion is ongoing.

The preservation of soil profiles from threats such as erosion are further considered in Section 11.9 Erosion.

7.3 Hydrology

A watershed runs through the Park from the north-west through to the east. The watershed divides the water catchment areas into two, creeks flowing north and north-west towards the Neerigen River and drainage lines running south-easterly towards the Wungong River valley. The main drainage line extending into the Park, on the Eastern boundary, runs across a gently undulating plateau, except at the south east corner where land slopes down into a drainage line of a stream running south to Wungong River. Figure 4 shows the catchment boundaries of Bungendore Park.

Drainage lines running south to Wungong River barely reach Bungendore Park.

All of the creeks within Bungendore are seasonal (winter flowing), the main one being Cooliabbera Spring which dissects the western boundary of the Park adjoining the Wungong River south of Armadale. The creeks generally flow from May to November. Cooliabbera Spring has some associated damp areas adjacent to its drainage lines.

The water resource of the Park will have significance to existing fauna, both native and feral (see Section 9.2 Fauna and Section 11.4 Feral Animals). The ethnographic survey of the Park indicated significance of the water in relation to the Aboriginal people (See Section 8.1 Ethnographic).

All of the creeks contain fresh water as the catchment area is primarily within the undisturbed park area, therefore there are no potential pollutants except for vehicles on site and ground disturbance due to rehabilitation or track erosion.

Walking tracks within the park are well established with four named walk tracks on the plateau on eastern side of park where there are no drainage lines. The Cooliabberra Spring drainage line falls within the Landscape Protection Area and access has been discouraged through fencing and signage on-site.

The potential for rehabilitation activities to cause soil erosion is considered during the planning for rehabilitation works (see Section 11.8 Vegetation loss) particularly where activities such as deep ripping are proposed.

A Water Corporation major tunnel, which transfers water from Wungong Dam to the trunk mains located at Albany Highway, traverses the Park (Figure 4). The 2 metre wide tunnel is at an average depth of 100 metres below the natural ground surface. Drilling should not take place to the vicinity of the tunnel and the Water Corporation should be consulted prior to any drilling taking place.

7.4 Landscape and Scenic Value

The Darling Range is a significant scenic resource for both people living in the region amongst the bushland environment and people living on the Swan Coastal Plain who can view the vegetated scarp face.

Bungendore Park consists of a dramatic landscape, including undulating plateau, steep rocky outcrops and native bushland with a diversity of vegetation.

Based on previous studies of the Darling Scarp Regional Park (Stuart-Street and Kirkpatrick 1990), a large proportion of Bungendore Park can be classified as high scenic quality by the presence of granite outcrops, high density vegetation, spurs and gullies. The eastern portion of the Park is moderate scenic quality and is characterised by gently undulating topography. The Park also contains locations with lookout opportunities.

Areas of high scenic quality are partially represented in the Landscape Protection Area designated as a management zone as a result of 1997 management planning for the reserve (see section 10.1 Management Zones). This management plan proposed retaining the boundary of this Landscape Protection Area.

The City of Armadale Town Planning Scheme No. 4 Special Control Area Map No.1 identifies portions of the Park as an area of prime landscape quality (Figure 5).

Medium scenic quality areas were defined in the 1997 Bungendore Management Plan as being characterised by gently undulating topography. Areas of lower scenic quality as described in the 1997 Bungendore Park Management Plan included areas degraded due to rubbish dumping, areas badly eroded or trampled, areas previously used for gravel extraction and areas adjoining residential areas.

The Bungendore Park Management Committee has made significant progress over the last 27 years to revegetate areas identified in the 1997 Bungendore Park Management Plan as low scenic quality. Whilst gravel pits are in various stages of rehabilitation and still easily identified as distinct from the undisturbed bushland, efforts to rehabilitate these areas should be ongoing (see Section 11.8 Vegetation loss). The Bungendore Park Management Committee annually considers the need to undertake revegetation activities. Site Evaluation & Monitoring proforma (BP13) are used to plan annual revegetation and monitor the previous year's revegetation activities.

Track alignments have been revised in order to minimise the impacts of erosion on the landscape that may subsequently reduce scenic quality. Track W2 no longer runs across contours to cross Cooliabberra Spring; and Tracks 9 & 13 are no longer actively maintained. It is possible that the recently cleared Track W2 north of Track 7 will face future erosion, impacting on the scenic quality. Efforts to align this track with natural contours were made during its clearing in 2006 and this area will be monitored consistently to ensure appropriate erosion control is implemented. The locations of tracks are illustrated in Figure 6 - Bungendore Park Master Plan Map.

The impact of dieback on scenic and landscape values in the park was not considered in the 1997 Bungendore Park Management Plan. In 1993 dieback was first identified in the Park and subsequently the Park was mapped for dieback and a management plan for the disease has been implemented within the park for the past four years (see Section 11.1 Disease & Dieback). Whilst dieback results in cycles of both plant death and regeneration, inevitably, without a cure dieback will both reduce the natural density and diversity of the native vegetation as well as severely altering the structure and appearance of the bushland with subsequent impacts on fauna.

Approaches to address future areas of low scenic quality through revegetation may not be as successful as previously demonstrated in the Park for areas of erosion and past clearing, as the disease may always remain in the soil and pre-European levels of diversity may not be able to be re-established. The potential impact of Dieback on the biodiversity and scenic values of Bungendore Park is subsequently discussed in section 11.1 Disease & Dieback.

Track alignments are revised on an ongoing nature in order to minimise activities that could cause detrimental effects to areas of high scenic quality. For example, Spinebill Stroll has been re-routed so it follows Casuarina and Wattle Roads and no longer follows Tk 19, 18 & 16. This is to minimise the likelihood of the spread of dieback to areas of high scenic quality that are currently dieback free (see Figure 6 - Bungendore Park Master Plan Map).

Landscape and Scenic Value: Strategic Direction

- *Landscape and Scenic Value 1: Minimal alteration should occur to existing areas of high scenic quality.*
- *Landscape and Scenic Value 2: Take action to prevent activities that cause detrimental affects, (e.g. soil erosion, or the spread of dieback), within areas of high scenic quality.*

Other strategic directions for the protection of landscape and scenic vales from threats are further detailed in Sections 11.8 Vegetation loss, 11.1 Disease & Dieback and 11.3 Fire management.

8.0 Heritage Values

HERITAGE VALUES VISION
The identification and conservation of the ethnographic and archaeological values of Bungendore Park.

An ethnographic and archaeological survey was carried out at the Park in August 1995. A full report was been completed (Macintyre Dobson & Assoc. and Harris 1995), the results and recommendations of which are discussed in Section 8.1 Ethnographic below.

In 2007 as a part of this management plan preparation, a search was undertaken of the Aboriginal Heritage Inquiry System to determine the presence of any new Aboriginal sites (www.dia.wa.gov.au). The entire area of the Bungendore Park shows as being covered by a Heritage survey, and the western extent of the Park shows an Aboriginal Site ID 3512 – Wungong Brook mythological site.

8.1 Ethnographic

The conclusion reached as a result of archival research, consultations and a systematic field survey, is that there are two newly recorded sites of ethnographic significance to living Aboriginal people within the designated boundaries of the Bungendore Park Project Area.

It is pointed out that human interference to Aboriginal sites is an offence, unless authorised under Section 17 of the Western Australian *Aboriginal Heritage Act 1972*. It is therefore recommended that the Bungendore Park Management Committee take adequate measures to inform any project personnel of this requirement.

Access to natural features of indigenous significance was managed following the identification of management zones in the Bungendore Park Management Plan of 1997. Recreational pursuits in areas identified as “Heritage Areas” and “Landscape Protection Areas” have not been promoted consistent with this plan. These areas include the area previously identified for its indigenous significance and the area bordering the Wungong Gorge which was identified as of indigenous significance in the 2007 search of the state Aboriginal Heritage Inquiry System.

In 1996 the Bungendore Park Management Committee published a brochure titled "Boaks and Balga" as a tool to deliver indigenous education to park users.

Ethnographic Values: Strategic Direction

- *Ethnographic Values 1: Ethnographic should be protected by limiting access to natural features such as granite outcrops, creeks and springs to help protect them for future generations to enjoy.*
- *Ethnographic Values 2: Stakeholders should work in conjunction with local Aboriginal elders to develop and deliver educational information about the indigenous heritage of the Park (for example: Aboriginal foods and medicines).*

8.2 Archaeological

No archaeological sites, as defined in Section 5 of the *Aboriginal Heritage Act 1972* were located in the field survey or have previously been recorded in the project area.

Research indicated that a scattering of quartz artefact sites were recorded within 5 km of the survey area.

The project site was considered to hold the potential for archaeological sites, due to a number of granite and dolerite outcrops with quartz intrusions in association with minor creek lines in the Park.

A factor usually limiting the effectiveness of similar surveys is low visibility. In this case however, visibility was at its highest point in the Park as a result of bushfires. After having employed a strategy that encompassed a reasonable and diverse proportion of the project area, it is therefore considered that the survey methods were adequate and appropriate.

After having completed the survey, it is considered that the lack of sites located in the present survey may reflect a real absence of archaeological material in the survey area. The major brooks, Neerigen in the north and Wungong in the south, may have been major foci and preferred continuous occupation, hunting and gathering sites in the region.

As there were no archaeological sites located within the boundaries of the project area through the course of the survey, this management plan has been formulated based on this result.

Archaeological Values: Strategic Direction

- *Archaeological Values 1: Personnel undertaking recreational or other developments within the Park should be made aware of their obligations to report any archaeological material, should it be encountered during earthmoving, as outlined under Section 15 of the Aboriginal Heritage Act 1972-80.*

8.3 European Heritage

The area of Bungendore Park has been used by European settlers mainly as a resource for materials, e.g. timber and gravel. No area within the Park has been developed and therefore has no European heritage value. Areas adjacent to the Park, on its western and south-western boundaries, contain paddocks where evidence of previous European settlement existed (Macintyre Dobson and Assoc. & Harris 1995).

9.0 Biodiversity Values

BIODIVERSITY VALUES VISION

- The protection and conservation of the diversity of vegetation communities, flora & fauna, rare and endangered species, fungi and wildlife corridors and habitat within Bungendore Park.
- Manage biodiversity through ongoing efforts to understand Bungendore Park's values and threats to these values and the implications of management decisions on the Park.

9.1 Vegetation

Bungendore Park's vegetation is typical of the western edge of the Northern Jarrah forest, as described in previous studies (Bell & Heddle 1989, Heddle & Marchant 1983, Heddle *et al*. 1980, and Havel 1975b).

The vegetation complexes at the edge of the scarp are unique and limited in their range, forming a linear, north south strip less than 3 kilometres wide along the Darling Plateau. Vegetation is closely related to the topography and soils of the Park, as well as introduced factors such as dieback (see section 11.1 Disease & Dieback), gravel and timber extraction, and increased recreational use.

Bungendore Park is also a Perth Region plant biodiversity project Jarrah Forest reference site (JF5). These sites are areas of vegetation which existed prior to clearing to assist in improving local knowledge and guide species selection for revegetation sites (Del Marco *et al.* 2004).

9.1.1 Vegetation communities

The vegetation within the Park generally consists of open Jarrah-Marri forest with smaller areas of Wandoo-Marri woodland on the shallower solids of the western slopes. The Park also contains outcrops of granite which are surrounded by heath. Rock Sheoak occurs in the south west corner of the Park (J Lewis 1999 and 2007).

A botanical survey carried out in November 1993 by J Lewis identified the following five major vegetation communities. Photos of these typical vegetation communities follow (Plates 1- 5).

- Open Jarrah-Marri forest – mixed forest containing *Banksia grandis, Allocasuarina, Xanthorrhoea, Persoonia longifolia***.**
- Wandoo-Marri woodland – with an understorey of *Grevillea, Dryandra, Acacia, Hakea, Xanthorrhoea* and *Macrozamia.*
- Upland heath – around the granite outcrops with an upperstorey of Wandoo and Marri, *Allocasuarina* and an understorey of *Acacia, Calothamnus, Conostylis, Acacia, Petrophile, Verticordia* and *Xanthorrhoea*.
- Herbland – on granite outcrops including *Stylidium, Hibbertia, Borya,* mosses and lichens.
- Sheoak woodland – includes *Allocasuarina,* Marri and Christmas Tree with some Jarrah as an upperstorey. The understorey is dominated by *Acacia, Calothamnus, Drosera, Dryandra, Grevillea, Calytrix, Darwinia, Hovea* and *Hibbertia.*

In addition, six floristically distinct units (known as floristic community types – hereafter referred to as FCT's) were identified in the Park (Markey 1997) including the following (Figure 7).

- Upland Jarrah Forest (shown as Type 9 on Figure 7)
- Upland *Corymbia calophylla – Eucalyptus marginata* woodland (shown as type 11 on Figure 7).
- *Eucalyptus wandoo – Corymbia calophylla* woodland on poorly drained clay flats (shown as Type 1b on Figure 7).
- Southern granite shrublands and woodlands (shown as Type 2 on Figure 7).
- Woodlands on steep colluvial slopes of Scarp face and upper valleys (shown as Type 4 on Figure 7)
- Shrublands on upper slope granite outcrops (shown as Type 8 on Figure 7).

Of the FCTs identified above, Type 9 or the Upland Jarrah Forest is by far the most abundant across the Park. However, each of the FCT's is represented in the Landscape Protection Area. To the least extent, FCT 11 (Upland *Corymbia calophylla – Eucalyptus marginata* woodland) is represented within the Landscape Protection Area. This Management Plan proposes to amend the boundary of the Landscape Protection Area to allow for the inclusion of an area of FCT 11 on the south western boundary (see section 10.1 Management Zones).

The most diverse area of vegetation within Bungendore Park falls within the Cooliabberra Spring area, which is a winter wet depression. The most extensively represented vegetation community is the Open Jarrah-Marri forest. The four other vegetation communities are represented to a lesser extent.

These vegetation communities of Bungendore Park are threatened by a number of factors which are considered in alternative sections of this document (see Section 11.0 Key Threats).

The Cooliabberra Spring area was identified as having the highest conservation value of all the vegetation communities within the Park in the 1997 Bungendore Park Management Plan. Subsequent to recommendations in the 1997, a Landscape Protection Area was established around the spring including no access signs and

fencing where appropriate. This draft management plan proposes that the boundaries of the Landscape Protection Area be expanded (see Section 10.1 Management Zones)

Other vegetation communities are all represented within the Landscape Protection Area. Token fencing has been used within the Park to restrict access to the Landscape Protection Area as proposed in the 1997 Bungendore Park Management Plan.

More detailed study of the vegetation within Bungendore Park, specifically as relates to the response of vegetation to fire, was undertaken over an 8 year period by Jeff Lewis (Lewis 2003) and is further considered in Section 11.3 Fire management.

Vegetation Communities: Strategic Direction

- *Vegetation Communities 1: Maintain a Landscape Protection Area over the area of greatest diversity that represents all vegetation communities within the Park.*
- *Vegetation Communities 2: Maintain existing, and expand where necessary, token fencing and signage to the Landscape Protection Area.*
- *Vegetation Communities 3: As opportunities arise, establish monitoring plots within designated areas to record the response of vegetation to environmental impacts and management regimes.*

9.1.2 Flora

Within the five identified vegetation communities of Bungendore Park, a total of 351 species from 63 families have been recorded within the Park (J Lewis, 2007) (Appendix 3 Part A). These figures represent 44% of the total species occurring in the Jarrah Forest of the South West of Western Australia.

A botanical survey conducted in 1993 (Lewis, 1999) indicated two species of Declared Rare Flora (DRF) under the *Wildlife Conservation Act 1950*. These include:

- *Thelymitra stellata* (Star Sun Orchid)
- *Diuris micrantha* (Dwarf Bee-orchid)

Under the Commonwealth *Environmental Biodiversity and Conservation Act 1999*, *Thelymitra stellata* is classified as Endangered and *Diuris micrantha* classified as Vulnerable.

It is the policy of the Department of Environment and Conservation not to publicise the exact locations of populations of Declared Rare Flora. In accordance with this, details of the location and the management of these species have been included in Appendix 2 which will not appear in public versions of this document.

Populations of Declared Rare Flora have previously been disturbed in the Park (pers. comm. Sarti 2007) despite efforts to keep the information confidential.

According to the 1997 Bungendore Park Management Plan, a further three 'Priority' species under the *Wildlife Conservation Act 1950* were also identified. However, reference to the study indicating this finding could not be traced. Other species of significance recorded in the 'Flora of Bungendore Park' publication 2007 include:

- *Calothamnus rupestris* – a Priority 4 species under the *Wildlife Conservation Act 1950.* A few populations are known to occur near Admiral Rd and within the Landscape Protection Area. Lewis (2007) recommends further survey work within the Park for this species.
- *Pithocarpa corymbulosa* – currently listed as a Priority 2 species.
- *Dryandra praemosa* – a species previously recorded as 'geographically restricted' across western Australia. Five populations are known to occur in the Park predominantly along the southern boundary.
- *Astroloma foliosum* – or the Candle Cranberry. This species is endemic to the Darling Scarp and has only been recorded from a single granite outcrop within the Park. This species was once a Priority 4 species, but has since been removed from the listing.
- *Synaphea acutiloba* – a species endemic to the Perth area found through out the Park. This species was once a Priority 4 species, but has since been removed from the listing.
- *Tricoryne* sp. – this has been recorded in the Park and listed by Lewis (2007) as a Priority 2 species. This species is potentially occurring in the southern extension of its known distribution (occurs in the Eneabba area).

Other studies of rare and priority flora in the Darling Range has indicated that vegetation complexes, landforms and micro-climate particular to Bungendore Park may provide more suitable habitat for other declared rare species.

The diverse array of flora in Bungendore Park is threatened by a number of factors which are considered in subsequent sections of this document (see 11.0 Key Threats).

The Bungendore Park Management Committee has undertaken the production of interpretive material regarding the flora of the Park. A revised version of the book "The Flora of Bungendore Park" was released in August 2007. This publication is based on survey work undertaken in the Park by Jeff Lewis in 1993. In addition, research on the response of vegetation to fire has also been undertaken by Jeff Lewis following a wildfire in December 1994 (see section 11.2 Weeds).

Flora: Strategic Direction

- *Flora 1: Monitor those populations of rare and priority species regularly in conjunction with Department of Environment and Conservation officers.*
- *Flora 2: Locate populations of* Diuris micrantha *and consider management measures.*
- *Flora 3: Participate in further DRF and Priority species surveys when opportunities arise.*
- *Governance 4: Support ongoing flora, fauna and fungi research in Bungendore Park and consider findings of studies in an adaptive approach to park management.*
- *Climate 1: Participate in research opportunities into the effects of changing climate on biodiversity in Bungendore Park.*
- *Governance 5: Continue community education efforts to raise the profile of Bungendore Park's flora, fauna, fungi and recreational values.*

Further strategic directions for the protection of flora are considered in Section 11.0 Key Threats.

9.2 Fauna

9.2.1 Species occurrence

The fauna of Bungendore Park is considerably enriched by the varied habitat. In most respects this fauna is typical of the western edge of the Jarrah forest, but benefits from the inclusion or near proximity of additional habitat types. The vegetation of the Park includes, in addition to the Jarrah forest and its plateau top, smaller areas of Wandoo, heath scrub, Dryandra thickets, and some cleared areas. These give greater diversity to the fauna.

In particular, the steep slopes of the Wungong Gorge bordering the southern boundary of the Park seem to provide a corridor link with the fauna of the more heavily forested and wet areas of the Wungong catchment. These south-facing gorge escarpments carry dense undergrowth, which extends into the valleys of the southern end and to a lesser extent the western part of the Park below its laterite escarpment rim.

Below the escarpment rim the habitat changes markedly from the comparatively uniform Jarrah of the plateau top. There are areas of Wandoo along the western slopes, with dense low scrub on shallow soil around granite outcrops. In many places, cleared or partially cleared land touches upon the northern, western and south eastern boundaries. The Wandoo and heath have some additional fauna species not generally found in Jarrah, while the cleared land is a link with the much more open habitat westwards on the coastal plain, and brings to more open parts of the Park fauna that would usually avoid the heavier Jarrah forest.

The unique undulating plateau top also offers some further habitat variation, ranging from quite heavy Jarrah to open valleys, rather swampy in winter. Some of the habitat variety of this part is man made, but seems to have had the effect in increasing the bird population, especially the abundance of flowers and nest sites for honeyeaters in the Dryandra thickets around old gravel pits. Cooliabberra Spring retains an area of moisture throughout the summer, attracting kangaroos and birds in the hot summer months, a lusher habitat than the surrounding plateau.

Avifauna

A total of 82 species of birds have been recorded in the Park (Johnstone, 1996). Appendix 3 Part B provides a comprehensive list of the avian fauna recorded in the Park.

Along the southern edge of Bungendore Park, a precipitous drop into the Wungong Gorge is the permanent home of a pair of Wedge-tailed Eagles.

The comparatively lush vegetation (prior to the 1994 fire) of the northern (i.e. South facing) side of the Wungong Gorge brings into its edge Bungendore Park, and into the adjoining moister valleys, some bird species more typical of the wetter densely vegetated valleys of the main forest block further east and birds more typical of the Karri and south coast. Among these are very colourful Red-winged Wren (*Malurus elegans*), sometimes to be seen at Cooliabberra Spring, and the Red-eared Firetail

(*Stagonoplera oculata*). The Red-eared Firetail is now extinct in most of the Perth Metropolitan Area, and is scarce in the Wungong Gorge visiting the Park's southern boundary (Johnstone, 1996).

Another south-west endemic, the White-breasted Robin (*Eopsaltria georgiana*), has been recorded in the Wungong catchment and within the Park. These rather timid species are intolerant of human interference so disturbance in the western portion of the park should be kept to a minimum. Over half of the western boundary of the park falls within the Landscape Protection Area.

The Park supports good resident populations of a number of Western Australian endemic species and subspecies including the Red-capped Parrot, Western Rosella, Yellow Robin, Western Thornbill, White-naped Honeyeater and Western Spinebill.

Both the Endangered Baudin's Cockatoo (White-tailed Black-cockatoo) (*Calyptorhynchus baudinii*) and Carnaby's Cockatoo (*Calyptorhynchus latirostris*) and the Vulnerable Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*) occur within Bungendore Park (as listed under the *Wildlife Conservation Act 1950*). Under the Commonwealth *Environmental Biodiversity and Conservation Act 1999*, Carnaby's Cockatoo is classified as Endangered and Baudin's Cockatoo is classified as Vulnerable.

In the past five years, Carnaby's Cockatoo have been observed breeding in the Wungong Gorge and in Bungendore Park. Baudin's Cockatoo breed further south but move north in the autumn/ winter months, roosting in Wungong Gorge and feeding in the Park, nearby areas and on the Swan Coastal Plain (pers. comm. Johnstone, 2007). Preliminary research suggests that these species forage up to 8 to 12 km in range. The Red-tailed Black Cockatoo are also known to breed and feed within Bungendore Park, with individuals marked during research identified within the Park over a number of years. Historically, these birds were thought to feed within or nearby the Park, but are now observed feeding on the Swan Coastal Plain and moving 4 to 5 km away (pers. comm. Johnstone, 2007). The home range of these significant birds has conservation implications for the species itself and for the Park (also see section 9.2.2 Wildlife Corridors).

It is estimated that the total population of Baudin's Cockatoo is about 15,000 due to the shooting of the species by orchadists and the loss of habitat through clearing. Similarly, Carnaby's Cockatoo is threatened by clearing and competition for nesting hollows with Corellas and feral honey bees (Johnston & Kirkby, 2005). One suggested hypothesis for the increase in range of these species is the influence of threats to biodiversity such as climate change, dieback and clearing on the availability of food both within and nearby the Park.

All three cockatoo species live for approximately 50 years and tend to nest in the same hollow each breeding season – making Bungendore Park potentially home to a number of birds. For this reason, old stag trees should not be removed unless deemed a safety issue by the City of Armadale in conjunction with the Bungendore Park Management Committee. Arborists may be consulted to determine the status of these trees.

Bungendore Park became a project site for the Cockatoo Care Program in 2001. The Cockatoo Care Program – a then partnership between the WA Museum and the Water Corporation aims to provide research and public awareness to support the survival of these iconic birds. Studies in that Park has also assisted with wider understanding of the ecology and behaviour of these species.

Further to this, a current study by the WA Museum in collaboration with the Water Corporation is occurring on all birds recorded in the Wungong area (including Bungendore Park) considering the abundance of these birds, status (nomads, migrants etc.), feeding sources, breeding season etc.

Threats to avian fauna include the loss of nesting sites to feral bees and feral birds, fire and clearing of areas of important feeding, roosting and nesting sites. Feral animal control in Bungendore Park is further considered in Section 11.4 Feral Animals.

In addition to the control of feral animals, habitat supplementation may be an appropriate future action to provide nesting hollows for avian species. Prior to the installation of habitat supplementation such as nest boxes, careful consideration must be given to the ongoing maintenance requirements of these structures.

Mammals

Studies by the WA Museum since 1993 have yielded lists of mammals known to occur within the Park (see Appendix 3 Part C). This survey has not been updated since the 1997 Bungendore Management Plan, however, 28 species of mammals were found to be present in the Park. This list includes 6 species of introduced mammals; house mouse, black rat, fox, feral cat, rabbit and feral pig. Feral animal control in Bungendore Park is further considered in Section 11.4 Feral Animals.

In addition, Bat research is in the initial stages of development in the Park. The outcome of these studies may provide valuable information on future management approaches in Bungendore Park.

The large mammals of Bungendore Park are the Western Grey Kangaroo (*Macropus fuliginosus*), the Black-gloved or Western Brush Wallaby (*Macropus irma*) and the Common Brushtail Possum (*Trichosurus vulpeca*). Other mammal species of note include the Chuditch (native cat – *Dasyurus geoffroii*), Quenda (*Isoodon obesulus*), Brush-tailed Phascogale (*Phascogale tapoatafa*), Western Pygmy-possum (*Cercartetus concinnus*), Mardo or Yellow-footed Antechinus (*Antechinus flavipes*) and Echidna or Spiny anteater (*Tachyglossus aculeatus*).

One species of mammal documented to be found in the Park, the Chuditch is classified under the Commonwealth *Environmental Protection and Conservation Act 1999* and the *Wildlife Conservation Act 1950* as Vulnerable.

The Grey Kangaroo is common within the Park, and the Black-gloved Wallabies uncommon. Pit-fall trapping and opportunistic surveys undertaken by the WA Museum suggests that populations of mammals within the Park is low in comparison to expected population sizes in other areas (Johnstone pers. comm. 2007).

Mammal populations in the Park could potentially be threatened by the occurrence of predators such as feral cats and foxes, by the impacts of dieback on vegetation diversity and structure and by fire. Following wildfires in 1994, the relative abundance of mammals reduced in the Park, and a number of burnt kangaroos and possums were noted (Johnstone pers. comm. 2007).

Old stag or veteran trees for nesting, fallen logs and dense vegetation are key habitat requirements for the majority of mammal species recorded and for species the mammals rely on in the Park.

Of the mammals recorded as occurring within the Park itself, the Bandicoot, Brushtail Possum and Western Pygmy-possum primarily herbivorous and are dependent on bulbs, leaves, fruits and blossoms. Changes to vegetation structure such as changes to the number and diversity of flowering species could result in long term population declines resulting due to the loss of availability of food for these small mammals.

Such changes to vegetation structure could occur following dieback infection or fire and are further discussed in these sections (See Sections 11.1 Disease & Dieback and 11.3 Fire management). Burbridge and McKenzie (1989) found correlations with the non-flying mammal weight range of 0.035 grams to 5.5 kilograms and the likelihood of decline in range or extinction of this species. It has been found that the Western Pygmy Possum occurs in this critical weight range, and threats on the vegetation structure also have the potential to negatively impact on population numbers of this species.

In addition, the Water Rat, Echidna, Chuditch and Mardo may in turn be affected by primary threats such as predation (the Mardo also falls within the Critical Weight Range) and secondary threats such as changed vegetation and trophic structures as a result of impacts such as dieback and fire which again may reduce population numbers.

Reptiles, amphibians & insects

Studies by the WA Museum have yielded lists of invertebrates, reptiles and amphibians known to occur within the Park (see Appendix 3 Part D). Those of special significance include the King's Skink (*Egernia kingii*) (which is localised in its occurrence in the Park) and the Carpet Python (*Morelia spilota*).

Direct threats to fauna are further considered in subsequent sections of this report. Management of threats to vegetation assemblages and flora in the Park have been undertaken and discussed extensively within this Plan. Each of these activities in turn assists in the conservation of fauna in the Park and is also further considered through this plan.

Fauna: Strategic Direction

- *Fauna 1: Continue efforts using nest boxes to establish habitat supplementation areas and educate Park visitors about the fauna conservation values of the Park.*
- *Fauna 2: Retain dead trees that are standing or fallen in the bushland as fauna habitat when deemed safe to do so.*

- *Fauna 3: Continue to participate in cockatoo and other fauna monitoring projects in Bungendore Park.*
- *Fauna 4: Participate in efforts to reduce illegal shooting of cockatoos in areas surrounding Bungendore Park.*
- *Governance 4: Support ongoing flora, fauna and fungi research in Bungendore Park and consider findings of studies in an adaptive approach to Park management.*
- *Feral animals 1: Undertake further research as to population dynamics of feral animals in Bungendore Park and the threats these feral animals pose to the Park's conservation values. Implement management measures as deemed necessary, consistent with the Department of Environment and Conservation's Pest and Problem Animal Control Plan for Perth Regional Parks.*
- *Climate 1: Participate in research opportunities into the effects of changing climate on biodiversity in Bungendore Park.*
- *Hunting 1: Report all incidences of Hunting to the Department of Environment and Conservation for investigation by Wildlife Officers.*
- *Fire management 1: Stakeholders implement the Bungendore Park Fire Management Plan 2009 to 2018.*
- *Disease and Dieback 1: Implementation of the Dieback Management Plan 2009 to 2019 and review of this plan in 2019.*
- *Goverance 5: Continue community education efforts to raise the profile of Bungendore Park's flora, fauna, fungi and recreational values.*

9.2.2 Wildlife corridors

Bungendore Park abuts the Wungong Gorge to the south which is part of the Wungong Regional Park, which is then connected with water catchment areas and State Forest. In the north, fingers of bushland from the Armadale Settlers' Common Reserve come within a few hundred metres of the Park's boundary, separated by the Albany Highway. These linking pieces of bushland provide corridors for avifauna and seeds/spores to travel relatively unhindered.

Private lands in rural/residential and rural densities border the parks (see section 6.0 Adjacent lands). Vegetation in these areas may provide valuable links for birds migrating to and from Bungendore Park. In Rural Living Zones, under Section 5B.7 of the Town Planning Scheme 4, clearing of remnant vegetation or the destruction or damage of native trees is not permitted except for any approved development, approved vehicular access requirements or to satisfy necessary bush fire protection measures.

Wildlife corridors are essential for the fauna with large home ranges and to maintain genetic diversification through fauna migration. Whilst Bungendore Park provides a large land mass of relatively continuous habitat and vegetation, some species require other areas of vegetation disjunct from the Park as a component of their breeding, nesting and feeding habits. Other species require several kilometres of home range. For example, the home ranges of the Baudin's Cockatoo, Carnaby's Cockatoo and the Forest Red-tailed Black Cockatoo, all species of special conservation significance, are known to include areas on the Swan Coastal Plain for feeding, roosting and breeding. The conservation significance of links between the Park and other areas of significant vegetation with the capacity to support the feeding and roosting needs of these

cockatoos are highlighted. Areas such as Fletcher Park in Wungong, Creyk Park and Bob Blackburn Reserve in Armadale and areas of the wider Darling Range Regional Park are all areas where these species have been recorded (Cole, 2004, Johnstone and Kirkby, In prep.). Roadside verges and street trees also provide important food sources for these species.

Of the mammal species occurring in the Park most species require a maximum of a few kilometres in range. However, mating relationships and territorial nature of some mammals can result in differences in these estimates. Whilst some mammals may be able to sustain a home range entirely within the Park, inevitably others home ranges will cross into lands outside of the Park. Those mammals requiring water, such as the Water Rat, the Kangaroo and Wallaby may be very dependent on links between the Park and the Wungong Gorge. Cross tenure and cross agency management of habitat areas is critical to the maintenance of these important links and management of other threats.

Other fauna of conservation value occur within the Park. However due to the complexities in understanding life histories, species requirements and habits in Bungendore Park, the importance of local and more regional wildlife corridors is relatively unknown.

Figure 3 and 5 provide maps of the surrounding potential wildlife corridors surrounding Bungendore Park.

The 1997 Bungendore Park Management Plan identified the importance of strengthening links of the north of the Park with the south of the Armadale Settlers' Common Reserve across Albany Highway. This was in part achieved through the Bungendore Park Management Committee's involvement in the revegetation of the Albany Highway road reserve following its widening. Long term goals are focused on enhancing existing green links for wildlife corridors and buffering through activities such as weed management and revegetation (see section 11.2 Weeds).

The establishment of the Landscape Protection Area within the Park as proposed in the 1997 Bungendore Park Management Plan provides an area of diverse vegetation communities and creates links to floristically different communities of the Swan Coastal Plain and Wungong Gorge for fauna. Recreation within this area has not been promoted and some areas have been protected through measures such as the use of token fencing.

Wildlife Corridors: Strategic Direction

- *Wildlife Corridors 1: Participate in opportunities to identify and study wildlife corridors in the Park and from the Park to adjacent areas. Based on these outcomes consider opportunities to protect or enhance habitat corridors.*
- *Fauna 5: Support the protection of areas of habitat and feed trees at Creyk Park, Bob Blackburn, Fletcher Park and significant stands of street trees.*

9.3 Fungi

Fungi are a fundamental component of Jarrah Forest ecosystems such as Bungendore Park. Fungi recycle nutrients through the decomposition of organic material including

litter, dung and wood, provide a food and habitat function, and in addition form mycorrhizal relationships between flora and fauna. Both epigeous (above ground fruiting) and hypogeous (below ground) fungi occur within the Park, however, the extent of the relationships between the diversity of fungi and other flora and fauna in the Park, is relatively is unknown.

Forty five species of fungi have been collected and identified in the Park (see Appendix 3 Part E). Surveys have concentrated on the plateau of the Park in the Jarrah Marri upland forest community.

Mammals recorded in the park are a mixture of herbivorous, carnivorous and omnivorous species. Whilst many of these species are not typically considered mycophagous, they have been noted previously as opportunistic feeders and may also feed directly on fungi.

The impact of fire on fungi is considered in section 11.3.2 Fire planning.

The Bungendore Park Management Committee has participated in the Urban Bushland Fungi Project since its initiation in 2004. This project aimed to increase community skills in the identification and survey for mushrooms and to provide baseline knowledge about fungi. Four fungi surveys have been undertaken in the Park since 2000 with a total of 191 community members participating.

Fungi: Strategic Direction

- *Fungi 1: Establish a database of fungi known to occur in the park, including data such as features, habitat, and associated plant species.*
- *Fungi 2: Consider opportunities to further understand the impact of dieback and other threats on mycorrhizal relationships in the Park, and animal interactions with fungi.*
- *Goverance 5: Continue community education efforts to raise the profile of Bungendore Park's flora, fauna, fungi and recreational values.*

10.0 Management Structure

MANAGEMENT VALUES VISION
Establishment of a management structure that ensures the ongoing protection of biological, educational, recreational and historical values of the Park.

10.1 Management Zones

The 1997 Bungendore Park Management Plan broadly divided Bungendore Park into 5 zones with different attributes and management principles which are listed below.

1) Landscape Protection Area. "An area on the western and central area of the Park including the most diverse range of plant communities which require special protection. Limited access will be permitted; active recreation will be prohibited. No

facilities shall be provided except for interpretive and directional signage. Management to this area shall be low." This zone is approximately 182 hectares in size.

2) Heritage Area. "These areas have been identified as of special significance to the Aboriginal people as they contain water lines, rock outcrops and certain types of vegetation. Access will be limited and no facilities will be provided except for interpretive signage. Management in the area will be low."

3) High Use Zone. "The main tracks through the park that contain the majority of use. These areas will have occasional motorised and frequent non-motorised access. Facilities will be developed in specific areas (ie: picnic tables, seats and shelters). Ongoing management in these areas will be high."

4 and 5) Medium and Low Use Zones. "These areas do not attract much use, therefore, access to be left unaltered except for the rehabilitation of unwanted tracks. Motorised traffic is prohibited except for emergency and management purposes. No facilities are provided and management will be medium to low."

The definitions of these five management zones in the park are no longer considered adequate to address the management of threats to biodiversity within the Park.

This draft management plan proposes to retain the boundaries of the Landscape Protection Area with minor modification and the Heritage Protection Area but to remove the high, medium and low use zones of the Bungendore Park Management Plan 1997-2007. This plan also proposes to change the definitions of the Landscape and Heritage Protection Areas to reflect the need for more intensive management of threats such as dieback, weeds and erosion.

Minor modifications to the Landscape Protection Area are proposed to include an area of Floristic Community Type 11 (see section 9.1.1 Vegetation communities) which occurs on the southern border of the Park due to this vegetation types poor representation within the Park as a whole and within the Landscape Protection Area itself.

The impact of these threats on these zones is further discussed in subsequent sections of this plan.

Access to the Landscape Protection Area has been minimised through the use of token signage on the perimeter of some areas of this zone. In other areas, recreation has not been encouraged through the lack of marked walk trails and facilities within this area. There are no walk tracks designated in the Landscape Protection Area identified on maps of the walk tracks such as those in the street directory.

No active monitoring of the success of access control mechanisms employed to protect the Landscape Protection Area has been undertaken. Access is further considered in Section 10.2.6 Access control – gates and fences etc.

Management efforts in the Landscape Protection Area have been generally low – however there are threats to this area which require further consideration and are further considered in section 11.0 Key Threats.

Access to the three Heritage Areas that occur within the Park has not been promoted and do not cross marked walk tracks. Management efforts in the Heritage Areas has been generally low – however, there are threats to this area which require further consideration and are further considered in section 11.0 Key Threats.

The zoning plan was not reconsidered after the five year recommended review period of the 1997 Bungendore Park Management Plan.

Management Zones Strategic Directions:

- *Management Zones 1: Extend the Landscape Protection Area boundaries as identified on Bungendore Park Master Plan Map (Figure 6).*
- *Management Zones 2: Management Decisions will be based on the following revised definition of the Landscape Protection Area:*
  - *An area on the western and central area of the park including the most diverse range of plant communities which require special protection.*
  - *Limited access will be permitted but active recreation will not be encouraged.*
  - *No facilities will be provided except for directional signage.*
  - *Threats to conservation values will be addressed as a priority.*
- *Management Zones 3: Retain the Heritage Protection Areas as defined on Bungendore Park Master Plan Map (Figure 6).*
- *Management Zones 4: Management Decisions will be based on the following revised definition of the Heritage Areas:*
  - *These areas have been identified as of special significance to the Aboriginal people as they contain water lines, rock outcrops and certain types of vegetation.*
  - *Limited access will be permitted but active recreation will not be encouraged.*
  - *No facilities will be provided except for directional signage.*
  - *Threats to conservation values will be addressed as a priority.*
- *Management Zones 5: Ongoing review of the Management Zone plan each 5 years.*

10.2 Visitor and Community Use

VISITOR AND COMMUNITY USE VISION

To understand the dynamics of visitor use and recreation within the Park, and to provide recreation and tourism opportunities, which meet visitor needs and expectations, minimises risks to visitor safety, and maintains primarily and in perpetuity the Parks biodiversity and 'sense of place' values.

Recent research shows that natural areas don't just protect biodiversity, but are fundamental for human health and wellbeing, fostering psychological wellbeing, reducing stress, boosting immune systems, enhancing productivity, and promoting healing (Parks Victoria 2002).

Bungendore Park is relatively well known and used by the local community. The management of the Park has involved local community groups which have in turned raised the profile of the Park.

While providing recreational and tourism opportunities is important in terms of raising the profile of the Park and meeting the needs of the local community, the provision of better facilities and opportunities is likely to increase the number of users and has the potential to degrade the existing values that attracted them in the first place unless they are well maintained.

In terms of provision of visitor opportunities within Bungendore Park, the primary objective will be to protect conservation values and 'sense of place' values of the Park (including deterring recreation from ecologically sensitive areas) and secondarily to meet the needs of visitors for nature based activities.

A visitor survey or study of park users has not been undertaken in Bungendore Park. As a result, management measures to promote recreation and tourism pursuits in the area are based on an assumption of what values the Park offers to its visitors and what aspects of the Park these visitors most value.

The need for trail markers to be designed and positioned in a way that provides an appropriate level of information whilst respecting the 'sense of place' values of the Park is further considered in section 10.3 Information, Interpretation, Education and Amenity.

Bungendore Park is currently used by the local community for walking, jogging, exercising pets, bird watching, nature appreciation, picnicking, horse riding and off-road cycling/mountain bike riding (permitted in some areas of the Park), and off road vehicle use (not permitted in the Park).

When providing for recreational pursuits in the Park, the City of Armadale as a land manager has a duty of care to ensure visitor safety is addressed. As such, tracks should be maintained in a state suitable for safe pedestrian access and hazards should also be identified and reduced as far as possible. The development of a plan to ensure this duty of care is met should be consistent with Australian Standards AS 2156.1-2001 Walking Tracks – Classification and Signage and AS 1256.2-2001 Walking Tracks Infrastructure Design. Using trail building principles as set out in *International Mountain Bicycling Association* (2004), sustainable trails can be created which minimise erosion and accommodate a variety of users.

The City of Armadale and the Bungendore Park Management Committee has installed fire access gates throughout the Park and at the main entrances and has allocated names and numbers to the tracks for both interpretive bushwalking and management access. Tracks now occur within the park for recreation and fire access. In addition,

one track is allocated as a bridle trail. The extent to which seating is required by Park visitors is unknown.

Strategic Directions (Visitor and Community Use):

- *Visitor and Community Use 1: Undertake to understand the dynamics of current Park visitor uses such as bushwalking, dog exercising, bird watching, nature appreciation, picnicking, horse riding and off road cycling. Determine the need for further facilities to meet the needs of all recreational user groups and establish mechanisms to meet these needs as well as other objectives for park and conservation management.*
- *Visitor and Community Use 2: Consider and seek grant or partnership opportunities to implement the Visitor and Trails Management Plan once developed.*
- *Visitor and Community Use 3: Closure of tracks not identified on Bungendore Park Master Plan Map 6 and allowed to either naturally regenerate or be revegetated.*
- *Visitor and Community Use 4: Develop and implement a Visitor and Trails Management Plan that considers the following:*
    - *Roles and responsibilities for regular track inspections and maintenance;*
    - *Consistent trail headers and signage for orientation which meet Australian Standards AS2156.1-2001 Walking Tracks – Classification and Signage and AS1256.2-20012001 Walking Tracks Infrastructure Design, consider vandalism and repair and are minimal as to not detract from 'sense of place';*
    - *The International Mountain Bicycling Association's Guide to Building Sweet Singletrack* (2004)*;*
    - *Consistent interpretative material;*
    - *Dieback and erosion risk; and*
    - *Visitor safety.*
- *Visitor and Community Use 5: New Tracks and Trails will only be developed and formed consistent with the dieback Management Plan, erosion control principles and the principles of the International Mountain Bicycling Association's Guide to Building Sweet Singletrack* (2004).
- *Visitor and Community Use 6: Ensure that Park users are provided information at Park entrances, consistent with Interpretation and Information Strategic Direction 1, that includes*
    - *areas in which they are/ are not encouraged to recreate in the Park and the rationale behind this*
    - *appropriate conduct in the Park*
    - *areas where bins are available*
    - *how to report illegal activities*
    - *Park safety information*

10.2.1 Bushwalking

Whilst recreational activities have never been monitored formally within the Park, bushwalking activities both with and without dogs is assumed to be the most popular

activity. Bushwalking activities are considered compatible with the biodiversity conservation objectives of this plan.

Bushwalking opportunities are provided in the Park, outside of areas designated for conservation, namely the Heritage Area and the Landscape Protection Area (see Section 8.1 Management Zones). Four named walk tracks (See Figure 6 – Bungendore Park Master Plan Map) occur outside these special protection areas, and are marked in the Park with tree tags (see Section 10.3 Information, Interpretation, Education and Amenity) for easy orientation. Leaflets are available from the City of Armadale illustrating these walk tracks. Tracks also appear within the West Australian Street Directory.

Due to the lack of a visitor use survey within the Park, it is unknown if the current trail network caters for all needs of the bushwalkers. The current trail network within the Park provides recreational and educational opportunities to park users, minimising the potential impacts of vegetation trampling from foot traffic. Many of the tracks which traverse the Park form a dual purpose for other activities and are illustrated on the Bungendore Park Master Plan Map (Figure 6).

The 1997 Bungendore Park Management Plan proposed the development of further walk trails which provide views across the Darling Scarp (north of the Landscape Protection Area) and an additional trail which links the Wungong Gorge. The provision of these additional bushwalking opportunities may be important to meeting expectations and needs of visitors. The development of an additional tracks which links the Wungong Gorge to Bungendore Park is possible through Gate L. Investigations into the feasibility of these track developments should be further considered during the undertaking of a visitor needs survey. The further development of any walk tracks and facilities within the Park should also be consistent with the City of Armadale Recreation Strategic Plan (City of Armadale 2003) which proposes the following strategies associated with the provision of walk trails in the City of Armadale:

“Investigate and report to Council on opportunities to establish additional walk and/or bridle trails in bushland reserves and trails which link bushland reserve” (Strategy 26) and “Develop and promote a system of walking trails along the ridge and face of the Darling Scarp” (Strategy 57).

Potential threats associated with bushwalking activities to the biodiversity conservation values of the Park include the spread of dieback, rubbish and dog faeces reducing the aesthetic quality of the Park, track erosion and vegetation trampling. It is recommended that no new walk tracks be established to the scarp edge.

Threats associated with these activities are addressed in Sections 11.1 Disease & Dieback, Section 11.9 Erosion and Section 11.5 Rubbish Dumping. The extent to which Park visitors access those areas that are not permitted or desirable for recreational use is unknown, and should be further studied in order to manage any threats adequately.

The use of walk tracks for recreational pursuits in Bungendore Park has elements of risk. Visitors to the Park need to be aware of safety hazards including both site specific risks and those found in any bushland.

Strategic Directions (Visitor and Community Use - bushwalking):

- *Visitor and Community Use 7: Using outcomes of a visitor use study, re-evaluate the need for an additional track linking the Wungong Gorge to Bungendore Park.*
- *Visitor and Community Use 8: Continue to permit dogs on leash in Bungendore Park. Ensure adequate signage and instruction to Park users regarding the requirements for dogs to remain on-leash.*

10.2.2 Bird watching and nature appreciation

The extent to which Park visitors value bird watching and nature appreciation opportunities in the Park is largely unknown. It is known that the Park and Wungong Gorge are recognised internationally by bird watchers as one of Perth's premier birding hotspots due to the high assemblage of endemic birds in the area (pers. comm. Kirkby, 2008). It can be assumed that bird watching and nature appreciation activities are undertaken in conjunction with other activities such as bushwalking, and that the remote bushland sense of place values of the Park is the draw card for these activities. Unlike those simply visiting the Park for bushwalking opportunities, bird watching and nature appreciation enthusiasts may desire access to areas of the park outside of the designated recreational areas of the Park.

Further visitor use studies should be undertaken to determine if the current tracks and trails within the Park meet the needs of this group, or if other facilities are required in order to provide this opportunity in a manner which meets the users needs, minimises risks and protects the Parks conservation values.

10.2.3 Picnicking

Picnicking is rarely observed within the Park but without the findings of a visitor use study in the Park, the extent to which this activity is undertaken – is relatively unknown. No picnic facilities are provided in the Park, and it is likely that visitors picnicking in the area are doing so in association with other activities such as walking and nature appreciation.

The provision of picnic facilities in the Park may pose threats to other values such as 'sense of place' and conservation values through a normally associated increased occurrence in rubbish and vandalism of picnic tables and bins etc. The 1997 Bungendore Park Management Plan proposed the installation of picnic areas close to the Admiral Rd and Albany Highway access gates where vegetation is already degraded and surveillance is reasonable. Rubbish bins are located at the Admiral Road and Albany Highway entrances to the Park.

Picnic facilities are available in the nearby Wungong Dam – 2 kilometres from Bungendore Park. Given the risks associated with the provision of these facilities, and the nearby facilities at Wungong Dam, it is proposed not to provide picnic facilities

within that Park and that an appropriate alternative may be to link the Wungong Dam facilities to Bungendore Park by walk trail.

10.2.4 Horse Riding

The number of visitors using Bungendore Park for horse riding, and the frequency of these visits is currently unknown. Horse use in the conservation areas is considered to be damaging to sensitive ecosystems through track erosion, soil compression, grazing and weed spread through faeces.

In response to support from the local community during the development of the 1997 Bungendore Park Management Plan to use the Park for horse riding activities, a number of bridle trails were designated in the Park, away from sensitive areas and connecting rural subdivisions of surrounding areas (See Bungendore Park Master Plan Map 6).

Additional actions proposed in the 1997 Bungendore Park Management Plan to manage equestrian use of the Park included:

- The establishment of a 1200mm high post and rail fencing on the Park side of the bridle trail and accompanying signage to clearly identify areas in which horses are/ are not permitted.
- The track be monitored to determine any threats that horse use pose to the Park
- Request equestrian users feed their horses on a seed free diet 24 hours prior to entering the Park.
- That horse riding be phased out if considered detrimental to the conservation of the Park.
- That a code of conduct be established for horse-riders along designated bridle trails.

Signage was installed to designate areas where horses are not permitted and 3 cavalettis were installed to allow equestrian access while deterring motor bike riders. No monitoring of the impacts of horses has been undertaken.

Subsequent to the development of the bridle path, dieback mapping indicated that the path intersects a large stance of dieback free vegetation where recreation would not be encouraged consistent with the principles of this management plan.

Further studies are required to determine the levels of horse use which are occurring in the Park and to ensure that equestrian users are remaining in those areas designated for horses. However, anecdotal information suggests that it is local community members using the bridle trails rather than larger clubs and groups arriving to use the area with horse floats.

It is proposed that local community members, who can access the Park without travelling their horse on a float, should be allowed to continue to use the designated bridle paths within the Park. Further dieback hygiene consideration is detailed in Section11.1 Disease & Dieback. Consistent with the approach to ‘phase out’ horse riding in the Park as proposed in the 1997 Bungendore Park Management Plan, people should be discouraged to use the area for equestrian use through the use of signage at

parking areas. Under the *Local Government Act 1995* City of Armadale Property Local Law, all vehicles, including an animal being ridden or driven, are prohibited on local government property unless a person obtains a permit under the local law to do so. The implementation of a 'horse rider permit system' was a recommendation of the 1997 Management Plan. Currently no permits under the Property Local Law have been issued.

This local horse riding recreational users group should also be consulted to ensure that the current bridle trail meets their needs and they are satisfied with the designated trail and codes of conduct.

Strategic Directions (Visitor and Community Use – horse riding):

- *Visitor and Community Use 9: Revise the 'code of conduct' for local equestrian users of the Park and develop tools to communicate it to Park users.*
- *Visitor and Community Use 10: Discourage horse riding in areas not designated as Bridle Trails in Bungendore Park.*
- *Visitor and Community Use 11: Do not promote Bungendore Park as an equestrian area.*
- *Visitor and Community Use 12: Install adequate signage for horse riders that assists with orientation and determining which areas are permitted for the activity and which areas are not.*
- *Visitor and Community Use 13: Where opportunities arise, participate in research opportunities into the effects of horse riding on the conservation values of Bungendore Park.*

10.2.5 Off-road cycling

The extent to which off road cycling (mountain bike riding) activities are undertaken in the Park are unknown. Off road cycling has the potential to spread dieback. Further studies shall be undertaken to establish the extent to which off road cycling is undertaken in the Park. Consideration may be given to appropriate responses to ensure the needs of this visitor user group are met in low conservation value areas while still considering other park management and conservation objectives. Off road cycling is also permitted on named tracks under the *Local Government Act 1995* City of Armadale Property Local Law on local government property.

10.2.6 Access control – gates and fences etc.

Designated access to Bungendore Park is primarily off Admiral Rd to the east, with secondary access off Albany Highway. Albany Highway is a major travel route, therefore, in regional terms the Park can be easily identifiable and accessed.

Fire access gates on the perimeter of the park restrict non management personnel access into the Park.

Existing fencing occurs around Bungendore Park in sections, some of which is in good repair and dilapidated in other areas. In 1995, the Management Committee upgraded the access gates with additional vehicle-deterrent fencing. The dilapidated appearance of the fencing often results in an area looking uncared for and can result in

subsequent rubbish dumping and misuse. The general upgrading of the fencing to the perimeter of Bungendore Park will help its profile as a reserve for conservation and deter misuse.

Fencing and gates are also used on the inside of the Park as 'token' fencing. This internal fencing is used to protect areas of special value such as areas of the Landscape Protection Area. Internal gates provide a reminder to management vehicles about the accessibility of different tracks.

10.2.7 Access for management

The formation of tracks in Bungendore Park would have begun with timber and gravel extraction as well as firewood collection and fire access track formation. Additional tracks are likely to have been formed as a result of rubbish dumping activities.

As a result, Bungendore Park is currently traversed by numerous tracks. These tracks serve dual purpose in many instances as walking tracks and fire access tracks. Walking tracks are discussed in section 10.2.1 Bushwalking. Fire access is considered in section 11.3 Fire management.

Management vehicles such as those required to undertake general inspections, weed control, dieback treatment, maintenance and fire management are allowed access in the Park along existing designated tracks (see Figure 6 - Bungendore Park Master Plan Map). Entry is via gates which are dual-locked with the City of Armadale Parks and Gardens key and Bungendore Park Management Committee.

A series of signs assist managers in orienting themselves within the Park. Internal gates are also used to minimise accidental access into areas were vehicles are not permitted (see section 10.1 Management Zones).

Other vehicles may be authorised to access designated areas for events or special occasions. Requests for access should be assessed by the Bungendore Park Management Committee and the City of Armadale.

Signage and interpretation is considered in section 10.3 Information, Interpretation, Education and Amenity.

Strategic Directions (Visitor and Community Use – access for management)

- *Visitor and Community Use 14: Prohibit public (non management) vehicles into the Park except for events/ special occasions.*
- *Visitor and Community Use 15: Require that all organised groups seeking permission to use Bungendore Park as a venue for events, commit to remaining on existing tracks and trails outside of the Landscape Protection an Heritage Areas and observe appropriate dieback hygiene.*
- *Visitor and Community Use 16: If the need is identified in the future, develop a vehicle Code of Conduct which addresses City of Armadale dieback policy ENG9, speed limits, the need to lock gates on entry and entry of the park, and other safety issues relating to vehicles in the Park as well as provides maps of access points, dieback, and management zones. Ensure all management*

personnel and special occasion vehicles in the Park have a copy of the Code of Conduct.

10.2.8 Unauthorised access by off road vehicles

Vehicles, other than management vehicles, are prohibited under City of Armadale by-local laws in Bungendore Park. However, both four wheel drives and two and four wheel off-road motorbikes still use the Park and in the wider Darling Range Regional Park. Offenders can be prosecuted under the *Off Road Vehicle Act*.

Activities such as trail bike riding and four wheel driving have the potential to spread dieback and cause track erosion. These activities also pose a significant threat to other park users. Key areas where off road vehicles are thought to access the Park from includes areas identified in this plan as Landscape Protection Areas and Heritage Areas.

Uncontrolled access to the Park mainly occurs on its western, southern end, and to some extent, eastern boundaries, either via firebreaks or new trails being formed. Access on the Southern boundary is from South Western Highway, where DEC managed access gates in the Wungong Gorge are often damaged to gain entry. Access is also achieved via Old Admiral Rd south in the Shire of Serpentine Jarrahdale municipality. Due to the steep slope of the southern boundary, at this stage, vehicles appear to be remaining in the DEC managed gorge area. However, access by some vehicles is evident at Gates J, K, B and L. It is recommended that signs advising that off road vehicles are not permitted in the Park be installed at these locations (See section 10.3 Information, Interpretation, Education and Amenity).

Through the use of fencing and gates opportunities for off road vehicle access into Bungendore Park has been minimised. Incidences of rubbish dumping have also significantly reduced since the implementation of access control measures on the perimeter of the reserve.

Whilst possibly proving an effective deterrent for some potential off road vehicle users, the installation of gates and fencing is not effective in eliminating all illegal use of vehicles within the Park. Information brochures advising residents about the illegal nature of operating a vehicle in City of Armadale reserves has been distributed to properties surrounding the Park, but no monitoring of success was undertaken. City of Armadale and Shire of Serpentine Jarrahdale Rangers, DEC Rangers and Police have previously undertaken joint effort ‘stings’ in the regional park. Feedback from DEC Rangers suggests that these stings are effective in reducing off road vehicle use in the regional park if undertaken on a regular basis.

Damaged gates and fences are repaired and upgraded on an ongoing basis and all reports of off road vehicle use in the reserve should be followed up by City of Armadale rangers.

Strategic Directions (Visitor and Community Use – unauthorised access):

- *Visitor and Community Use 17: Repair damaged gates and fences as soon as possible. Control access through the use of gates and large rocks ongoing basis when areas become ‘opened up’.*

- *Visitor and Community Use 18: Seek to further identify where adjacent landholders may be accessing the Park in areas not permitted and liaise with this user group.*
- *Visitor and Community Use 19: Upgrade fencing to ensure it provides an impression that Bungendore Park is well cared for, prevents unwanted access, allows wildlife to pass through and protects areas of valuable flora.*
- *Visitor and Community Use 20: Install 'off road vehicles prohibited signs' at Gates J, K, B, L and other locations where vehicles enter the reserve as they are identified.*
- *Visitor and Community Use 21: Where resources permit, contribute to the undertaking of joint agency off road vehicle stings in the Wungong Regional Park.*
- *Visitor and Community Use 22: Provide copies of the "Off Road Vehicles in the City of Armadale" brochure to locals and park users and neighbours encouraging them to report illegal off road vehicles when observed.*

10.3 Information, Interpretation, Education and Amenity

INFORMATION, INTERPRETATION, EDUCATION AND AMENITY VISION
The use of a standard style of communication tools in Bungendore Park.

10.3.1 Interpretive material & communication

20 different types of signs and symbols are used throughout Bungendore Park. Common signs used in the park include:

- Tracks and trail identifiers for orientation;
- Firebreak identifiers;
- 'No entry signs';
- Routed timber Reserve Name signs (used at Park entrances);
- Totem signs;
- Interpretive and educational signs;

Images of the signs currently used in Bungendore Park appear in Appendix 4.

This document has identified the need for more signage for the Park to address threats. Recommended signs include:

- No off road vehicle signs – see section 10.2.8 Unauthorised access by off road vehicles
- Code of conduct signs – see section 10.2.1 Bushwalking
- Signage to provide orientation and safety – see section 10.2 Visitor and Community Use

It is also proposed to communicate with park neighbours regarding issues such as dieback, weeds, unauthorised access and fire management.

The Bungendore Park Management Committee has previously developed park signage and interpretative material featuring the City of Armadale and Bungendore Park Management Committee logo. Whilst currently not used in the park, the

Department of Environmental and Conservation style for regional parks also applies to Bungendore Park as it is part of the wider Wungong Regional Park.

Further interpretative material, signage and communication materials should continue to reflect both management of the park by the City and by the community, through the use of the Bungendore Park Management Committee and City of Armadale logos.

Consistent with City of Armadale policy, all park signs and communication methods should be developed in a standard style across the Park, taking into consideration the City of Armadale corporate style, the Department of Environment and Conservation style for the Wungong Regional Park, and feature the Bungendore Park Management Committee logo.

All signage installed in the park must be approved by the City of Armadale prior to manufacture and installation.

Communication tools should be developed consistent with thematic interpretation principles.

Strategic Direction (information, interpretation, education and amenity) :

- *Interpretation and Information 1: Development of a standard style for Park signs and communication mediums, consistent with City of Armadale corporate styles, Department of Environment and Conservation Wungong Regional Park styles and featuring the Bungendore Park Management Committee logo.*

11.0 Key Threats

11.1 Disease & Dieback

DIEBACK AND DISEASE VISION
Undertake actions to minimise the further spread of dieback within Bungendore Park as a priority action. Treat areas of dieback free vegetation that are at high risk of infection to minimise further impacts of the spread on biodiversity values.

The water mould *Phytophthora cinnamomi* (hereafter referred to as dieback) is known to occur in 57% of Bungendore Park. Its introduction to the park is unknown, but presumably occurred during timber production and or gravel extraction activities.

Other *Phytophthora* species in WA that may have the potential to impact the Park include *P. citricola, P. cryptogea, P. nicotianae,* and others. The Australian Honey Fungus (*Armillaria* sp.) is responsible for "white rot" root disease is highly destructive and survives on dead plant material. For this reason, mulch should not be brought into the Park as part of any revegetation programs.

Dieback was first identified in the Park in 1993 (Pers. comm. Colquhoun 2007). In 2001 Bungendore Park was mapped for the presence of dieback and disease fronts were marked on the ground by blazing trees and using flagging tape.

An estimated 40% of the flora in Bungendore Park is thought to be susceptible to dieback.

Potential impacts of dieback on Bungendore Parks' values include:

- Death of up to 40% of the species diversity through direct susceptibility of these species to *Phytophthora cinnamomi.*
- Death of species not directly susceptible to *Phytophthora cinnamomi* but susceptible to changes in biophysical conditions resulting from death of susceptible species.
- Changed habitat availability due to changes in vegetation structure and diversity leading to loss of fauna and fungi diversity.
- Changed trophic relationships due to changes in vegetation structure and diversity leading to loss of fauna diversity.
- Loss of Heritage values.
- Loss of visual and landscape values.
- Water table elevation due to the loss of vegetation resulting from deleterious effect to water sensitive species.

The intensity of the impact from *Phytophthora cinnamomi* infection varies across the Park.

Areas of highest susceptibility to dieback infection include:

- areas adjacent to already infected areas;
- areas close to vectoring influences (such as run-off of *Phytophthora cinnamomi* spores from upslope areas or proximity to tracks where soil may be moved on shoes or vehicles);
- areas where access is not controlled.

The locations of dieback infections in Bungendore Park are illustrated on the Dieback Control Map illustrated in Appendix 5 - Bungendore Park *Phytophthora cinnamomi* Management Plan 2009 to 2019. Whilst Bungendore Park has not been remapped for dieback since its original mapping in 2001, disease fronts have been remarked on-ground during the undertaking of treatment works. It appears that in some areas the front has moved in the order of 5 metres from its original location (pers. comm. Tufnell 2007).

Dieback spreads through the movement of *Phytophthora cinnamomi* spores in soil. Spores of *Phytophthora cinnamomi* also spread via root to root contact of susceptible species (research suggests approximately 1m per year). Any activities that result in the movement of soil can potentially move dieback.

Due to the nature of dieback being able to spread through soil movement associated with human based activities and natural vectors through root to root contact and overland flow, protectability of the vegetation over time is a key consideration in the long term conservation of Bungendore Park.

Two management responses to the threat of dieback are proposed. The primary management objective is to reduce further spread of the disease. Boot cleaning stations have been installed in strategic locations, and visitors to the Park are encouraged to use the brushes or spray their shoes with methylated spirits to prevent the spread of dieback. The second management objective is to treat areas of vegetation where the risk of spread is highest with phosphite. This proposed management approach is further detailed in Appendix 5 - Bungendore Park *Phytophthora cinnamomi* Management Plan 2009 to 2019.

Strategic Direction (Dieback):

- *Disease and Dieback 1: Implement the Bungendore Park Dieback Management Plan 2009 to 2019 and review this plan in 2019.*
- *Visitor and Community Use 5: Ensure that Park users are provided information at Park entrances, consistent with Interpretation and Information Strategic Direction 1, that includes*
    - *areas in which they are/ are not encouraged to recreate in the Park*
    - *appropriate conduct in the Park*
    - *areas where bins are available*
    - *how to report illegal activities*
    - *Park safety information*

11.2 Weeds

WEED VISION
Undertake actions to identify (map) the weeds of Bungendore Park and implement actions to gradually minimise weed infestations, focusing on priority weeds and keeping good condition bushland in good condition.

Weeds are species that occur outside of their natural range. They have the ability to displace native plants and can disrupt ecosystem function through smothering vegetation, altering habitat and fire regime.

Weeds can establish in the park through:

- Wind, water and bird dispersal from neighbouring properties
- Inappropriate dumping of garden refuse
- Fire management activities.

Thirty four species of weeds are known to occur in Bungendore Park to date. These weeds have been identified by the Bungendore Park Management Committee and some mapping has been undertaken. Presently, the majority of the Park is weed free, with smaller areas densely populated with weeds. These pose a threat to the rest of the Park as well as the weeds which occur on neighbouring properties. Cottonbush is prevalent on boundaries of the Park to neighbouring properties and in the Landscape Protection Zone. This declared weed is a priority for control. Populations of three invasive plants (*Watsonia* sp., Bridal Creeper, Blackberry and Arum Lily) are increasing in the Wungong Gorge area adjacent to the Park.

The control of weeds in Bungendore Park should occur using best practice weed management approaches and should be considerate of potential off-target damage and safety.

Weed control undertaken by community members in Bungendore Park should be approved in writing as approved works by the City of Armadale, consistent with procedures detailed in the City of Armadale Friends Group Manual.

Contractors engaged to undertaken chemical weed control in the Park should only be engaged directly by the City of Armadale.

The Bungendore Park Management Committee has previously undertaken efforts to encourage neighbours to Bungendore Park to remove weeds on their own properties and plant local plants to minimise the risk of spread into the Park.

The City of Armadale recently adopted Policy ENG 14 Landscaping and an associated management practice aimed at ensuring landscaping of public open spaces and street verges undertaken by the City in Bedfordale, Roleystone and Karragullen uses locally native plant species unlikely to become weeds.

Fire management activities such as prescribed burning and fire break maintenance can result in increased weed problems. Often weeds thrive in disturbed environments so bushland condition following prescribed burning or wildfires can promote weed growth.

Strategic Directions (Weeds)

- *Weeds 1: Communicate with park neighbours to encourage the use of locally native plants and encourage weed control on adjacent lands*
- *Weeds 2: Prepare and implement a weed control plan which identifies the weed species which occur in the Park, maps their locations and extent, and priorities these weeds for control actions.*
- *Weeds 3: Ensure that any weed proliferation that may follow firebreak maintenance activities, prescribed burning activities or wildfires is followed up with appropriate control.*

11.3 Fire management

FIRE MANAGEMENT VISION
That a cooperative and adaptive approach to fire management is undertaken in Bungendore Park to ensure life and property are protected and that the biodiversity of the reserve is conserved.

11.3.1 Fire History

Bushfires have historically been part of the Australian environment, with wildfires occurring in the Park throughout its history. Documented control burns have occurred since 1977 and fire safety has been the responsibility of the Bedfordale Volunteer Fire Brigade from this date under the direction of the City of Armadale Ranger Services.

Figure 8 illustrates the documented areas of the Park which have been burnt. One of the most significant documented wildfires that occurred in the Park burnt 85% of the vegetation in 1994, killing many animals and threatening the ongoing regeneration ability of the vegetation.

11.3.2 Fire planning

Bush fire protection in Western Australia is a responsibility of Local Government Authorities which administer the day to day running of Volunteer Bushfire Brigades and fire prevention works.

Within the Metropolitan Regional Fire District, the Fire and Emergency Services Authority is responsible for fire fighting response. Bungendore Park falls within the jurisdiction of the Bedfordale Volunteer Bush Fire Brigade.

Bungendore Park has residential properties adjacent to its boundaries. The priority for fire management objectives primarily should consider the protection of life and property followed by a reducing in the incidence of unplanned fires, minimising the spread of weeds and diseases by fire operations and maintaining existing diversity, composition of vegetation and wildlife habitats. Proposed management response to each of these priorities is further discussed in Appendix 6: Bungendore Park Fire Management Plan 2009 – 2019.

11.3.3 Emergency Response

Due to the ease of access to the Park, ignition points by arson are widespread. On average over the past ten years, 10 fires considered to be arson occurred in the Park.

The topography of the Park, with steep rocky slopes on its western side and undulating bushland on its eastern side, makes wildfires difficult and dangerous to control, particularly on the Park's western edge.

The wind pattern in the region during the high fire season is morning easterly winds followed by south-westerly sea breezes and then easterly winds in the late afternoon or evening. These wind patterns increased the difficulty in controlling the 1994 wildfire.

Whilst the clearing of new tracks in Bungendore Park is not consistent with the principles of this plan, new tracks may be necessary in emergency response situations. These tracks should be installed with consideration of potential erosion and dieback impacts (see section 11.1 Disease & Dieback and section 11.9 Erosion). Following the installation of a new firebreak in an emergency situation, the Bungendore Park Management Committee and the City of Armadale should consider the necessity of retaining the track and take appropriate management action.

Following a wildfire, prescribed burn event, or incidences where new firebreaks are installed in emergency situations these areas shall be mapped and recorded by the City of Armadale.

Fire Management Strategic Direction:

- *Fire management 1: Implement the Bungendore Park Fire Management Plan 2009 to 2019.*
- *Fire management 2: Annually communicate objectives of the Bungendore Park Fire Management Plan 2009 to 2019 to Park neighbours and report on the progress in its implementation.*
- *Fire management 3: Map all planned and unplanned fires and store the information electronically.*
- *Fire management 4: Following a wildfire event, carcasses of fauna which may have scientific value are to be offered to the Western Australian Museum for scientific purposes.*
- *Fire management 5: Future fire control and general access tracks (as required) are to follow natural landforms, where possible, reducing the effects of erosion on the landscape.*

11.4 Feral Animals

FERAL ANIMAL VISION
To understand the occurrence and threats posed by feral animals in Bungendore Park and develop and implement a control plan for introduced pests and animals in the Park.

It is widely known that foxes and feral animals such as rabbits, cats and pigs, as well as domestic pets, have negative effects on native animals and plants in bushland, especially in areas located close to urban areas. Feral and domestic animals can damage native plants and habitats by grazing digging and trampling, competing for food and habitat, and predating on native animals.

Domestic animals within the Park are considered in section 10.2 Visitor and Community Use.

Rabbits

European Rabbits are a significant pest in Perth's Regional Parks and cause considerable damage to the natural environment. Rabbits can strip bark off shrubs and trees, graze on vegetation, impact on the regeneration of native plans, cause soil erosion from warren digging and spread weeds (Department of Environment and Conservation 2007).

Rabbits (*Oryctolagus cuniculus)* have not been identified as a problem in Bungendore Park, but have been indicated as a problem in surrounding areas of Bedfordale. It may be assumed that rabbits are not a problem in the Park due to the presence of feral cats and foxes. If rabbits were to establish themselves within Bungendore Park, the effect on the landscape and habitat may be greater than that of foxes and cats combined. In addition, research from New South Wales suggests that following the undertaking of feral cat and fox control – rabbit numbers can dramatically increase (Natural Heritage Trust 1999).

Prior to the undertaking of any rabbit control measures in the Park, the current population of rabbits and an assessment of their potential impact on the Park should be undertaken.

Feral Pigs

Feral pig activity has been observed within the Park and in the Wungong Gorge area.

Feral pigs (*Sus scrofa)* are both an agricultural and environmental pest. Their habit of wallowing and rooting around watercourses and wetland areas can destroy vegetation diminishing nesting and feeding sites for native wildlife and promoting erosion and potentially spreading dieback.

A feral pig control program commenced in 2007 on the Park's boundary with the Wungong Gorge. Grant funding received by the Bungendore Park Management Committee was used for a trapping program. There has been evidence of pigs in the Landscape and Heritage Protection Areas within Bungendore Park highlights the need for ongoing monitoring of feral pig populations and subsequent management.

Trapping, baiting and shooting are feral pig control options for Regional Parks.

Feral Cats

The area surrounding Bungendore Park has historically been identified as an area where unwanted cats have been dumped. Two feral cats were noted to occur in the Park in 1997.

Predation by cats and foxes is considered to be a major factor in the decline, and in some cases extinction of many of Western Australia's mammals. In Western Australia, a majority of mammal extinctions were confined to species on the 35 to 4200g weight range (excluding bats), and nationally this critical weight range was 35 to 5500g (Burbridge and McKenzie 1989). Many mammals of Bungendore Park would be within this weight range and be typical prey for foxes and cats.

A recent PhD study undertaken in the City of Armadale considered if pet cats have an impact on species richness and abundance of native mammals in low-density Western Australian suburbia (Lilith, 2007).

This study found that mammal species diversity was not significantly different in areas of different cat regulation, suggesting that vegetation structure and composition may have contributed more to the overall mammal species richness.

This study also found that in rural areas, the home ranges of cats ranged up to 2.9 kilometres and it was proposed that buffer zones of up to 500m be established around nature reserves to exclude most roaming cats. A residents survey undertaken in the City of Armadale found that 75% of owners and 95% of non cat owners believed cat regulations were necessary in the City with 60% prepared to keep their cats on their property at all times and over 80% willing to confine their cats in at night if required.

Given previous studies on the impacts of native cats on wildlife and this level of support for cat control, education mechanisms for promoting responsible cat ownership may be appropriate for areas within 500m of Bungendore Park.

Foxes

The extent to which foxes (*Vulpes vulpes*) occupy the Park is also unknown.

The control of feral animals such as foxes is generally undertaken across the State using a combination of vermin proof fencing, baiting, trapping and shooting. The methods employed for this control in Regional Parks is detailed in the Department of Environment and Conservation publication (2007) titled 'Pest and Problem Animal Control Plan for Perth's' Regional Parks'.

As a measure to control foxes and cats, aerial 1080 baiting is undertaken in State Forest areas by the Department of Environment and Conservation. The closest areas to the City to receive the 1080 treatment include the Walyunga and Avon Valley National Parks near Mundaring. The dried meat baits which are used contain the naturally occurring poison '1080', found in the native plant genus *Gastrolobium*, commonly called `poison peas'. 1080, or sodium fluroacetate is poisonous to cats and foxes (although cats do not readily take baits) but does not kill native wildlife. However, 1080 is poisonous to dogs posing difficulties in its use close to residential areas.

Currently the Department of Environment and Conservation hand bait small reserves with one bait for every 20 hectares. This must be undertaken monthly on an ongoing basis. The introduction of a baiting program at Bungendore Park would be required on an ongoing basis coupled with careful population monitoring and the instruction of mechanisms to ensure the chance of off target damage (such as domestic dogs) does not occur.

The fencing of Bungendore Park and eradication of vermin within the Park would require a large capital investment and ongoing maintenance. Any proposal to fence the Park would also need to consider the importance of links between the Park and the wider Wungong Gorge.

Feral bees

Feral European Honey Bees (*Apis mellifera*) are known to displace native bees, reduce pollination of native wildflowers, lead to an increased risk of diseases affecting commercial beekeeping and take over tree hollows of native animals (Hay and Clunies-Ross 2007). Feral bees are known to occur in nesting hollows in Bungendore Park.

Feral Bee control has been undertaken in Bungendore Park since 2002. The control of bees has been undertaken by the Bungendore Park Management Committee with external grant funding. Control is undertaken using chemical treatments on a hive-by-hive basis.

Other control options available to control bees in Perth's Regional Parks include removal and destruction of hives, chemical control, and enticement to alternative hives (Department of Environment and Conservation, 2007).

The undertaking of apiary activities in Bungendore Park is not considered compatible with the conservation objectives of the reserve. A search of the Department of Environment and Conservations website July 2007 indicated that there are no current apiary sites in Bungendore Park. The nearest Apiary site is in the Wungong Gorge area on West Australian Planning Commission Land.

Feral birds

Rainbow Lorikeets, Eastern Long-billed Corella and Galah species have recently been seen in the Park. The extent of the threat of feral birds is not yet known, however these species have the potential to impact on hollow nesting birds within the Park. Potential threat from the Indian Ringneck is also high if this species establishes in the Perth Metropolitan Region and spread into the Park.

Feral Animals Strategic Direction:

- *Feral animals 1: Undertake further research as to population dynamics of feral animals in Bungendore Park and the threats these feral animals pose the parks conservation values. Implement management measures as deemed necessary consistent with the Department of Environment and Conservations Pest and problem animal control plan for Perth Regional Parks.*
- *Feral animals 2: Undertake ongoing control of feral pig and feral bees in Bungendore Park consistent with best practice guidelines for the control and management of these species as resources permit.*
- *Feral animals 3: Develop mechanisms to educate landowners nearby to Bungendore Park on responsible cat ownership.*

11.5 Rubbish Dumping

RUBBISH VISION
Bungendore Park free of rubbish.

One of the assumed values of Bungendore Park to visitors is the 'sense of place' and nature appreciation opportunities the Park offers. The occurrence of rubbish within the Park diminishes this feel and poses a threat to flora and fauna.

Dumping of rubbish historically has occurred in Bungendore Park. However with ongoing efforts to restrict entry to the Park by unauthorised vehicles, incidences of rubbish dumping have significantly reduced. Ongoing maintenance of Park fencing and access points should be undertaken to continue to minimise rubbish dumping incidences. Any rubbish found dumped in the Park should be removed as a priority.

Bins are provided at the main parking areas of Bungendore Park to provide easy access for maintenance. No bags are provided for dog excrement and no signs indicate to park users that their rubbish needs to be carried back to that location with them as no bins occur within the Park.

The provision of clear signage at Park entrances indicating the expected code of conduct of visitors and information about facilities available is likely to assist in minimising littering incidences.

This Plan proposes that picnic facilities are not provided within the Park (See Section 10.2.3 Picnicking)

Strategic Direction (Rubbish)

- *Rubbish Dumping 1: Remove rubbish found dumped within the Park as a priority.*
- *Rubbish Dumping 2: Provide dog excrement bags at Park entrances.*
- *Visitor and Community Use 5: Ensure that Park users are provided information at Park entrances, consistent with Interpretation and Information Strategic Direction 1, that includes*
    - *areas in which they are/ are not encouraged to recreate in the Park*
    - *appropriate conduct in the Park*
    - *areas where bins are available*
    - *how to report illegal activities*
    - *Park safety information*

11.6 Vandalism

VANDALISM VISION
That the occurrence of vandalism and graffiti is reduced in Bungendore Park through careful structure and facility design.

The vandalism of structures and facilities is an ongoing and costly problem in Bungendore Park. Vandalism of interpretive material is concentrated to areas nearby the adjacent school and to major entrances to the Park.

Currently, vandalism repair is coordinated by volunteers of the Bungendore Park Management Committee and the local scout groups, in particular the Armadale Red Cross Cadet Unit and the Armadale Christian College, and major repairs are undertaken by the City of Armadale. The repair of vandalism and graffiti should be undertaken as a priority – as not to promote the areas as 'unsafe' to Park users.

All future structures and facilities installed into Bungendore Park should be robust to vandalism threats.

Strategic Direction (Vandalism):

- *Vandalism 1: Repair vandalism and remove graffiti as it occurs as a priority.*
- *Vandalism 2: Ensure all future and facilities installed into Bungendore Park are robust to vandalism threats.*
- *Visitor and Community Use 5: Ensure that Park users are provided information at Park entrances, consistent with Interpretation and Information Strategic Direction 1, that includes*
    - *areas in which they are/ are not encouraged to recreate in the Park*

- *appropriate conduct in the Park*
- *areas where bins are available*
- *how to report illegal activities*
- *Park safety information*

11.7 Hunting

HUNTING VISION
That hunting in Bungendore Park does not occur unless undertaken as an approved method of feral animal control.

Hunting in Bungendore Park has been sporadically observed. In 2006, a Western Brush Wallaby was found shot in the north western extent of the Reserve. The shooting was reported to the Department of Environment and Conservation for investigation.

In 2007, reports were received that illegal off road vehicle users were traversing the Park with guns. This activity was thought to be associated with feral pig shooting in the Wungong Gorge area.

Strategic Direction (Hunting):

- *Hunting 1: Report all incidences of Hunting to the Department of Environment and Conservation for investigation by Wildlife Officers*

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11.8 Vegetation loss

VEGETATION LOSS VISION
Conservation and enhancement of vegetation occurring in Bungendore Park.

Much of Bungendore Park is considered good condition bushland and the vegetation is self sustaining. However, areas of historic gravel extraction are significantly less vegetated than the remainder of the Park. Bungendore Park Management Committee has made significant progress over the last 27 years to revegetate degraded areas. The Armadale Red Cross Cadet Unit have also previously participated in revegetation activities. Each year, the Bungendore Park Management Committee considers the need to undertake revegetation activities (See Section 7.4 Landscape and Scenic Value). These activities should be undertaken in an ongoing basis.

Revegetation activities should consider the following principles;

- The preference for seedlings derived from seed collected within the Park to maintain genetic integrity;
- The use of dieback resistant species in dieback infected areas;
- Nurseries engaged for plant propagation should have NAISA accreditation and appropriate dieback hygiene measures in place;
- Externally sourced mulch should not be used to prevent known pathogens and seeds from entering the Park.

Whilst revegetation in the Park has previously concentrated on areas of gravel extraction, the need to revegetate areas that have suffered vegetation loss as a result dieback infection may also be important to supplement ecosystem losses and to ensure the landscape and scenic qualities of the Park are not diminished.

For further discussion on mechanisms and approaches to managing dieback infected landscapes, see Section 11.1 Disease & Dieback.

Fire-wood collection has been documented in the Park in the past. This activity is not permitted in the Park and this information should be included in interpretative signage within the Park.

Strategic Direction (vegetation loss):

- *Vegetation loss 1: Prior to the rehabilitation of any area plan must be developed clearly identifying a three year adaptive revegetation program for these works.*
- *Vegetation loss 2: Revegetation stock should be sourced from seed collected within the Park where available. Species selection should be considerate of the dieback status of the area.*
- *Vegetation loss 3: Revegetation stock should be sourced from NAISA accredited nurseries consistent with the City of Armadale Landscaping and Dieback Management Policies.*
- *Vegetation loss 4: Externally sourced mulch should not be used for revegetation programs in the Park.*

11.9 Erosion

EROSION VISION
That the structure of soils in Bungendore Park are not altered through erosion.

Across the vegetated areas of Bungendore Park, minimal erosion problems occur. However, the steep face of the scarp to the west of the Park and the network of tracks that traverse the Park are a source of erosion which can lead to silting of watercourses and the undermining of vegetation. They can also lead to track damage requiring repair of the formation of alternative routes.

Vehicle access to the Park is generally restricted to management vehicles, however unauthorised off road vehicle use still occurs (see Section 10.2.8 Unauthorised access by off road vehicles). The management of the Park in a manner that minimises incidents of off road vehicle use is likely to have follow on effects in reduced track erosion.

Erosion along the tracks has been controlled on an ongoing basis through the installation of culverts and the creation of contour banks as described in the 1997 Bungendore Park Management Plan. In addition, steeply sloping tracks have been realigned and allowed to regenerate.

There is a need to monitor tracks and take action where appropriate to minimise erosion. Roles and responsibilities for the monitoring of tracks are detailed in Section 11.3 Fire management.

The formation of new tracks in Bungendore Park is not considered consistent with the Parks biodiversity conservation objectives. However, new track installation may be necessary in emergency situations such as wildfire (see section 11.3.3 Emergency Response). Where practicable, new tracks should run along contour lines and avoid steep sloping areas.

Strategic Directions (Erosion):

- *Erosion 1: Do not encourage public to access areas of high erosion such as the scarp face in the Landscape Protection Area.*
- *Erosion 2: Implement erosion control on tracks which have to remain open on steep slopes.*
- *Erosion 3: Monitor the effectiveness of erosion control efforts.*
- *Landscape and Scenic Value 3: Future fire control and general access tracks (as required) are to follow natural landforms, where possible, reducing the effects of erosion on the landscape.*

11.10 Climate Change

CLIMATE CHANGE VISION
That Bungendore Park is managed in an adaptive approach to the changing climatic conditions.

Changes in climatic conditions have been observed across the world including in the south west of Western Australia. Since the 1970s the average annual rainfall in many parts of the south west has decreased dramatically, this change thought to be at least partially due to the phenomenon known as Climate Change (McKellar & Abbott 2007). Climate change predictions of the CSIRO suggest that rainfall is likely to continue to decrease and annual temperatures continue to increase in WA (McKellar & Abbott 2007).

These current and projected future changes in climate (hereafter referred to as climate change) is likely to have both direct and indirect influences on the biodiversity values of south west ecosystems, including Bungendore Park.

Potential direct effects on species and ecosystems are likely as a result of changes to ambient temperature, rainfall, winds and extreme events. Indirect effects on species and ecosystems are likely by altering important factors, and the interplay between factors, such as fire frequency and behaviour, the spread and intensity of disease such as dieback, competition and predation and resource availability.

In addition to climate change, Bungendore Park is already known to be affected by a number of threatening processes. Due to the complex interplay between variables, it is difficult to predict the future climate conditions and effects this may have on species and ecosystems. It is proposed that one of the best ways to directly reduce the

vulnerability of ecological systems to climate change is to reduce the impacts and damage that they already experience (McKellar & Abbott 2007).

Strategic Direction (Climate change):

- *Climate 1: Participate in research opportunities into the effects of changing climate on biodiversity in Bungendore Park.*
- *Climate 2: Review literature and research as it becomes available relating to the impacts of climate change on biodiversity in the southwest of Western Australia and apply principles to the management of Bungendore Park. Special focus should be directed to areas of special significance such as declared rare species of flora or fauna.*
- *Climate 3: Reduce ecosystems stresses from other disturbance factors consistent with the priorities identified in this document.*

12 Implementation and Review

Strategic Direction		Page Reference
Governance Vision **All Stakeholders participating in the management of Bungendore Park in a cooperative, coordinated and adaptive management approach.**		
Governance 1:	Annually report on the activities and achievement of the Bungendore Park Management Committee with reference to their Terms of Reference. Review the Terms of Reference as required	8
Governance 2:	Manage Bungendore Park in cooperation with adjacent landholders including land managers which form part of the wider Wungong Regional Park.	8,11
Governance 3:	Incorporate monitoring and review into all management activities within the Park and ensure adequate records of management actions within the Park are retained.	8
Governance 4:	Support ongoing flora, fauna and fungi research in Bungendore Park and consider findings of studies in an adaptive approach to park management.	8,22,27
Governance 5:	Continue community education efforts to raise the profile of Bungendore Park's flora, fauna, fungi and recreational values.	8,22,27,29,
History Vision **The natural history and management history of Bungendore Park is captured in perpetuity and considered when making management decisions.**		
History 1:	Maintain communication between the City of Armadale and Bungendore Park Management Committee to ensure information about the management history of the Park is captured in the City of Armadale central filing systems.	9
History 2:	Consider opportunities as they arise to further research and document the history of the Park	9
Adjacent Lands **A consistent approach to the management of Bungendore Park and the wider proposed Wungong Regional Park.**		
Adjacent Lands 1:	Liaise with landowners to encourage land uses on adjoining land that are sympathetic with Bungendore Park values.	11
Adjacent Lands 2:	Maintain 'low profile' access to trigonometric points.	11
Adjacent Lands 3:	Consider the impact of future land use changes on Bungendore Park during the early stages of planning.	11
Biophysical Environment Vision o **Management decisions and actions undertaken in Bungendore Park consider the need to adapt to climate change.** o **Protection of natural geological and hydrological processes within Bungendore Park.** o **Protection and enhancement of landscape and scenic values of Bungendore Park.**		
Landscape and Scenic Value 1:	Minimal alteration should occur to existing areas of high scenic quality.	17
Landscape and Scenic Value 2:	Take action to prevent activities that cause detrimental affects, (e.g. soil erosion, or the spread of dieback), within areas of high scenic quality.	17

Strategic Direction		Page Reference
Landscape and Scenic Value 3:	Future fire control and general access tracks (as required) are to follow natural landforms, where possible, reducing the effects of erosion on the landscape.	52
Heritage Values Vision **The identification and conservation of the ethnographic and archaeological values of Bungendore Park.**		
Ethnographic Values 1:	Access should be limited to natural features such as granite outcrops, creeks and springs to help protect them for future generations to enjoy.	18
Ethnographic Values 2:	Stakeholders should work in conjunction with local Aboriginal elders to develop and deliver educational information about the indigenous heritage of the Park (for example: Aboriginal foods and medicines).	18
Archaeological Values 1:	Personnel undertaking recreational or other developments within the Park should be made aware of their obligations to report any archaeological material, should it be encountered during earthmoving, as outlined under Section 15 of the Aboriginal Heritage Act 1972-80.	18
Biodiversity Values Vision o **The protection and conservation of the diversity of vegetation communities, flora and fauna, rare and endangered species, fungi and wildlife corridors and habitat within Bungendore Park.** o **Manage biodiversity through ongoing efforts to understand Bungendore Park's values and threats to these values and the implications of management decisions on the Park.**		
Vegetation Communities 1:	Maintain a Landscape Protection Area over the area of greatest diversity that represents all vegetation communities within the Park.	21
Vegetation Communities 2:	Maintain existing, and expand where necessary, token fencing and signage to the Landscape Protection Area.	21
Vegetation Communities 3:	As opportunities arise, establish monitoring plots within designated areas to record the response of vegetation to environmental impacts and management regimes.	21
Flora 1:	Monitor those populations of rare and priority species regularly in conjunction with Department of Environment and Conservation officers.	22
Flora 2:	Locate populations of *Diuris micrantha* and consider management measures.	22
Flora 3:	Participate in further DRF and Priority species surveys when opportunities arise.	22
Fauna 1:	Continue efforts using nest boxes to establish habitat supplementation areas and educate Park visitors about the fauna conservation values of the Park.	26
Fauna 2:	Retain dead trees that are standing or fallen in the bushland as fauna habitat when deemed safe to do so.	26
Fauna 3:	Continue to participate in cockatoo and other fauna monitoring projects in Bungendore Park.	27
Fauna 4:	Participate in efforts to reduce illegal shooting of cockatoos in areas surrounding Bungendore Park.	27
Fauna 5:	Support the protection of areas of habitat and feed trees at Creyk Park, Bob Blackburn, Fletcher Park and significant stands of street trees.	28

Strategic Direction		Page Reference
Wildlife Corridors 1:	Participate in opportunities to identify and study wildlife corridors in the Park and from the Park to adjacent areas. Based on these outcomes consider opportunities to protect habitat corridors.	28
Fungi 1:	Establish a database of fungi known to occur in the Park, including data such as features, habitat, and associated plant species.	29
Fungi 2:	Consider opportunities to further understand the impact of dieback and other threats on mycorrhizal relationships in the Park, and animal interactions with fungi.	29
Management Values Vision **Establishment of a management structure that ensures the ongoing protection of biological, educational, recreational and historical values of the Park.**		
Management Zones 1:	Extend the Landscape Protection Area boundaries as identified on Bungendore Park Master Plan Map (Figure 6).	31
Management Zones 2:	Management Decisions will be based on the following revised definition of the Landscape Protection Area: • An area on the western and central area of the park including the most diverse range of plant communities which require special protection. • Limited access will be permitted but active recreation will not be encouraged. • No facilities will be provided except for directional signage. • Threats to conservation values will be addressed as a priority.	31
Management Zones 3:	Retain the Heritage Protection Areas as defined on Bungendore Park Master Plan Map (Figure 6).	31
Management Zones 4:	Management Decisions will be based on the following revised definition of the Heritage Areas: • These areas have been identified as of special significance to the Aboriginal people as they contain water lines, rock outcrops and certain types of vegetation. • Limited access will be permitted but active recreation will not be encouraged. • No facilities will be provided except for directional signage. • Threats to conservation values will be addressed as a priority.	31
Management Zones 5:	Ongoing review of the Management Zone plan each 5 years.	31
Visitor and Community Use Vision **To understand the dynamics of visitor use and recreation within the Park, and to provide recreation and tourism opportunities, which meet visitor needs and expectations, minimises risks to visitor safety and maintains primarily and in perpetuity the Parks biodiversity and 'sense of place' values.**		
Visitor and Community Use 1:	Undertake to understand the dynamics of current Park visitor uses such as bushwalking, dog exercising, bird watching, nature appreciation, picnicking, horse riding and off road cycling. Determine the need for further facilities to meet the needs of all recreational user groups and establish mechanisms to meet these needs as well as other objectives for park and conservation management.	33
Visitor and Community Use 2:	Consider and seek grant or partnership opportunities to implement the Visitor and Trails Management Plan once developed.	33

Strategic Direction		Page Reference
Visitor and Community Use 3:	Closure of tracks not identified on Bungendore Park Master Plan Map 6 and allowed to either naturally regenerate or be revegetated.	33
Visitor and Community Use 4:	Develop and implement a Visitor and Trails Management Plan that considers the following: • Roles and responsibilities for regular track inspections and maintenance; • Consistent trail headers and signage for orientation which meet Australian Standards AS2156.1-2001 Walking Tracks – Classification and Signage and AS1256.2-20012001 Walking Tracks Infrastructure Design, consider vandalism and repair and are minimal as to not detract from 'sense of place'; • The International Mountain Bicycling Association's Guide to Building Sweet Singletrack (2004); • Consistent interpretative material; • Dieback and erosion risk; and • Visitor safety.	33
Visitor and Community Use 5:	New Tracks and Trails will only be developed and formed consistent with the dieback management plan and erosion control principles.	33,43,50
Visitor and Community Use 6:	Ensure that Park users are provided information at Park entrances, consistent with Interpretation and Information Strategic Direction 1, that includes • areas in which they are/ are not encouraged to recreate in the Park • appropriate conduct in the Park • areas where bins are available • how to report illegal activities • Park safety information	33
Visitor and Community Use 7:	Using outcomes of a visitor use study, re-evaluate the need for an additional track linking the Wungong Gorge to Bungendore Park.	35
Visitor and Community Use 8:	Continue to permit dogs on leash in Bungendore Park. Ensure adequate signage and instruction to Park users regarding the requirements for dogs to remain on-leash.	35
Visitor and Community Use 9:	Revise the 'code of conduct' for local equestrian users of the Park and develop tools to communicate it to Park users.	37
Visitor and Community Use 10:	Discourage horse riding in areas not designated as Bridle Trails in Bungendore Park.	37
Visitor and Community Use 11:	Do not promote Bungendore Park as an equestrian area.	37
Visitor and Community Use 12:	Install adequate signage for horse riders that assists with orientation and determining which areas are permitted for the activity and which areas are not.	37
Visitor and Community Use 13:	Where opportunities arise, participate in research opportunities into the effects of horse riding on the conservation values of Bungendore Park.	37
Visitor and Community Use 14:	Prohibit public (non management) vehicles into the Park except for events/ special occasions.	38

Strategic Direction		Page Reference
Visitor and Community Use 15:	Require that all organised groups seeking permission to use Bungendore Park as a venue for events, commit to remaining on existing tracks and trails outside of the Landscape Protection and Heritage Areas and observe appropriate dieback hygiene.	38
Visitor and Community Use 16:	If the need is identified in the future, develop a vehicle Code of Conduct which addresses City of Armadale dieback policy ENG9, speed limits, the need to lock gates on entry and entry of the park, and other safety issues relating to vehicles in the Park as well as provides maps of access points, dieback, and management zones. Ensure all management personnel and special occasion vehicles in the Park have a copy of the Code of Conduct.	38
Visitor and Community Use 17:	Repair damaged gates and fences as soon as possible. Control access through the use of gates and large rocks ongoing basis when areas become 'opened up'.	39
Visitor and Community Use 18:	Seek to further identify where adjacent landholders may be accessing the Park in areas not permitted and liaise with this user group.	39
Visitor and Community Use 19:	Upgrade fencing to ensure it provides an impression that Bungendore Park is well cared for, prevents unwanted access, allows wildlife to pass through and protects areas of valuable flora.	40
Visitor and Community Use 20:	Install 'off road vehicles prohibited signs' at Gates J, K, B, L and other locations where vehicles enter the reserve as they are identified.	40
Visitor and Community Use 21:	Where resources permit, contribute to the undertaking of joint agency off road vehicle stings in the Wungong Regional Park.	40
Visitor and Community Use 22:	Provide copies of the "Off Road Vehicles in the City of Armadale" brochure to locals and park users and neighbours encouraging them to report illegal off road vehicles when observed.	40
Information, Interpretation, Education and Amenity Vision **The use of a standard style of communication tools in Bungendore Park.**		
Interpretation and Information 1:	Development of a standard style for Park signs and communication mediums, consistent with City of Armadale corporate styles, Department of Environment and Conservation Wungong Regional Park styles and featuring the Bungendore Park Management Committee logo.	41
Disease and Dieback Vision **Undertake actions to minimise the further spread of dieback within Bungendore Park as a priority action. Treat areas of dieback free vegetation that are high risk of infection to minimise further impacts of the spread on biodiversity values.**		
Disease and Dieback 1:	Implementation of the Dieback Management Plan 2009 to 2019 and review of this plan in 2019.	27,43
Weeds Vision **Undertake actions to identify (map) the weeds of Bungendore Park and implement actions to gradually minimise weed infestations, focusing on priority weeds and keeping good condition bushland in good condition.**		
Weeds 1:	Communicate with park neighbours to encourage the use of locally native plants and encourage weed control on adjacent lands	44
Weeds 2:	Prepare and implement a weed control plan which identifies the weed species which occur in the Park, maps their locations and extent, and priorities these weeds for control actions.	44

Strategic Direction		Page Reference
Weeds 3:	Ensure that any weed proliferation that may follow firebreak maintenance activities, prescribed burning activities or wildfires is followed up with appropriate control.	44
Fire Management Vision **That a cooperative and adaptive approach to fire management is undertaken in Bungendore Park to ensure life and property are protected and that the biodiversity of the reserve is conserved.**		
Fire Management 1:	Stakeholders implement the Bungendore Park Fire Management Plan 2009 to 2019.	27, 46
Fire Management 2:	Annually communicate objectives of the Bungendore Park Fire Management Plan 2009 to 2019 to Park neighbours and report on the progress in the implementation.	456
Fire Management 3:	Map all planned and unplanned fires and store the information electronically.	46
Fire Management 4:	Following a wildfire event, carcasses of fauna which may have scientific value are to be offered to the Western Australian Museum for scientific purposes.	46
Fire Management 5:	Future fire control and general access tracks (as required) are to follow natural landforms, where possible, reducing the effects of erosion on the landscape.	46
Feral Animal Vision **To understand the occurrence and threats posed by feral animals in Bungendore Park and develop and implement a control plan for introduced pests and animals in the Park.**		
Feral Animals 1:	Undertake further research as to population dynamics of feral animals in Bungendore Park and the threats these feral animals pose to the Park's conservation values. Implement management measures as deemed necessary consistent with the Department of Environment and Conservations *Pest and problem animal control plan for Perth Regional Parks.*	26,49
Feral Animals 2:	Undertake ongoing control of feral pig and feral bees in Bungendore Park consistent with best practice guidelines for the control and management of these species.	49
Feral Animals 3:	Develop mechanisms to educate landowners nearby to Bungendore Park on responsible cat ownership.	49
Rubbish Dumping Vision **Bungendore Park free of rubbish.**		
Rubbish Dumping 1:	Removal of rubbish found dumped within the Park as a priority.	50
Rubbish Dumping 2:	Provide dog excrement bags at Park entrances.	50
Vandalism Vision **That the occurrence of vandalism and graffiti is reduced in Bungendore Park through careful structure and facility design.**		
Vandalism 1:	Repair vandalism and remove graffiti as it occurs as a priority.	50
Vandalism 2:	Ensure all future and facilities installed into Bungendore Park are robust to vandalism threats.	50

Strategic Direction		Page Reference
Hunting Vision **That hunting in Bungendore Park does not occur unless undertaken as an approved method of feral animal control.**		
Hunting 1:	Report all incidences of Hunting to the Department of Environment and Conservation for investigation by Wildlife Officers.	27,51
Vegetation Loss Vision **Conservation and enhancement of vegetation occurring in Bungendore Park.**		
Vegetation Loss 1:	Prior to the rehabilitation of areas of low scenic quality, a plan must be developed clearly identifying a three year adaptive program for these works.	52
Vegetation Loss 2:	Revegetation stock should be sourced from seed collected within the Park where available. Species selection should be considerate of the dieback status of the area.	52
Vegetation Loss 3:	Revegetation stock should be sourced from NAISA accredited nurseries consistent with the City of Armadale Landscaping and Dieback Management Policies.	52
Vegetation Loss 4:	Externally sourced mulch should not be used for revegetation programs in the Park.	52
Erosion Vision **That the structure of soils in Bungendore Park are not altered through erosion.**		
Erosion 1:	Do not encourage public to access areas of high erosion such as the scarp face in the Landscape Protection Area.	53
Erosion 2:	Implement erosion control on tracks which have to remain open on steep slopes.	53
Erosion 3:	Monitor the effectiveness of erosion control efforts.	53
Climate Change Vision **That Bungendore Park is managed in an adaptive approach to the changing climatic conditions.**		
Climate 1	Participate in research opportunities into the effects of changing climate on biodiversity in Bungendore Park.	22,27,54
Climate 2	Review literature and research as it becomes available relating to the impacts of climate change on biodiversity in the southwest of Western Australia and apply principles to the management of Bungendore Park. Special focus should be directed to areas of special significance such as declared rare species of flora or fauna.	54
Climate 3	Reduce ecosystems stresses from other disturbance factors consistent with the priorities identified in this document.	54

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14. Figures

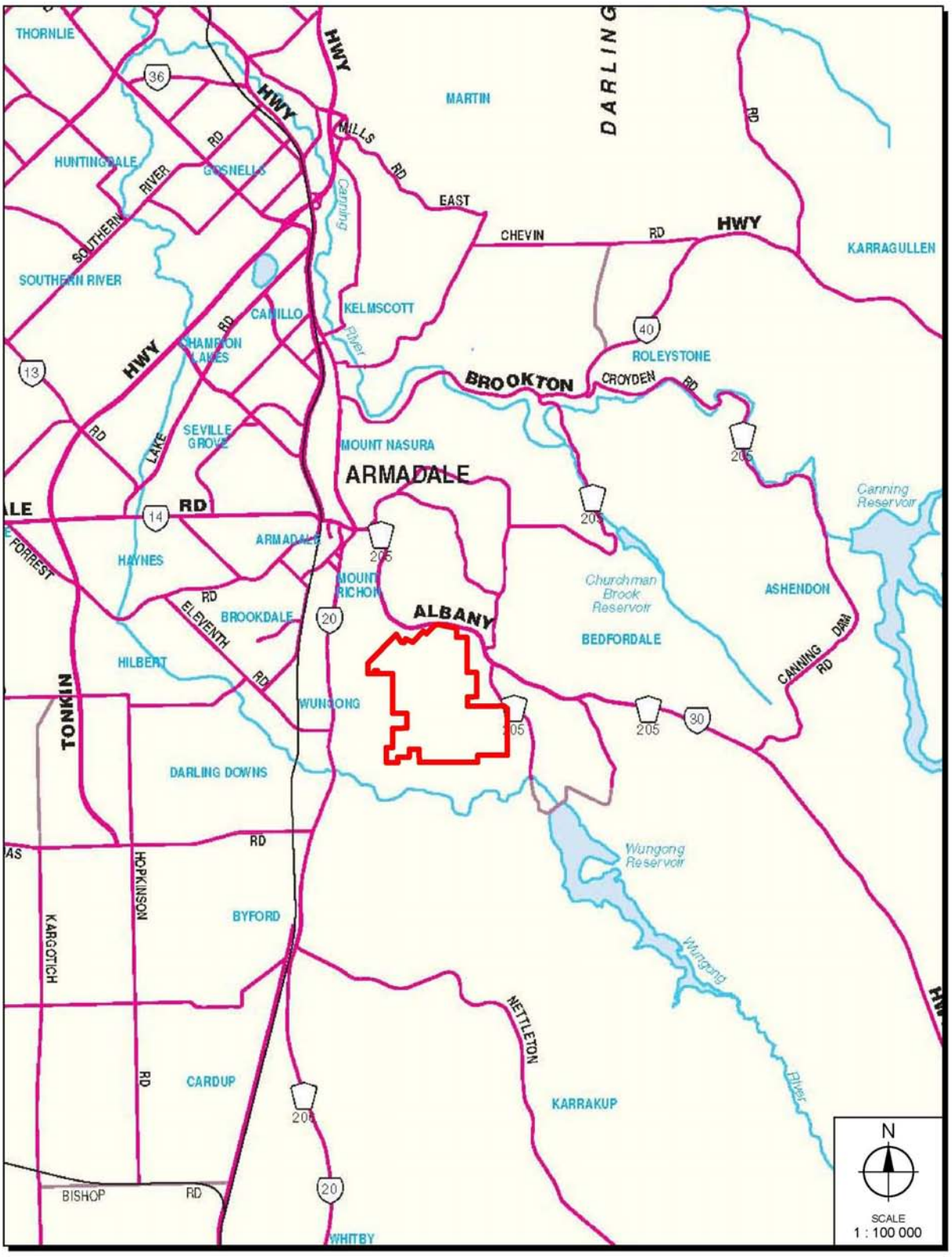


FIGURE 1 - LOCATION PLAN
BUNGENDORE PARK

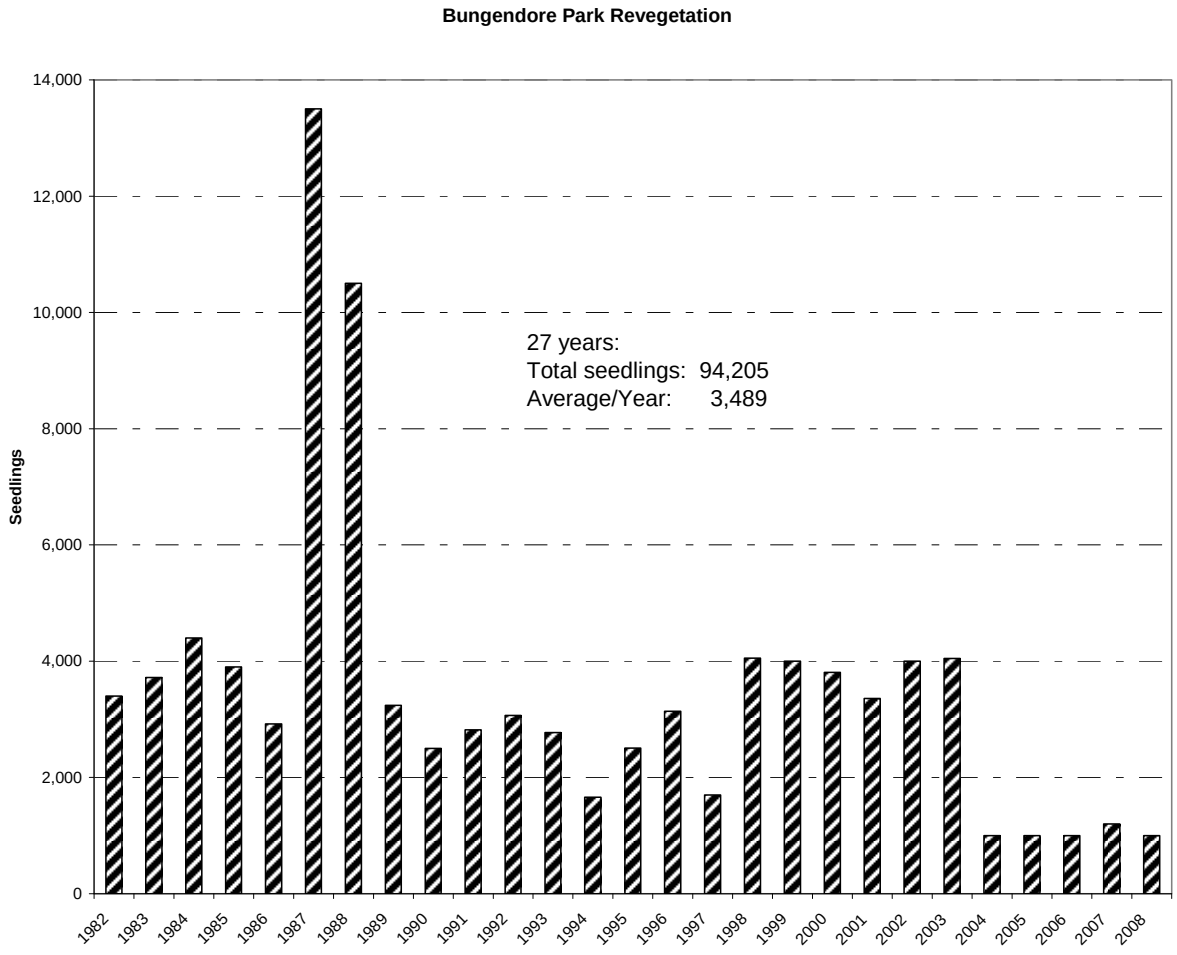


Figure 2: Seedlings planted by volunteers in Bungendore Park since 1982 (information current as of August 2008).

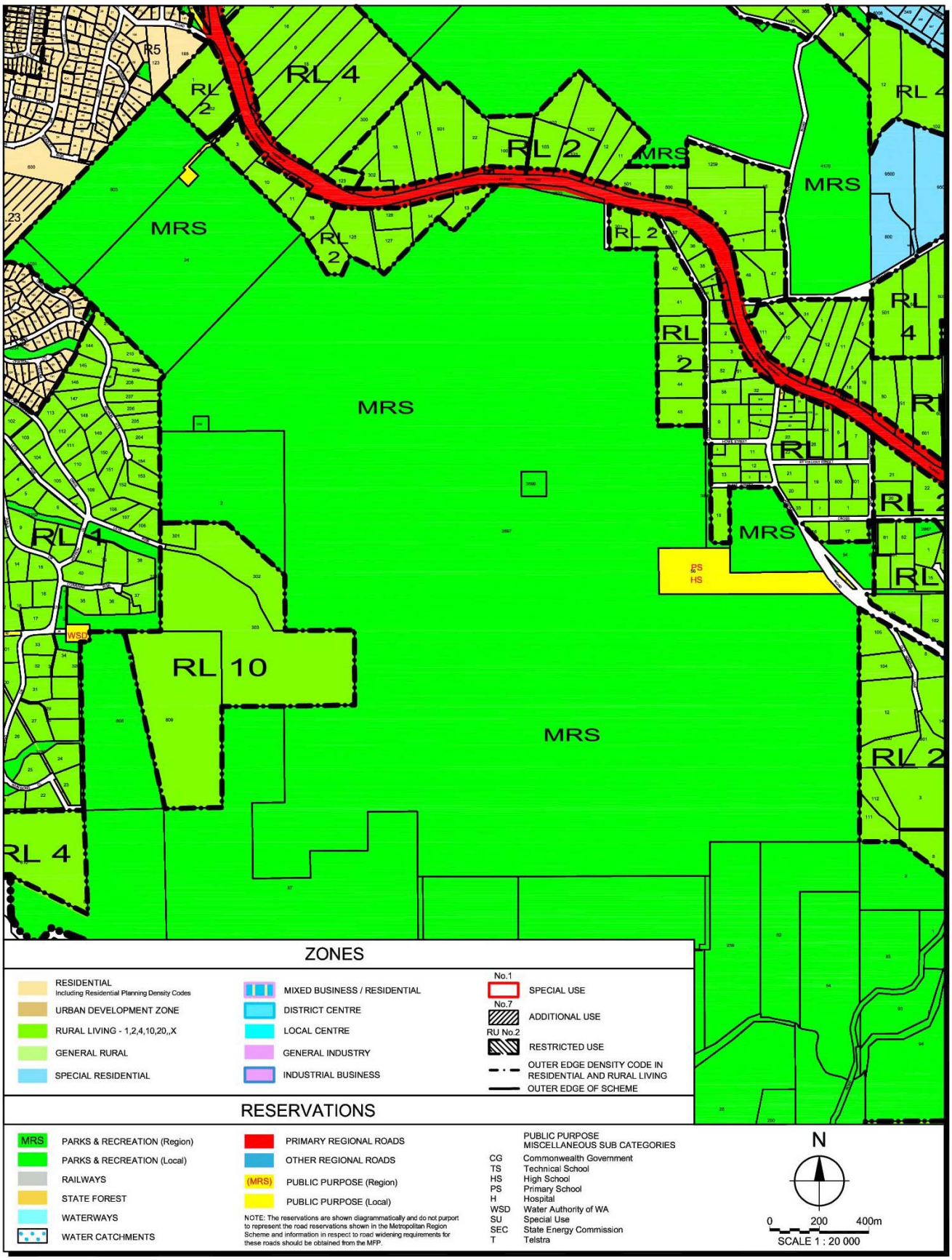


FIGURE 3 - TOWN PLANNING SCHEME No. 4

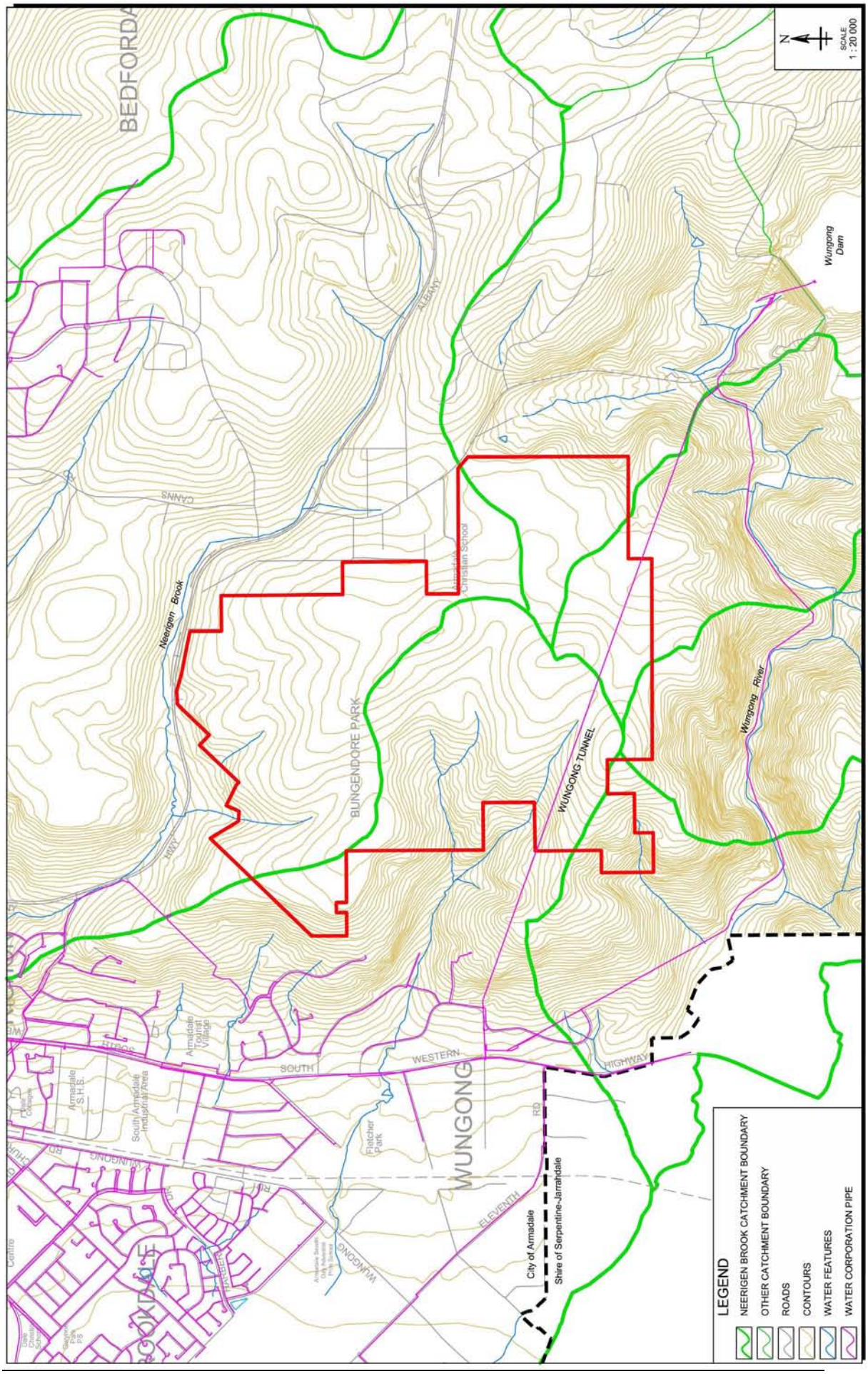


FIGURE 4
LOCATION OF BUNGENDORE PARK AND LOCAL CATCHMENT AREA

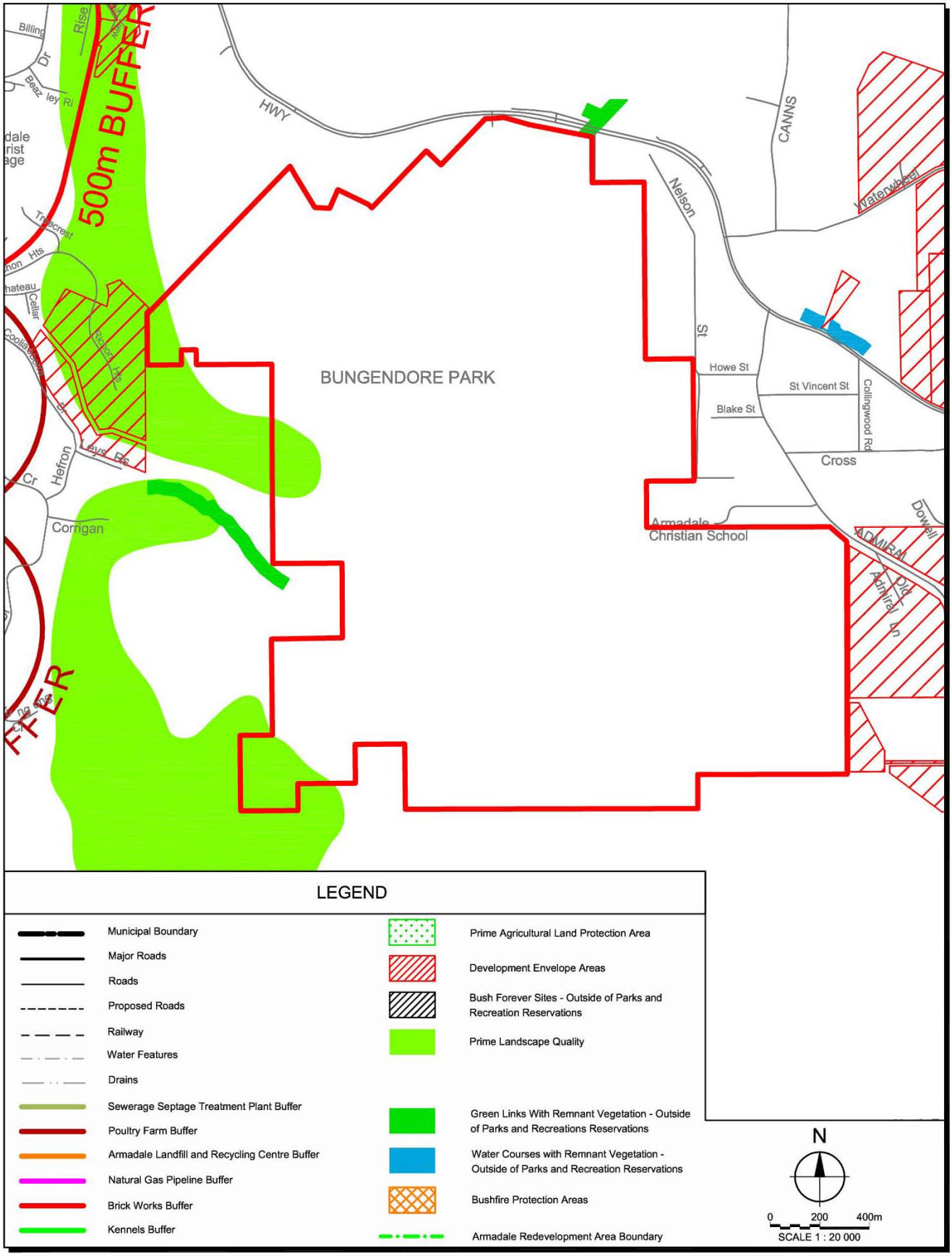
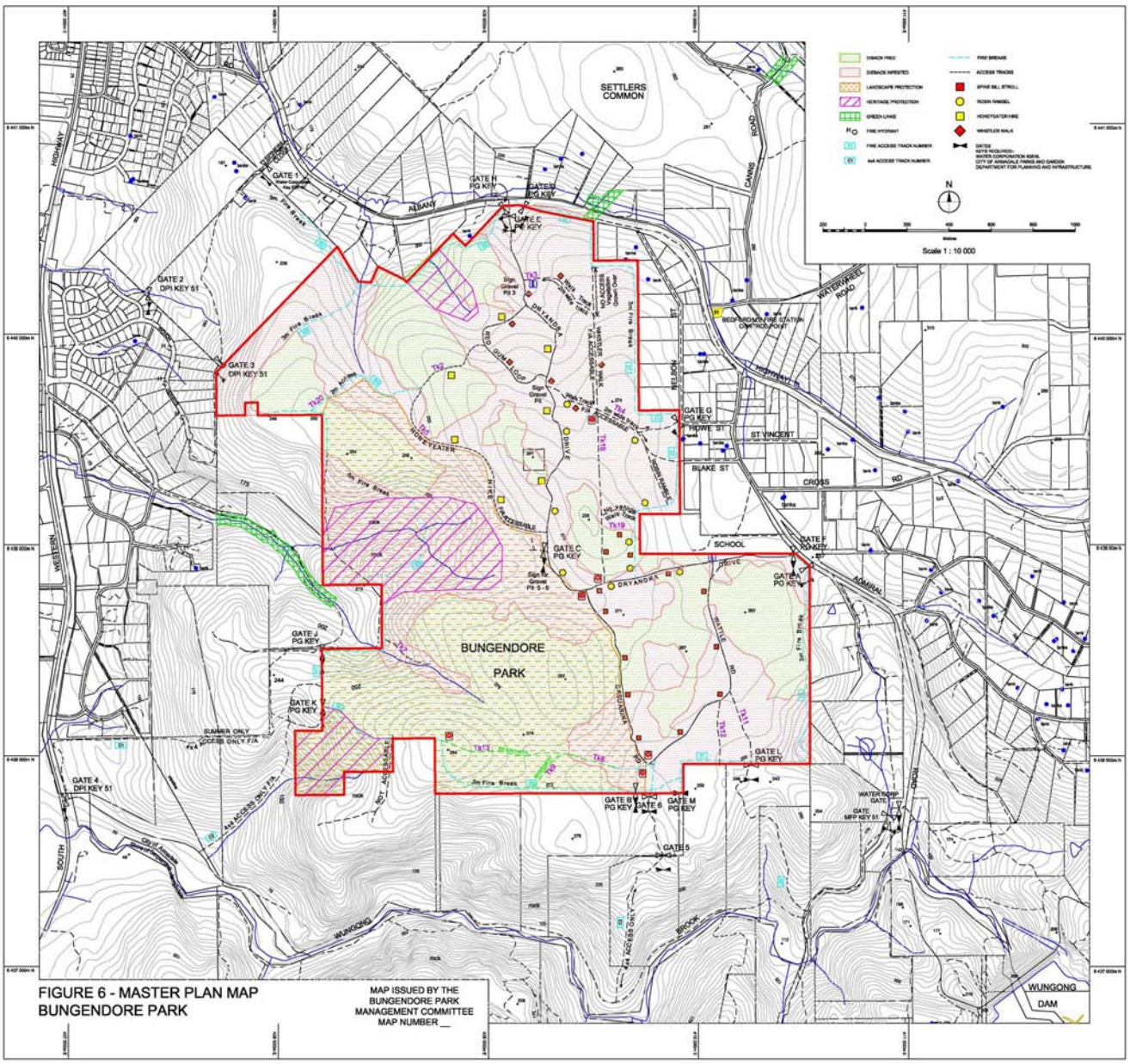


FIGURE 5 - TOWN PLANNING SCHEME No. 4
SPECIAL CONTROL AREA MAP 1


SETTLERS COMMON
BUNGENDORE PARK
GATE 1
GATE 2 DPI KEY 51
GATE 3 DPI KEY 51
GATE 4 DPI KEY 51
GATE H PG KEY
GATE E PG KEY
GATE G PG KEY
GATE C PG KEY
GATE F PG KEY
GATE A PG KEY
GATE J PG KEY
GATE K PG KEY
GATE L PG KEY
GATE B PG KEY
GATE 6
GATE M PG KEY
GATE 5
ALBANY HIGHWAY
CANNING ROAD
WATERWHEEL ROAD
HOWE ST
ST VINCENT
BLAKE ST
CROSS RD
NELSON ST
DRYANDRA DRIVE
SCHOOL
ADMIRAL
WESTERN
SOUTH
WUNGONG BROOK
WUNGONG DAM
Scale 1 : 10 000
FIGURE 6 - MASTER PLAN MAP
BUNGENDORE PARK
MAP ISSUED BY THE BUNGENDORE PARK MANAGEMENT COMMITTEE
MAP NUMBER __

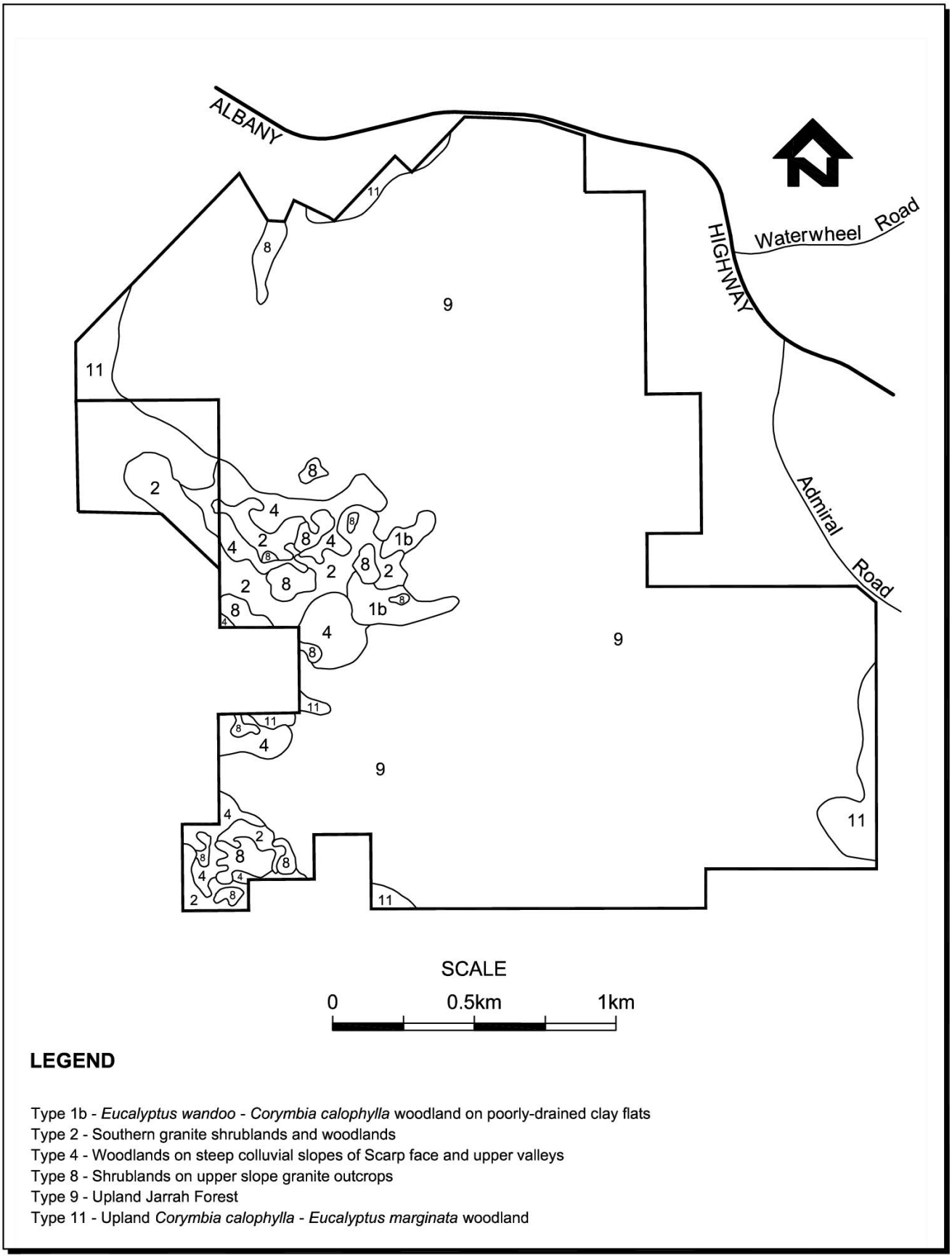


FIGURE 7 - FLORISTIC COMMUNITY TYPES
((Adapted from Markey, 1997 in Lewis, 2007)
BUNGENDORE PARK

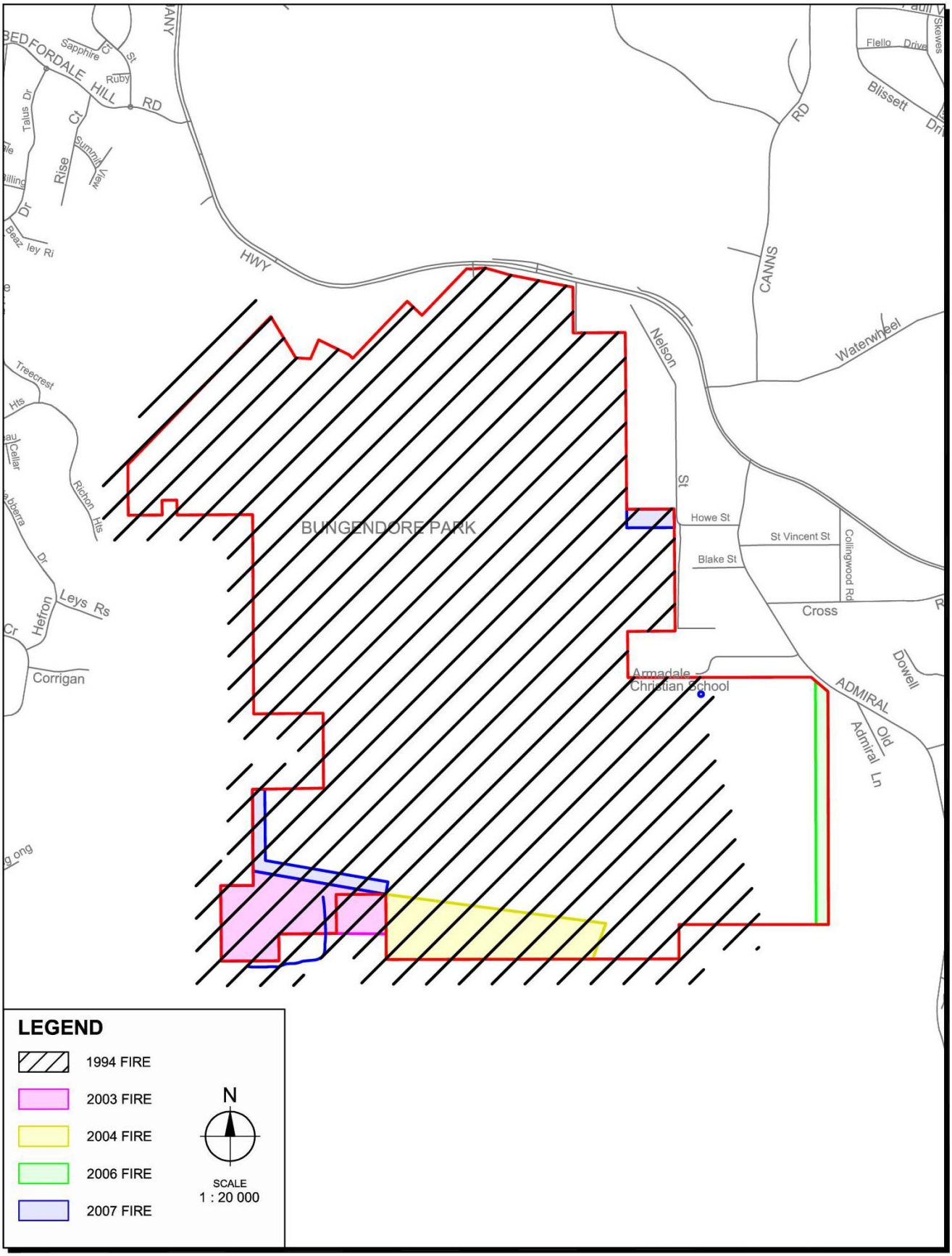


FIGURE 8 - DOCUMENTED WILDFIRES
BUNGENDORE PARK

15. Plates

Plate 1: Open Jarrah-Marri forest – mixed forest containing *Banksia grandis, Allocasuarina, Xanthorrhoea, Persoonia longifolia.* (Photo courtesy of Kim Sarti)

Plate 2: Wandoo-Marri woodland – with an understorey of *Grevillea*, *Dryandra*, *Acacia*, *Hakea*, *Xanthorrhoea* and *Macrozamia.* (Photo courtesy of Kim Sarti)

Plate 3: Upland heath – around the granite outcrops with an upperstorey of Wandoo and Marri, *Allocasuarina* and an understorey of *Acacia, Calothamnus, Conostylis, Acacia, Petrophile, Verticordia* and *Xanthorrhoea*. (Photo courtesy of Kim Sarti)

Plate 4: Herbland – on granite outcrops including *Stylidium, Hibbertia, Borya,* mosses and lichens. (Photo courtesy of Kim Sarti)

Plate 5: Sheoak woodlands – includes *Allocasuarina*, Marri and Christmas Tree with some Jarrah as an upperstorey. The understorey is dominated by *Acacia, Calothamnus, Drosera, Dryandra, Grevillea, Calytrix, Darwinia, Hovea* and *Hibbertia.* (Photo courtesy of Kim Sarti)

Plate 6: Cooliabberra Spring area.

Appendix 1 – Bungendore Park Management Committee Terms of Reference

Adopted by Council 7 February 2005

1.0 INTRODUCTION

1.1 The Council of the City of Armadale (hereinafter called the "Council") hereby establishes a committee under the powers given in Section 5.8 of the Local Government Act 1995 (hereinafter called the "Act").

1.2 The committee referred to in 1.1 is to be known as the Bungendore Park Management Committee (hereinafter called the "Committee").

1.3 The Committee has been established to assist Council in the exercise of its powers and duties. The Committee shall conduct its business in a manner consistent with the provisions of the Act, Local Government Regulations, Council's local laws, policies, Code of Conduct and this document.

1.4 In these Terms of Reference the following interpretations shall apply:

"*Act*" – The Local Government Act 1995;
"*CEO*" – The Chief Executive Officer of the City of Armadale;
"*Committee*" – The Bungendore Park Management Committee;
"*Council*" – The Council of the City of Armadale;
"*Ordinary Elections Day*" – A day fixed by Section 4.6 of the Act for holding the polls for ordinary elections for the City of Armadale;
"*Simple Majority*" – More than 50% of the members present and voting.
"*Presiding Member*" – The presiding member is the person elected by the Committee members to preside at all meetings of the Committee.

2.0 PURPOSE

2.1 To assist in the conservation and management of Bungendore Park as a conservation reserve for low-impact usage by:

a. Assisting with, and advising on, the preparation and review of a Management Plan for Bungendore Park for consideration by Council. The Management Plan is to be prepared with regard to the objectives of the Committee and with the benefit of public consultation.
b. Assisting with implementation of the Management Plan for Bungendore Park.
c. Seeking grant funds to achieve the Management Plan and Terms of Reference objectives as determined by the Committee and Manager Parks to be appropriate, having due regard to the ability of the City, Committee and volunteers to implement and administer such grants.
d. Encouraging community involvement in the management and appropriate use of Bungendore Park.
e. Liaising with the Bushcare and Environmental Advisory Committee on matters that fall within the role of the Bushcare and Environmental Advisory Committee.
f. Providing a means of communication between the City of Armadale and users of Bungendore Park.
g. Advising Council on this Committee's opinion and attitude on matters arising in respect to Bungendore Park.

3.0 OBJECTIVES

3.1 The objectives of the Committee are:

- Management - to protect, restore and enhance the natural bushland environment.
- Conservation - to conserve the indigenous plant, fungi and animal species and their habitats to meet the needs and aspirations of future generations.
- Education - to promote awareness and better understanding of the natural environment and appreciation of its views.
- Recreation and Tourism - to facilitate public enjoyment of the natural attributes of the park without compromising conservation and Management Plan objectives.

3.2 To make recommendations to Council regarding budget priorities for the provision of services, activities and facilities for Bungendore Park.

4.0 MEMBERSHIP

4.1 In accordance with Section 5.10 (1) (a) of the Act, all members of the Committee shall be appointed by Council.

4.2 The Committee shall comprise the following membership:

a. A Councillor of the City of Armadale; and
b. Up to 11 members drawn from:
   i) individuals with a demonstrated commitment, interest or expertise in protection and rehabilitation of the natural environment;
   ii) community groups such as volunteer bush fire organisations, resident and ratepayer groups and service clubs where they have an interest in or expertise in environmental matters.

4.3 The method of filling positions shall be via a public advertising process inviting interested persons to nominate for a position in writing whereupon Council will then appoint a person(s) to the Committee.

4.4 The processes prescribed in Clause 4.4 of this document shall take place in a manner that will allow for the appointment of all persons to the Committee as soon after the ordinary elections day as is possible

4.6 Where an organisational representative or community representative positional vacancy occurs mid-term, that vacancy shall be filled as soon as possible and in the manner as described in 4.3 above.

4.7 Any member wishing to resign from the committee must do so in writing to the CEO or the Presiding Member.

4.8 If any member is absent from three consecutive meetings without approved leave of the Committee, they shall forfeit their position on the Committee. The Council shall be informed and will immediately undertake the procedure prescribed in Clause 4.6 of this document.

4.9 The Committee may enlist the services of other persons or organisations that are not members of the Committee to assist in meeting its objectives. Such persons may attend Committee meetings, however not in the capacity of a Committee member.

5.0 MEETINGS

5.1 At the first meeting of the Committee, the members of the Committee:

(a) shall elect a presiding member from amongst themselves;

(b) may elect, again from amongst themselves, a deputy presiding member; and

(c) may elect, again from amongst themselves, a Secretary and a Treasurer.

5.2. The Committee Members, when conduction elections under Clause 5.1, are to vote on the matter by secret ballot as if they were electors voting at an election.

5.3 The person elected by the Committee as Presiding Member or Deputy Presiding Member shall remain in that position until;

(a) all committee positions become vacant at the next ordinary elections day;

(b) the person ceases to be a member of the Committee for reasons other than as per (a) above; or

(c) the person resigns from that position.

5.4 Where the positions of Presiding Member or Deputy Presiding Member become vacant as a result of Clauses 5.3 (b) or (c) the Committee must elect a replacement at the next meeting of the Committee.

5.5 If the Presiding Member and Deputy Presiding Member are absent from the same meeting, the members present must elect a Presiding Member for that meeting only from amongst themselves prior to the commencement of any business.

5.6 The Committee shall meet at least 10 times per year at a place and time to be determined by the Committee.

5.7 Notice of meetings shall be given to members at least five working days before each meeting.

5.8 A deputation seeking to be received by the Committee is to apply in writing to the CEO, who is to forward the written request to the Presiding Member.

5.9 A deputation invited to attend a Committee meeting is not to exceed five persons, only two of whom may address the Committee, although others may respond to specific questions from committee members and is not to address the committee for a period exceeding 15 minutes without the agreement of the committee.

6.0 QUORUM

6.1 The quorum for the Committee shall be at least 50% of the number of offices, whether vacant or not.

6.2 If a quorum has not been established within 30 minutes after the meeting is due to begin the meeting may be adjourned.

6.3 The committee is not to transact business at a meeting unless a quorum is present.

6.4 If at any time during the course of a meeting a quorum is not present because in relation to a particular matter a member(s) has left the meeting after disclosing a financial interest, the matter shall be adjourned until a quorum is present to decide the matter.

6.5 If at any time during the course of a meeting a quorum is not present because of a member(s) leaving the meeting for reasons other than the disclosure of a financial interest, the person presiding is to suspend the proceedings of the meeting for a period not exceeding 10 minutes. If a quorum is not present at the end of that time, the meeting is deemed to have been adjourned and the person presiding is to reschedule it to some future time or date.

7.0 VOTING

7.1 Voting is to be conducted so that no voter's vote is secret.

7.2 All members of the Committee shall have one vote. If the votes of the members present are equally divided, the person presiding may cast a second vote. Use of the second vote shall be recorded in the Minutes.

7.3 If a Committee member requests that their vote be recorded or the votes of all members present be recorded, the person presiding is to cause the vote or votes to be recorded in the minutes.

7.4 A decision of the Committee does not have affect unless a simple majority has made it. Decisions of the Committee are not binding on Council.

8.0 MINUTES

8.1 The person presiding at a meeting shall ensure that Minutes are kept of the meeting's proceedings.

8.2 The minutes of the meeting shall include:

(a) the names of the members present at the meeting;

(b) where a member enters or leaves the meeting during the course of the meeting, the time of entry or departure, as the case requires, in the chronological sequence of the business of the meeting;

(c) details of each motion moved at the meeting, the mover and the outcome of the motion;

(d) details of each decision made at the meeting;

(e) in relation to each disclosure made under section 5.65 or 5.70 of the Act in relation to the meeting, where the extent of the interest has been disclosed, the extent of the interest.

8.3 A copy of the unconfirmed Minutes shall be sent to all Committee members within 14 days of the meeting.

8.4 A copy of the confirmed Minutes shall be sent to Council within 14 days of the confirmation.

8.5 The person presiding at the meeting at which the minutes are confirmed is to sign the Minutes and certify confirmation.

9.0 SUB-GROUP(S)

9.1 The Committee may appoint a sub-group(s) of its members to carry out a particular task consistent with the purpose and objectives of the Committee. A sub-group shall not exercise a power or perform a duty without the approval of the Committee.

10.0 COMMUNICATION AND PUBLIC RELATIONS

10.1 All aspects of communication by Committee Members (including verbal, written or personal), involving the Local Government's activities should be of a standard which

reflects the standards and objectives of the Council. Communications should be accurate, polite and professional.

10.2 Statements to the press on behalf of the Local Government will only be made by the Mayor or the CEO.

11.0 DELEGATED POWERS

11.1 In accordance with Clause 5.16 & 5.17 of the Local Government Act 1995 Council delegates the management of minor grant funds received for the proper management of Reserve A4561 to the Bungendore Park Management Committee subject to the following requirements:

a. Grant applications to be supported by the City's Manager Parks or Environmental Officer;
b. All expenditure to be authorised by a formal motion of Committee;
c. Operation an account in the name of the Bungendore Park Management Committee with the Presiding Member, Secretary and Treasurer being signatories;
d. Maintenance of the account records in a manner acceptable to the City's auditors; and
e. Submission of the account records for annual audit.

11.2 Major grants will be managed predominantly through the City of Armadale Municipal Fund at the discretion of the Manager Parks on the advice of the Committee.

11.3 Notwithstanding Clause 11.1, it is the intention of Council that the Committee is to advise and make recommendations to Council, via the Technical Services Committee.

12.0 DISCLOSURE OF FINANCIAL INTERESTS

12.1 A member is to be treated as having an interest in a matter if either the member or person with whom the member is closely associated has a direct or indirect financial interest in the matter or a proximity interest in the matter.

12.2 A person has a financial interest in a matter if it is reasonable to expect that the matter will, if dealt with by the local government in a particular way, result in a financial gain, loss, benefit or detriment for the person.

12.3 A person has a proximity interest in a matter if the matter concerns:

(a) a proposed change to a planning scheme affecting land that adjoins the person's land,

(b) a proposed change to the zoning or use of land that adjoins the person's land, or

(c) a proposed development (as defined in Section 5.63(5)) of land that adjoins the person's land.

12.4 A reference in this sub-division to an indirect financial interest of a person in a matter includes a reference to a financial relationship between that person and another person who requires a local government decision in relation to the matter.

12.5 A person is to be treated as being closely associated with a member if the relevant person:

(a) is in partnership with the member;

(b) is an employer of the member;

(c) is a beneficiary under a trust, or an object of a discretionary trust, of which the member is a trustee;

(d) is a body corporate:

(i) of which the member is a director, secretary or executive officer; or

(ii) in which the member holds shares having a value exceeding the prescribed amount;

(e) is the spouse or a child of the member and is living with the member;

(f) is a Council member and the person:

(i) gave a notifiable gift to the relevant person in relation to the election at which the relevant person was last elected, or

(ii) has given a notifiable gift to the relevant person since the relevant person was last elected.

(g) has a relationship specified in any of paragraphs (a) to (d) in respect of the member's spouse if the spouse is living with the member.

12.6 In addition to disclosure of financial interests, committee members are required to disclose any interest they have in a matter to be discussed at the meeting that would give rise to a reasonable belief that the impartiality of the person have the interest would adversely affected.

12.7 Where an interest must be disclosed under 12.6 above, the disclosure is to be made at the meeting immediately before the matter is discussed or at the time the advice is given, and is to be recorded in the Minutes of the meeting.

12.8 The disclosure of an interest in 12.6 above does not affect the ability of the committee member to discuss or vote on the matter.

12.9 In accordance with Section 5.63 of the Act, there are some financial interests that committee members need not disclose, for example:

(a) an interest common to a significant number of electors or ratepayers,

(b) an interest arising from the imposition of any rate, charge or fee by the local government,

(c) an interest relating to a fee, reimbursement of an expense or an allowance to which Sections 5.98, 5.99, 5.100 or 5.101(2) refers,

(d) an interest relating to the pay, terms or conditions of an employee unless –

(i) the relevant person is the employee, or

(ii) either the relevant person's spouse or child is the employee if the spouse or child is living with the relevant person,

(e) an interest arising only because the relevant person is, or may become, a member of the Council of a regional local government,

(f) an interest arising only because the relevant person is, or intends to become, a member or office bearer of a body with non-profit making objectives,

(g) an interest arising only because the relevant person is, or intends to become, a member, office bearer, officer or employee of a department of the Public Service of the State or Commonwealth or a body established under a written law, or

(h) a prescribed interest.

12.10 A reference to a spouse includes a reference to a person who is residing with the member in a marriage-like relationship, although not actually married to that person.

12.11 A member who has an interest in any matter to be discussed at a meeting must disclose the nature of the interest:

(a) in a written notice given to the CEO before the meeting; or

(b) at the meeting immediately before the matter is discussed.

12.12 A disclosure of an interest shall be recorded in minutes.

12.13 In accordance with Section 5.65 (1) of the Act, any member who fails to disclose an interest is liable to a penalty of $10,000 or imprisonment for 2 years.

12.14 A member who makes a disclosure pursuant to this section shall not participate in, or be present during, any discussion or decision making procedure relating to the matter, unless the member is allowed to in accordance with Clause 12.16.

12.15 In accordance with Section 5.67 of the Act, any member who participates in or is present during any discussion or decision making procedure without approval to do so is liable to a penalty of $10,000 or imprisonment for 2 years.

12.16 If a member has disclosed an interest in a matter, the members present who are entitled to vote on the matter may allow the disclosing member to participate in or be present during any discussion or decision making procedure relating to that matter if the disclosing member also discloses the extent of the interest and those members decide that the interest is so trivial or insignificant as to be unlikely to influence the disclosing members conduct in relation to the matter or is common to a significant number of electors or ratepayers.

12.17 A decision under Clause 12.16 is to be recorded in the minutes of the meeting together with the extent of any participation allowed by the Committee.

12.18 Where a member has disclosed an interest in a matter and has left the room the remaining members may resolve to invite the member to return to provide specific information to clarify the matter and in such case the member is to withdraw after providing the specified information.

12.19 A register shall be kept of all disclosures of a financial interest.

13.0 CONDUCT OF MEMBERS

13.1 No member is to reflect adversely upon a decision of the Committee except on a motion that the decision be revoked or changed.

13.2 No member is to use offensive or objectionable expressions in reference to any member, employee of the Council, or any other person. Any member who does not adhere to this clause is liable to a penalty of $1,000.

13.3 No member is to reflect adversely on the character or actions of a member, officer or any other person participating in the meeting.

13.4 If a member specifically requests, immediately after their use, that any particular words used by a member be recorded in the minutes, the person presiding is to cause the words used to be taken down and read to the meeting for verification and to then be recorded in the minutes.

13.5 In the event of two or more members wishing to speak at the same time, the person presiding is to decide which member is entitled to be heard first. The decision is not open to discussion or dissent.

13.6 The person presiding is to preserve order, and may call any member or other person in attendance to order, whenever, in his or her opinion, there is cause for so doing.

14.0 DISBANDMENT OF THE COMMITTEE

14.1 Disbandment of the Committee shall be at the direction of Council.

15.0 AMENDMENTS TO THE TERMS OF REFERENCE

15.1 This document may be altered at any time by the Council on recommendation of the Committee or after giving 14 days notice to the Committee.

16.0 MEETINGS NOT OPEN TO THE PUBLIC

16.1 Meeting of the Committee shall not be open to the public, unless at the invitation of the Committee.

SCHEDULE 1 – LIST OF MEMBERS

Title	First name(s)	Surname
Cr		Best
Mrs	Irene	Morcombe
Mr	Kim	Sarti
Mr	Don	Griffiths
Mr	Ron	Withnell
Mrs	Penny	Versteeg
Ms	Miriam	Stanborough
Mr	Bill	Ladyman
Mr	Caralyn	Lagrange
Mrs	Ian	Thompson
Mr	VACANT	
Ms	VACANT	

Appendix 2 – Management of Declared Rare Flora

(not available in public document)

Appendix 3 – Flora, Fauna and Fungi Species recorded in Bungendore Park

Part A – Flora Species

	Genus and Species	Family	Common Name
	Acacia alata	Mimosaceae	Winged Wattle
	Acacia barbinervis	Mimosaceae	
	Acacia chrysella	Mimosaceae	
	Acacia dentifera	Mimosaceae	
	Acacia lateriticola	Mimosaceae	Gravel Wattle
	Acacia nervosa	Mimosaceae	Rib Wattle
	Acacia pulchella	Mimosaceae	Prickly Moses
	Acacia saligna	Mimosaceae	Orange Wattle
	Acacia teretifolia	Mimosaceae	
	Acacia urophylla	Mimosaceae	
	Adenanthos barbiger	Proteaceae	Hairy Glandflower
	Agrostocrinum scabrum	Anthericaceae	Blue Grass Lily
*	*Aira cupaniana*	Poaceae	Silvery Hairgrass
	Allocasuarina fraseriana	Casuarinaceae	Sheoak
	Allocasuarina huegeliana	Casuarinaceae	Rock Sheoak
	Allocasuarina humilis	Casuarinaceae	Dwarf Sheoak
*	*Anagalis arvensis* var. *arvensis*	Primulaceae	Pimpernel
*	*Anagalis arvensis* var. *caerulea*	Primulaceae	Pimpernel
	Andersonia lehmanniana	Epacridaceae	
	Anigozanthos manglesii	Haemodoraceae	Red & Green Kangaroo Paw
*	*Arctotheca calendula*	Asteraceae	Capeweed
	Astroloma foliosum	Epacridaceae	Candle Cranberry
	Astroloma pallidum	Epacridaceae	Kick Bush
	Austrostipa campylachne	Poaceae	
*	*Babiana angustifolia*	Iridaceae	Baboon Flower
	Baeckea camphorosmae	Myrtaceae	Camphor Myrtle
	Banksia grandis	Proteaceae	Bull Banksia, Pulgarla
	Beaufortia macrostemon	Myrtaceae	
	Billardiera fraseri	Pittosporaceae	Elegant Pronaya
	Billardiera heterophylla	Pittosporaceae	Australian Bluebell
	Billardiera variifolia	Pittosporaceae	
	Boronia fastigiata	Rutaceae	Bushy Boronia
	Boronia spathulata	Rutaceae	
	Borya nitida	Anthericaceae	Pincushions
	Borya sphaerocephala	Anthericaceae	Pincushions
	Bossiaea eriocarpa	Papilionaceae	Common Brown Pea
	Bossiaea ornata	Papilionaceae	Broad-leaved Brown Pea
*	*Briza maxima*	Poaceae	Blowfly Grass
*	*Briza minor*	Poaceae	Shivery Grass
	Burchardia congesta	Colchicaceae	Milkmaids
	Burchardia multiflora	Colchicaceae	Dwarf Burchardia
	Caesia micrantha	Anthericaceae	Pale Grass-lily
	Caladenia deformis	Orchidaceae	Blue Fairy Orchid

	Caladenia flava	Orchidaceae	Cowslip Orchid
	Caladenia gemmata	Orchidaceae	Blue China Orchid
	Caladenia hirta	Orchidaceae	Sugar Candy Orchid
	Caladenia ixioides subsp. *candida*	Orchidaceae	White China
	Caladenia latifolia	Orchidaceae	Pink Fairies
	Caladenia longicauda subsp. *clivicola*	Orchidaceae	Hills Spider Orchid
	Caladenia longicauda subsp. *longicauda*	Orchidaceae	White Spider Orchid
	Caladenia macrostylis	Orchidaceae	Leaping Spider Orchid
	Caladenia marginata	Orchidaceae	White Fairy Orchid
	Caladenia nana subsp. *nana*	Orchidaceae	Little Pink Fan Orchid
	Caladenia reptans	Orchidaceae	Dwarf Pink Fairy
	Caladenia sericea	Orchidaceae	Silky Blue Orchid
	Caladenia uliginosa	Orchidaceae	Darting Spider Orchid
	Calothamnus quadrifidus	Myrtaceae	One-sided Bottlebrush
	Calothamnus rupestris	Myrtaceae	Mouse Ears
	Calothamnus sanguineus	Myrtaceae	Silky-leaved Blood flower
	Calytrix acutifolia	Myrtaceae	
	Calytrix depressa	Myrtaceae	
	Cassytha glabella	Lauraceae	Tangled Dodder Laurel
	Cassytha racemosa	Lauraceae	Dodder Laurel
*	*Centaurium erythraea*	Gentianaceae	Common Centaury
*	*Chamaecytisus palmensis*	Papilionaceae	Tagasaste or Tree Lucerne
	Chamaescilla corymbosa	Anthericaceae	Blue Squill
	Cheilanthes austrotenuifolia	Adiantaceae	Rock Fern
	Cheilanthes distans	Adiantaceae	Bristly Cloak Fern
	Chorizema dicksonii	Papilionaceae	Yellow-eyed Flame Pea
	Clematis aristata var. *occidentalis*	Ranunculaceae	Common Clematis
	Comesperma calymega	Polygalaceae	Blue-spike Milkwort
	Comesperma ciliatum	Polygalaceae	Love Creeper
	Comesperma virgatum	Polygalaceae	Milkwort
	Conospermum huegelii	Proteaceae	Slender Smokebush
	Conostylis aculeata	Haemodoraceae	Prickly Conostylis
	Conostylis androstemma	Haemodoraceae	Trumpets
	Conostylis caricina	Haemodoraceae	
	Conostylis setigera	Haemodoraceae	Bristly Cottonhead
	Conostylis setosa	Haemodoraceae	White Cottonhead
*	*Conyza sumatrensis*	Asteraceae	Tall Fleabane
	Corymbia calophylla	Myrtaceae	Marri
	Craspedia variabilis	Asteraceae	
	Cryptandra arbutiflora	Rhamnaceae	Waxy Cryptandra
	Dampiera alata	Goodeniaceae	Winged-stem Dampiera
	Dampiera linearis	Goodeniaceae	Common Dampiera
	Darwinia citriodora	Myrtaceae	Lemon-scented Darwinia
	Daviesia cordata	Papilionaceae	Bookleaf
	Daviesia decurrens	Papilionaceae	Prickly Bitter Pea
	Daviesia horrida	Papilionaceae	Prickly Bitter Pea
	Daviesia longifolia	Papilionaceae	
	Daviesia preissii	Papilionaceae	

	Daviesia rhombifolia	Papilionaceae	Bitter Pea
	Desmocladus fasciculatus	Restionaceae	
	Desmocladus flexuosus	Restionaceae	
	Dianella revoluta	Phormiaceae	
	Dioscorea hastifolia	Dioscoreaceae	Warrine
*	*Dipogon lignosus*	Papilionaceae	Dolichos Pea
*	*Disa bracteata*	Orchidaceae	South African Orchid
	Diuris brumalis	Orchidaceae	Winter Donkey Orchid
	Diuris corymbosa	Orchidaceae	Common Donkey Orchid
	Diuris laxiflora	Orchidaceae	Bee Orchid
	Diuris longifolia	Orchidaceae	Purple Pansy Orchid
	Diuris magnifica	Orchidaceae	Pansy Orchid
	Diuris micrantha	Orchidaceae	Dwarf Bee Orchid
	Diuris setacea	Orchidaceae	Bristly Donkey Orchid
	Drakaea livida	Orchidaceae	Warty Hammer Orchid
	Drosera bulbosa subsp. *bulbosa*	Droseraceae	Red-leaved Sundew
	Drosera erythrorhiza subsp. *collina*	Droseraceae	Red Ink Sundew
	Drosera gigantea	Droseraceae	Giant Sundew
	Drosera glanduligera	Droseraceae	Pimpernel Sundew
	Drosera menziesii subsp. *menziesii*	Droseraceae	Pink Rainbow
	Drosera pallida	Droseraceae	Pale Sundew
	Drosera stolonifera subsp. *stolonifera*	Droseraceae	Leafy Sundew
	Dryandra armata	Proteaceae	Prickly Dryandra
	Dryandra lindleyana	Proteaceae	Couch Honeypot
	Dryandra praemorsa	Proteaceae	Cut-leaf Dryandra
	Dryandra sessilis	Proteaceae	Parrot Bush
*	*Echium plantagineum*	Boraginaceae	Paterson's Curse
	Elythranthera brunonis	Orchidaceae	Purple Enamel Orchid
	Elythranthera emarginata	Orchidaceae	Pink Enamel Orchid
	Eriochilus dilatatus	Orchidaceae	White Bunny Orchid
	Eryngium pinnatifidum	Apiaceae	Blue Devils
	Eucalyptus marginata	Myrtaceae	Jarrah
	Eucalyptus patens	Myrtaceae	Blackbutt
	Eucalyptus rudis	Myrtaceae	Flooded Gum
	Eucalyptus wandoo	Myrtaceae	Wandoo
*	*Ficus carica*	Moraceae	Common Fig
*	*Fumaria muralis*	Fumariaceae	Wall Fumitory
	Gastrolobium nervosum	Papilionaceae	
	Geranium solanderi	Geraniaceae	Native Geranium
	Gompholobium capitatum	Papilionaceae	Yellow Pea
	Gompholobium knightianum	Papilionaceae	
	Gompholobium marginatum	Papilionaceae	
	Gompholobium polymorphum	Papilionaceae	
	Goodenia caerulea	Goodeniaceae	
	Goodenia fasciculata	Goodeniaceae	Bristly Goodenia
	Goodenia pulchella	Goodeniaceae	
	Grevillea bipinnatifida	Proteaceae	Fuschia Grevillea
	Grevillea endlicheriana	Proteaceae	Spindly Grevillea
	Grevillea pilulifera	Proteaceae	Woolly-flowered Grevillea

	Grevillea quercifolia	Proteaceae	Oak-leaf Grevillea
	Grevillea synapheae	Proteaceae	Catkin Grevillea
	Grevillea wilsonii	Proteaceae	Wilson's Grevillea
	Haemodorum simplex	Haemodoraceae	
	Hakea auriculata	Proteaceae	
	Hakea erinacea	Proteaceae	Hedgehog Hakea
	Hakea lissocarpha	Proteaceae	Honey Bush
	Hakea stenocarpa	Proteaceae	Narrow-fruited Hakea
	Hakea trifurcata	Proteaceae	Two-leaf Hakea
	Hakea undulata	Proteaceae	Wavy-leaved Hakea
	Hemigenia incana	Lamiaceae	Silky Hemigenia
	Hemigenia ramosissima	Lamiaceae	
*	*Hesperantha falcata*	Iridaceae	
	Hibbertia amplexicaulis	Dilleniaceae	
	Hibbertia commutata	Dilleniaceae	
	Hibbertia glomerata	Dilleniaceae	
	Hibbertia huegelii	Dilleniaceae	
	Hibbertia hypericoides	Dilleniaceae	Yellow Buttercups
	Hibbertia pilosa	Dilleniaceae	Hairy Guinea Flower
	Hibbertia subvaginata	Dilleniaceae	
	Hovea chorizemifolia	Papilionaceae	Holly-leaved Hovea
	Hovea pungens	Papilionaceae	Devils Pins
	Hovea trisperma	Papilionaceae	Common Hovea
	Hyalosperma cotula	Asteraceae	
	Hybanthus floribundus	Violaceae	
	Hydrocotyle hirta	Apiaceae	Hairy Pennywort
	Hypocalymma angustifolium	Myrtaceae	White Myrtle
	Hypocalymma robustum	Myrtaceae	Swan River Myrtle
*	*Hypochaeris glabra*	Asteraceae	Smooth Catsear
	Hypoxis occidentalis	Hypoxidaceae	
	Isopogon asper	Proteaceae	
	Isopogon dubius	Proteaceae	Pincushion Coneflower
	Isopogon sphaerocephalus	Proteaceae	Drumstick Isopogon
	Isotoma hypocrateriformis	Lobeliaceae	Woodbridge Poison
	Jacksonia alata	Papilionaceae	
	Juncus pallidus	Juncaceae	Pale Rush
	Kennedia coccinea	Papilionaceae	Coral Vine
	Kennedia prostrata	Papilionaceae	Running Postman
	Kingia australis	Dasypogonaceae	Kingia
	Labichea punctata	Caesalpiniaceae	Lance-leaved Cassia
	Lagenophora huegelii	Asteraceae	
	Lasiopetalum floribundum	Sterculiaceae	
*	*Lathyrus latifolius*	Papilionaceae	
	Laxmannia squarrosa	Anthericaceae	
	Lechenaultia biloba	Goodeniaceae	Blue Lechenaultia
	Lepidosperma angustatum	Cyperaceae	
	Lepidosperma leptostachyum	Cyperaceae	
	Lepidosperma longitudinale	Cyperaceae	Pithy Sword-sedge
	Lepidosperma scabrum	Cyperaceae	
	Lepidosperma squamatum	Cyperaceae	

	Lepidosperma tetraquetrum	Cyperaceae	
	Lepidosperma tuberculatum	Cyperaceae	
	Leporella fimbriata	Orchidaceae	Hare Orchid
	Leptomeria cunninghamii	Santalaceae	
	Leptospermum erubescens	Myrtaceae	Roadside Teatree
*	*Leptospermum laevigatum*	Myrtaceae	Coastal Teatree
	Leptospermum roei	Myrtaceae	
	Leucopogon capitellatus	Epacridaceae	
	Leucopogon gracillimus	Epacridaceae	
	Leucopogon nutans	Epacridaceae	Drooping Leucopogon
	Leucopogon oxycedrus	Epacridaceae	
	Leucopogon propinquus	Epacridaceae	
	Leucopogon pulchellus	Epacridaceae	Beard-heath
	Leucopogon verticillatus	Epacridaceae	Tassel Flower
	Levenhookia leptantha	Stylidiaceae	Trumpet Stylewort
	Levenhookia stipitata	Stylidiaceae	Common Stylewort
	Lobelia gibbosa	Lobeliaceae	Tall Lobelia
	Lobelia heterophylla	Lobeliaceae	Wing-seeded Lobelia
	Lobelia rhombifolia	Lobeliaceae	Tufted Lobelia
	Lobelia rhytidosperma	Lobeliaceae	Wrinked-seeded Lobelia
	Lomandra integra	Dasypogonaceae	
	Lomandra nigricans	Dasypogonaceae	Mat Rush
	Lomandra preissii	Dasypogonaceae	
	Lyperanthus serratus	Orchidaceae	Rattle Beaks
	Macrozamia riedlei	Zamiaceae	Zamia
	Marianthus bicolor	Pittosporaceae	Painted Marianthus
	Melaleuca hamulosa	Myrtaceae	
	Melaleuca pauciflora	Myrtaceae	
	Melaleuca preissiana	Myrtaceae	Moonah
	Melaleuca radula	Myrtaceae	Graceful Honeymyrtle
	Melaleuca rhaphiophylla	Myrtaceae	Swamp Paperbark
	Melaleuca scabra	Myrtaceae	Rough Honeymyrtle
	Mesomelaena tetragona	Cyperaceae	Semaphore Sedge
	Microtis aff. *alba*	Orchidaceae	Scented Mignonette Orchid
	Microtis alba	Orchidaceae	White Mignonette Orchid
	Microtis media subsp. *media*	Orchidaceae	Common Mignonette Orchid
	Mirbelia spinosa	Papilionaceae	
*	*Moraea flaccida*	Iridaceae	One-leaf Cape Tulip
	Nuytsia floribunda	Loranthaceae	WA Christmas Tree
	Olearia paucidentata	Asteraceae	Autumn Scrub Daisy
	Opercularia echinocephala	Rubiaceae	Bristly Headed Stink Weed
	Opercularia vaginata	Rubiaceae	Dog Weed
	Orthrosanthus laxus	Iridaceae	Morning Iris
*	*Oxalis glabra*	Oxalidaceae	
*	*Oxalis pes-caprae*	Oxalidaceae	Soursob
*	*Oxalis purpurea*	Oxalidaceae	Largeflower Wood Sorrel
*	*Parentucellia viscosa*	Scrophulariaceae	Sticky Bartsia
	Patersonia occidentalis	Iridaceae	Purple Flag
	Patersonia pygmaea	Iridaceae	Pygmy Patersonia
	Pelargonium littorale	Geraniaceae	

	Pentapeltis peltigera	Apiaceae	
	Persoonia elliptica	Proteaceae	Snottygobble
	Persoonia longifolia	Proteaceae	Snottygobble
	Petrophile biloba	Proteaceae	Granite Petrophile
	Petrophile linearis	Proteaceae	Pixie Mops
	Petrophile striata	Proteaceae	
	Philotheca spicata	Rutaceae	Pepper & Salt
	Philydrella pygmaea	Philydraceae	Butterfly Flowers
	Phyllanthus calycinus	Euphorbiaceae	False Boronia
	Phylloglossum drummondii	Lycopodiaceae	Pygmy Club Moss
	Pilostyles hamiltonii	Rafflesiaceae	
	Pimelea ciliata	Thymelaeaceae	White Banjine
	Pimelea imbricata	Thymelaeaceae	
	Pimelea rosea	Thymelaeaceae	Rose Banjine
	Pimelea spectabilis	Thymelaeaceae	Bunjong
	Pimelea suaveolens	Thymelaeaceae	Sweet Banjine
	Pithocarpa corymbulosa	Asteraceae	Corymbose Pithocarpa
	Pithocarpa pulchella	Asteraceae	Beautiful Pithocarpa
	Poa drummondiana	Poaceae	Knotted Poa
	Podolepis lessonii	Asteraceae	
	Prasophyllum aff. *elatum*	Orchidaceae	Crowded Leek Orchid
	Prasophyllum elatum	Orchidaceae	Tall Leek Orchid
	Prasophyllum fimbria	Orchidaceae	Fringed Leek Orchid
	Prasophyllum giganteum	Orchidaceae	Bronze Leek Orchid
	Prasophyllum hians	Orchidaceae	Yawning Leek Orchid
	Prasophyllum parvifolium	Orchidaceae	Autumn Leek Orchid
	Prasophyllum plumaeforme	Orchidaceae	Dainty Leek Orchid
	Prasophyllum ringens	Orchidaceae	Little Laughing Leek Orchid
	Pteridium esculentum	Dennstaedtiaceae	Bracken
	Pterochaeta paniculata	Asteraceae	
	Pterostylis aff. *sanguinea*	Orchidaceae	Crowded Banded Greenhood Orchid
	Pterostylis barbata	Orchidaceae	Bird Orchid
	Pterostylis pyramidalis	Orchidaceae	Snail Orchid
	Pterostylis recurva	Orchidaceae	Jug Orchid
	Pterostylis vittata	Orchidaceae	Banded Greenhood Orchid
	Ptilotus drummondii	Amaranthaceae	Narrowleaf Mulla Mulla
	Ptilotus manglesii	Amaranthaceae	Rose-tipped Mulla Mulla
	Ptilotus polystachyus	Amaranthaceae	Prince of Wales Feather
	Pyrorchis nigricans	Orchidaceae	Redbeaks
	Ranunculus colonorum	Ranunculaceae	Common Buttercup
*	*Raphanus raphanistrum*	Cruciferae	Wild Radish
	Rhodanthe citrina	Asteraceae	
*	*Romulea rosea*	Iridaceae	Guildford Grass
*	*Rubus* aff. *selmeri*	Rosaceae	Blackberry
	Scaevola calliptera	Goodeniaceae	Royal Robe
	Scaevola pilosa	Goodeniaceae	Hairy Fan-flower
	Scaevola platyphylla	Goodeniaceae	Broad-leaved Fan Flower
	Schoenus sp.	Cyperaceae	
	Senecio pinnatifolius	Asteraceae	Variable Groundsel

	Senecio squarrosus	Asteraceae	Squarrose Fireweed
	Sowerbaea laxiflora	Anthericaceae	Purple Tassles
	Sphaerolobium medium	Papilionaceae	
	Sphaerolobium vimineum	Papilionaceae	Leafless Globe Pea
	Spiculaea ciliata	Orchidaceae	Elbow Orchid
*	*Stachys arvensis*	Lamiaceae	Stagger Weed
	Stackhousia monogyna	Stackhousiaceae	Winged Stackhousia
	Stylidium amoenum	Stylidiaceae	Lovely Trigger Plant
	Stylidium breviscapum	Stylidiaceae	Boomerang Trigger Plant
	Stylidium brunonianum	Stylidiaceae	Pink FountainTrigger Plant
	Stylidium bulbiferum	Stylidiaceae	Circus Trigger Plant
	Stylidium calcaratum	Stylidiaceae	Book Trigger Plant
	Stylidium carnosum	Stylidiaceae	Fleshy-leaved Trigger Plant
	Stylidium hispidum	Stylidiaceae	White Butterfly Trigger Plant
	Stylidium junceum	Stylidiaceae	Reed Trigger Plant
	Stylidium leptophyllum	Stylidiaceae	Needle-leaved Trigger Plant
	Stylidium macranthum	Stylidiaceae	Crab Claws
	Stylidium obtusatum	Stylidiaceae	PinaforeTrigger Plant
	Stylidium petiolare	Stylidiaceae	Horn Trigger Plant
	Stylidium repens	Stylidiaceae	Matted Trigger Plant
	Stylidium rhynchocarpum	Stylidiaceae	Black-beaked Trigger Plant
	Stylidium schoenoides	Stylidiaceae	Cow Kicks
	Stypandra glauca	Phormiaceae	Blind Grass
	Styphelia tenuiflora	Epacridaceae	Common Pinheath
	Synaphea acutiloba	Proteaceae	Granite Synaphea
	Synaphea petiolaris	Proteaceae	Synaphea
	Taxandria linearifolia	Myrtaceae	Swamp Peppermint
	Tetrarrhena laevis	Poaceae	Forest Ricegrass
	Tetratheca hirsuta	Tremandraceae	
	Thelymitra antennifera	Orchidaceae	Lemon-scented Sun Orchid
	Thelymitra benthamiana	Orchidaceae	Cinnamon Sun Orchid
	Thelymitra crinita	Orchidaceae	Blue Lady Orchid
	Thelymitra macrophylla	Orchidaceae	Scented Sun Orchid
	Thelymitra pauciflora	Orchidaceae	Slender Sun Orchid
	Thelymitra stellata	Orchidaceae	Star Sun Orchid
	Thomasia foliosa	Sterculiaceae	
	Thysanotus dichotomus	Anthericaceae	Branching Fringed Lily
	Thysanotus gracilis	Anthericaceae	
	Thysanotus manglesianus	Anthericaceae	Fringed Lily
	Thysanotus multiflorus	Anthericaceae	Many-flowered Fringed Lily
	Thysanotus tenellus	Anthericaceae	
	Trachymene pilosa	Apiaceae	Native Parsnip
	Tribonanthes brachypetala	Haemodoraceae	
	Tricochline spathulata	Asteraceae	Native Gerbera
	Tricoryne elatior	Anthericaceae	Yellow Autumn Lily
	Tricoryne sp.	Anthericaceae	
	Tricostularia neesii	Cyperaceae	
	Tripterococcus brunonis	Stackhousiaceae	
	Trymalium floribundum	Rhamnaceae	
	Trymalium ledifolium	Rhamnaceae	

*	*Ursinia anthemoides*	Asteraceae	Ursinia
	Verticordia acerosa var. *preissii*	Myrtaceae	
	Verticordia densiflora var. *densiflora*	Myrtaceae	Compacted Featherflower
	Verticordia huegelii	Myrtaceae	Variegated Featherflower
	Verticordia pennigera	Myrtaceae	Featherflower
*	*Vicia sativa*	Papilionaceae	Common Vetch
	Viminaria juncea	Papilionaceae	Swishbush
*	*Wahlenbergia capensis*	Campanulaceae	Cape Bluebell
*	*Watsonia meriana* var. *bulbillifera*	Iridaceae	Bugle Lily
	Xanthorrhoea gracilis	Xanthorrhoeaceae	Graceful Balga
	Xanthorrhoea preissii	Xanthorrhoeaceae	Balga
*	*Zantedeschia aethiopica*	Araceae	Arum Lily

***** = introduced species.
(Adapted from Lewis, 2007 and Bungendore Park Management Plan 1997-2007)

Part B – Bird Species

Species	**Common Name**
Casuariidae	
Dromaius novaehollandiae	Emu
Phasianidae	
**Parvo cristatus*	Common Peafowl
Anatidae	
Tadorna tadornoides	Australian Shelduck
Chenonetta jubata	Australian Wood Duck
Anas superciliosa	Pacific Black Duck
Phalacrocoracidae	
Phalacrocorax melanoleucos	Little Pied Cormorant
Ardeidae	
Ardea pacifica	White-necked Heron
Ardea novaehollandiae	White-faced Heron
Accipitridae	
Elanus caeruleus axillaris	Australian Black-shouldered Kite
Lophoictinia isura	Square-tailed Kite
Accipiter fasciatus fasciatus	Brown Goshawk
Accipiter cirrocephalus cirrocephalus	Collared Sparrowhawk
Aquila morphnoides morphnoides	Little Eagle
Aquila audax	Wedge-tailed Eagle
Falconidae	
Falco berigora berigora	Brown Falcon
Falco longipennis	Australian Hobby
Falco peregrinus	Peregrine Falcon
Falco cenchroides cenchroides	Australian Kestrel
Rallidae	

Gallirallus philippensis	Buff-banded Rail
Turnicidae	
Turnix varia varia	Painted Button-quail
Columbidae	
**Columba livia*	Domestic Pigeon
**Streptopelia senegalensis senegalensis*	Laughing Turtle-Dove
**Streptopelia chinensis*	Spotted Turtle-Dove
Phaps chalcoptera	Common Bronzewing
Psittacidae	
Calyptorhynchus banksii naso	Red-tailed Black Cockatoo
**Calyptorhynchus funereus*	Yellow-tailed Black Cockatoo
Calyptorhynchus latirostris	Carnaby's Cockatoo
Calyptorhynchus baudinii	Baudin's Cockatoo
**Cacatua roseicapilla*	Galah
**Cacatua tenuirostris*	Eastern Long-billed Corella
**Cacatua sanguinea*	Little Corella
**Trichoglossus haematodus moluccanus*	Rainbow Lorikeet
Glossopsitta porphyrocephala	Purple-crowned Lorikeet
Polytelis anthopeplus	Regent Parrot
Platycercus zonarius	Australian Ringneck
Platycercus spurius	Red-capped Parrot
**Platycercus elegans*	Crimson Rosella
Platycercus icterotis icterotis	Western Rosella
Neophema elegans	Elegant Parrot
Cuculidae	
Cuculus pallidus	Pallid Cuckoo
Cacomantis flabelliformis flabelliformis	Fan-tailed Cuckoo
Chrysococcyx lucidus plagosus	Shining Bronze Cuckoo
Strigidae	
Ninox novaeseelandiae boobook	Boobook Owl
Tytonidae	
Tyto alba delicatula	Barn Owl
Podargidae	
Podargus strigoides brachypterus	Tawny Frogmouth
Aegothelidae	
Aegotheles cristatus cristatus	Australian Owlet-nightjar
Apodidae	
Apus pacificus pacificus	Fork-tailed Swift
Halcyonidae	
**Dacelo novaeguineae*	Laughing Kookaburra
Todiramphus sancta sancta	Sacred Kingfisher

Meropidae	
Merops ornatus	Rainbow Bee-eater
Climacteridae	
Climacteris rufa	Rufous Treecreeper
Maluridae	
Malurus splendens splendens	Splendid Fairy-wren
Malurus elegans	Red-winged Fairy-wren
Pardalotidae	
Pardalotus punctatus	Spotted Pardalote
Pardalotus striatus westraliensis	Striated Pardalote
Acanthizidae	
Sericornis frontalis balstoni	White-browed Scrubwren
Smicrornis brevirostris	Weebill
Gerygone fusca fusca	Western Gerygone
Acanthiza apicalis	Broad-tailed Thornbill
Acanthiza inornata	Western Thornbill
Acanthiza chrysorrhoa	Yellow-rumped Thornbill
Meliphagidae	
Lichmera indistincta indistincta	Brown Honeyeater
Meliphaga virescens	Singing Honeyeater
Meliphaga ornata	Yellow-plumed Honeyeater
Melithreptus brevirostris leucogenys	Brown-headed Honeyeater
Melithreptus chloropsis	Western White-naped Honeyeater
Phylidonyris novaehollandiae	New Holland Honeyeater
Phylidonyris nigra mystacalis	White-cheeked Honeyeater
Phylidonyris melanops	Tawny-crowned Honeyeater
Acanthorhynchus superciliosus	Western Spinebill
Anthochaera chrysoptera lunulata	Western Little Wattlebird
Anthochaera carunculata	Red Wattlebird
Petroicidae	
Petroica multicolor campbelli	Scarlet Robin
Petroica goodenovii	Red-capped Robin
Eopsaltria australis griseogularis	Western Yellow Robin
Eopsaltria georgiana	White-breasted Robin
Neosittidae	
Daphoenositta chrysoptera pileata	Varied Sittella
Pachycephalidae	
Pachycephala pectoralis fuliginosa	Golden Whistler
Pachycephala rufiventris	Rufous Whistler
Colluricincla harmonica rufiventris	Grey Shrike-thrush
Dicruridae	
Rhipidura fuliginosa preissi	Grey Fantail
	Restless Flycatcher???

Rhipidura leucophrys leucophrys	Willie Wagtail
Grallina cyanoleuca	Magpie Lark
Campephagidae	
Coracina novaehollandiae	Black-faced Cuckoo Shrike
Lalage tricolor	White-winged Triller
Artamidae	
Artamus cinereus melanops	Black-faced Woodswallow
Artamus cyanopterus	Dusky Woodswallow
Cracticidae	
Cracticus torquatus torquatus	Grey Butcherbird
Cracticus tibicen dorsalis	Australian Magpie (White-backed Magpie)
Strepera versicolor plumbea	Grey Currawong
Corvidae	
Corvus coronoides perplexus	Australian Raven
Hirundinidae	
Hirundo neoxena	Welcome Swallow
Hirundo nigricans nigricans	Tree Martin
Zosteropidae	
Zosterops lateralis gouldi	Grey-breasted White-eye
Dicaeidae	
Dicaeum hirundinaceum hirundinaceum	Mistletoebird
Estrildidae	
Stagonopleura oculata	Red-eared Firetail

i = introduced or exotic species
(Adapted from Bungendore Park Management Plan 1997-2007 and Johnstone, R and Kirkby, T 2008.)

Part C – Mammal Species

	Species	**Common name**
	TACHYGLOSSIDAE (echidnas)	
	Tachyglossus aculeatus	Echidna
	DASYURIDAE	
	Antechinus flavipes	Yellow-footed Antechinus
	Dasyurus geoffroii	Chuditch
	Phascogale tapoatafa	Brush-tailed Phascogale
	Sminthopsis crassicaudata	Fat-tailed Dunnart
	Sminthopsis gilberti	Gilbert's Dunnart
	MYRMECOBIIDAE.(numbat)	
	Myrmecobius fasciatus	Numbat
	PERAMELIDAE (bandicoots)	
	Isoodon obesulus	Quenda/Southern Brown Bandicoot

	PHALANGERIDAE (possums)	
	Trichosurus vulpecula	Common Brush-tailed Possum
	BURRAMYIDAE (pygmy possums)	
	Cercartetus concinnus	Western Pygmy-possum
	MACROPODIDAE (kangaroo and wallabies)	
	Macropusfuliginosus	Western Grey Kangaroo
	Macropus irma	Western Brush Wallaby
	Setonix brachyurus	Quokka
	MOLLOSIDAE (mastiff bats)	
	Tadarida australis	White-striped Bat
	Mormopterus planiceps	
	VESPERTILIONIDAE (vesper bats)	
	Chalinolobus gouldii	Gould's Wattled Bat
	Chalinolobus mono	Chocolate Wattled Bat
	Eptesicus regulus	
	Nyctophilus geoffroyi	Lesser Long-eared Bat
	Nyctophilus gouldii	Gould's Long-eared Bat
	Nyctophilus major	Greater Long-eared Bat
	MURIDAE (rates and mice) *s*	
	Hydromys chrysogaster	Water-rat
i	*Mus musculus*	House Mouse
	Rattus fuscipe	Southern Bush-Rat
i	*Rattus rattus*	Black Rat
	LEPORIDAE (rabbits and hares)	
i	*Oryctolagus-cuniculus*	Rabbit
	CAN DAE (foxes and dogs) -	
	Canis familiars dingo	Dingo
i	*Vulpes vulpes*	European Red Fox
	FELIDAE (cats)	
i	*Felis -catus*	Feral Cat
	SUIDAE (pigs)	
i	*Sus scrofa_*	Feral Pig

i = introduced species
(Adapted from Bungendore Park Management Plan 1997-2007)

Part D – Amphibian and Reptile Species

Species	**Common name**
MYOBATRACHIDAE (LEPTODACTYLIDAE) (ground frogs)	
Crinia georgiana	Quacking Frog
Crinia (Ranidella) glauertii	Glauert's Froglet
Crinia (Ranidella) pseudinsignifera	Bleating Froglet
Geogrinia leai .	Lea's Frog
Heleioporus eyrei	Moaning Frog
Heleioporus inornatus	Whooping Frog
Heleioporus barycragus	Hooting Frog
Heleioporus psammophilus	Sand Frog
Limnodynastes dorsalis	Pobblebonk

Pseudophryne guentheri	Gunther's Toadlet
HYLIDAE (tree frogs)	
Litoria adelaidensis	Slender Tree-frog
Litoria moorei	Motorbike Frog
GEKKONIDAE (geckoes)	
Crenadactylus ocellatus	
Diplodactylus polyopthalmus	
Gehyra variegate	Tree Dtella
Phyllodactylus marmoratus	Marbled Gecko
Underwoodisaurus milii	Barking Gecko
PYGOPODIDAE (legless lizards)	
Aprasia pulchella	Pretty Worm-Lizard
Delma frazeri	Fraser's Legless
Lialis burtonis	Lizard Burton's Legless Lizard
Pygopus lepidopodus	Common Scaleyfoot
AGAMIDAE (dragon lizards)	
Ctenophorus ornatus	Ornate Dragon
Pogona minor	Bearded Dragon
VARANIDAE (monitors or goannas)	
Varanus gouldii	Gould's Monitor or Bungarra
Varanus rosenbergi	Rosenberg's Monitor
Varanus tristis	Tree Monitor
SCINCIDAE (skink lizards)	
Bassiana (Leiolopisma) trilineata	
Cryptoblepharus plagiocephalus	Fence Skink
Ctenotus labillardieri	Red-legged Skink
Egernia kingii	King's Skink
Egernia luctuosa	Mourning Skink
Egernia napoleonis	Salmon-bellied Skink
Hemiergis initialis	
Lerista distinguenda	
Menetia greyii	
Morethia obscura	
Tiliqua rugosa	Bobtail
TYPHLOPIDAE (blind snakes)	
Ramphotyphlops australis	
Ramphotyphlops pinguis	
Ramphotyphlops waitii	
Ramphotyphlops sp	
BOIDAE (pythons)	
Morelia spilotes	Carpet Python
ELAPIDAE (front-fanged snakes)	
Acanthophis antarcticus	Southern Death Adder
Notechis scutatus	Tiger Snake
Parasuta gouldii	Gould's Whip Snake
Parasuta nigriceps	Black-backed Snake
Pseudechis australis	Mulga Snake
Pseudonaja affinis	Dugite

Vermicella bertholdi	Jan's Banded Snake

(Adapted from Bungendore Park Management Plan 1997-2007)

Invertebrate Species

Species	**Common Name**
Apis mellifera	European Honey Bee*
Camponotus genus	Sugar Ant
Castiarina sp.	Jewel Beetle
Cerceris genus	Sphecid Wasp
Chrysopidae	Green Lacewing
Cicadetta genus	Cicada
Cleridae family	Clerid Beetle
Coccinellidae	Ladybird
Colletidae family *Leioproctus* genus	Red-tailed Bee
Coryphistes genus	Stick Grasshopper
Danaus chrysippus	Lesser Wanderer butterfly
Danaus plexippus	Monarch butterfly
Empididae family; Ceritomerinae sub-fam	Fly
Ephemerpotera order	Mayfly
Gelastocoridae family	Toad Bug
Goniaea genus	Gumleaf Grasshopper
Halictidae family *Lasioglossum* genus	Native Bee
Iridomyrmex sp.	Meat Ant
Junonia villida	Meadow Argus butterfly
Leioproctus sp.	Verticordia Bee
Mecoptera order, Harpobittacus *genus*	Scorpion-fly
Pachysaga genus	Bush Cricket/Katydid
Perga sp.	Saw Fly
Reduviidae	Assassin Bug
Rhytidoponera sp.	Ant
Scarabaeidae	Scarab Beetle
Scutigeridae	Feather Centipede or Scutigerid
Tabanidae	March Fly
Tettigoniidae	Katydid
Tipulidae	Crane Fly
Trichocolletes sp.	Native Bee
Vanessa kershawi	Australian Painted Lady butterfly
Zygaenidae family	Day flying Moth
	Braconid Wasp
	Caddis-fly
	Cockroach sp. 1, Native
	Cockroach sp. 2
	Cockroach sp. 3
	Dragonfly
	Eumastacid Hopper

*- introduced species.

(Adapted from Insect survey conducted with the Bungedore Park Management Committee, the WA Museum and WA Insect Study Group (Pers. comm. Sarti)).

Part E – Fungi Species

Species	**Common name**
Agaricus sp.	
Aleuria rhenana	Stalked Orange Peel Fungus

Amanita eucalypti	
Amanita spp.	
Amanita umbrinella	
Amanita xanthocephala	Yellow-headed Amanita
Armillaria luteobubalina	Australian Honey Fungus
Austroboletus occidentalis	Ridge-stemmed Bolete
Austropaxillus muelleri	
Bolbitius vitellinus	
Boletellus obscurecoccineus	Rhubarb Bolete
Boletus prolinus group	
Calocera sp.	
Collybia aff. dryophila	Cedar-scented Collybia
Collybia sp.	
Coltricia objectans	
Coltriciella dependens	
Cortinarius archeri	Archer's Cortinarius
Cortinarius basirubescens	
Cortinarius cf. radicatus	
Cortinarius globuliformis	Underground Yellow Cortinarius
Cortinarius sinapicolor	
Cortinarius spp.	
Dacrymyces sp.	
Daldinia concentrica	Cramp Balls
Exidia glandulosa	Witches Butter
Fistulina hepatica	Beefsteak Fungus
Galerina eucalyptorum	
Galerina unicolor	
Gymnopilus allantopus	
Gymnopilus austrosapineus	
Hohenbuehelia sp.	
Hypholoma australe	
Hysterangium sp.	
Inocybe spp.	
Laccaria lateritia	
Laccaria sp	
Lactarius sp.	
Lepiota spp.	
Leptonia sp.	
Leptonia viridomarginatum	
Lycoperdon sp.	
Macowanites sp.	
Mycena spp.	
Mycena carmeliana	
Omphalina sp.	
Omphalotus nidiformis	Ghost Fungus
Panus fasciatus	Hairy Panus
Peziza spp.	
Phellinus sp.	
Pholiota multicingulata	
Pholiota sp.	

Pisolithus albus	
Pulveroboletus sp.	
Pycnoporus coccineus	Scarlet Bracket Fungus
Ramaria ochraceosalmonicolor	Salmon Coral Fungus
Ramaria spp.	
Resupinatus sp.	
Russula spp.	
Russula clelandii	
Russula flocktonae	
Russula neerimea	
Schizophyllum commune	
Secotium sp.	
Sepedonium parasitising a Boletus	
Stropharia semiglobata	Dung Round Head
Trametes lilacino-gilva	
Tremella aurantia	Jelly Fungus
Tremelloscypha australiensis	
Tricholoma eucalypticum	
Tubaria serrulata	

(Adapted from Bougher et al., 2007, Bungendore Park Management Plan 1997-2007)

Appendix 4 – Communication tools and signs that appear in Bungendore Park

Plate 1-4: Entrance signage.
Plate 5-8: Directional signage.
Plate 9-16: Information signage.
Plate 17-21: Dieback information signage.

Plate 1

Plate 2

Plate 3

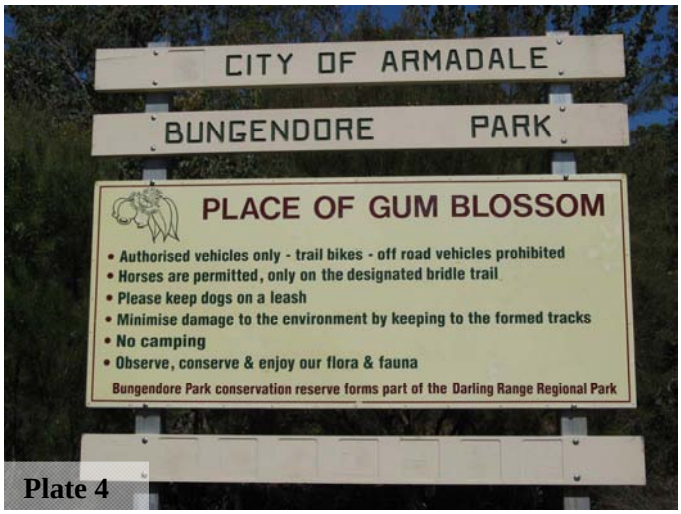


Plate 4

Plate 5

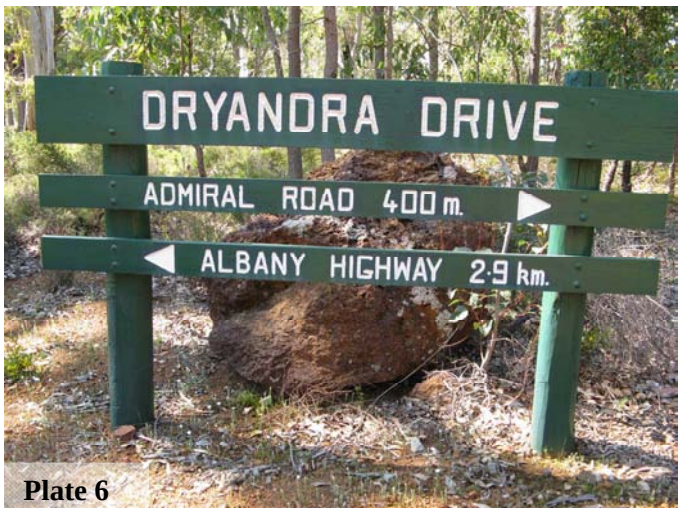


Plate 6

Plate 7

Plate 8

Plate 9

Plate 10

Plate 11


Plate 12

Plate 13

Plate 14

Plate 15

Plate 16

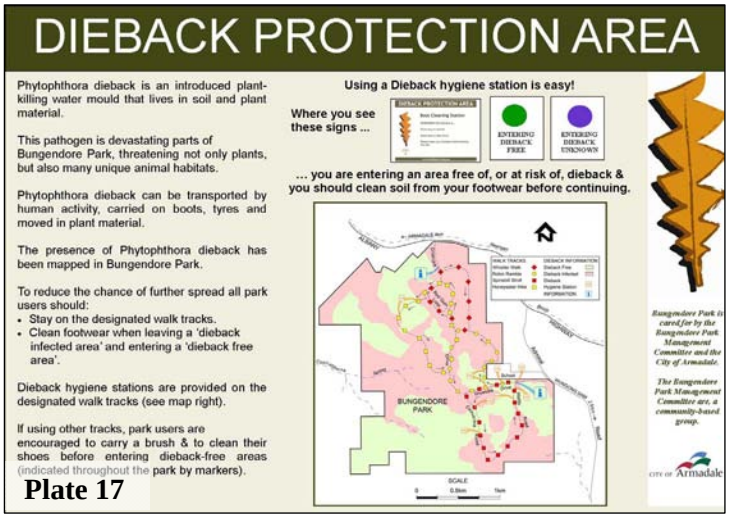


Plate 17

Plate 18

Plate 19

Plate 20

Plate 21

Appendix 5 - Bungendore Park Phytophthora cinnamomi Management Plan 2009 to 2019

1.0 Introduction and potential impacts

Approximately 281 hectares of Bungendore Park is infected with Dieback. The occurrence of dieback in Bungendore Park is illustrated on the Dieback Management Master Map.

Potential impacts of dieback on Bungendore Park's values include the death of up to 40% of the floral species diversity through direct susceptibility of these species to *Phytophthora cinnamomi.*

Further loss of flora that is not directly susceptible to dieback is also likely due to changes in biophysical conditions resulting from the death of susceptible species.

These key changes to floral composition, abundance, and vegetative structure are likely to have flow on effects to trophic relationships and fauna diversity and abundance.

The risk of dieback spread into areas of dieback free vegetation can be both described in terms of the likelihood of spread by vectors and also the potential impacts of an infection on vegetation.

For example, some areas of vegetation have a higher risk of dieback introduction than others, such as those areas adjacent to already infected areas or close to vectoring influences such as tracks. Further to this, some areas are at a greater risk of dieback introduction due to the likely impacts on the vegetation present, such as special conservation areas or areas of significant landscape or visual significance.

In areas infected with dieback, the level of impact varies. Some areas of vegetation are heavily impacted, with a low diversity of species remaining. Other areas are impacted to a lesser extent, with a wider diversity of species still present and a smaller number expressing disease symptoms. In areas more heavily impacted on by dieback, the loss of visual and landscape values can be quite dramatic.

It is estimated that dieback can move approximately 1 metre per year across a landscape through root-to-root contact. However, this estimate is highly generalised, with true rates of spread dependent on site specifics such as topography, disturbance and other factors. Five independent cells of dieback free vegetation occur across Bungendore Park – each surrounded by dieback infected areas.

The protectability of each cell is currently unknown. However, the Department of Environment and Conservation is currently developing a tool that will assist in predicting dieback spread by vectors such as root-to-root contact. The application of this tool to the five cells of dieback free vegetation in Bungendore is likely to further assist in determining management priorities.

2.0 Management approach

The aim of this Dieback Management Plan is to undertake actions to minimise the further spread of dieback within the Park and to treat those areas of dieback free vegetation that are at high risk of infection (due to vectors or due to conservation significance). This Management Plan is intended for review after 5 years.

The following dieback management approach will be undertaken in Bungendore Park:

1. Protection of areas of susceptibility through hygiene control measures and monitoring of the effectiveness of actions. Priority must be given to areas of special conservation significance.
2. Understanding the movement of dieback within the Park and the threat posed by the movement dynamics.
3. Treatment of dieback free vegetation with Phosphite along Dieback fronts.
4. Participation in research opportunities to further understand dieback.

The effectiveness of all management actions should be monitored. Management actions should, where possible, reflect current best practice.

3.0 Priorities for action

3.1 Protection of areas of susceptibility through hygiene control measures and monitoring of the effectiveness of actions.

Hygiene control is primarily achieved through the management of vectors of spread. Vectors of dieback spread in the Park include soil movement associated with walking and management tracks, overland flow, root to root spread and animal vectoring. Animal vectoring is not considered in this plan. The assumption has been made that the potential impact of these vectors is likely to be significantly lower than the potential impact of visitors, and therefore hygiene control in this plan is targeted towards human vectors. This assumption should be reconsidered when a review of this plan is undertaken.

The protection of areas of dieback free vegetation is best achieved through track closures or diversions and the quarantine of infected areas. However, where this is not feasible, hygiene control consisting of measures to minimise the risk of soil moving from dieback infected areas into dieback free area is proposed.

Dieback hygiene efforts and recreational planning must be complementary.

3.1.1 Hygiene management - walking track vectors

Tracks are one of the highest risk dieback vectors in the Park. The network of tracks in Bungendore Park is illustrated on the Dieback Management Master Map. Tracks are primarily used by Park visitors for recreation and by management vehicles.

Three of the four named walk tracks, as illustrated on the Dieback Management Master Map, intersect dieback fronts. The Spinebill Stroll walk intersects three areas of dieback free vegetation, requiring six hygiene stations. The Robin Ramble and Honeyeater Hike walks each cross into one area of dieback free vegetation, requiring two dieback hygiene stations on each walk. Whistler Walk remains in dieback infected areas. In addition, the bridle trail on the north western extent of the Park also crosses into a dieback free area. A dieback hygiene station for this area may not be an appropriate response.

Hygiene at these locations should be managed in the following manner:

- Installation of dieback hygiene stations with clear instructions to Park users about what they should do at each of these stations. Stations should be uniform across the Park and preferably consistent with similar signage used in other areas.

- All locations where tracks cross dieback fronts shall be signposted.
- Entry points to the Park should inform visitors of the dieback risk signs and their meanings.

There currently is no standard design for dieback hygiene stations across tenure. However it is proposed that hygiene stations placed on the Bungendore Park walk tracks meet the following criteria:

- Use of a standard sign across the Park indicating which area is dieback infected and which area is dieback free. The sign should be near the dieback front but still within the dieback infected area.
- Provide a brush to clean boots.
- Provide clear instructions for walkers travelling in both directions.
- Be designed in a manner which is robust to vandalism.

Figure 1: Example of a dieback hygiene station. A sign on each side of the bollard indicates the status of the vegetation the walker is heading towards and provides instructions of boot clean down.

This station design is considered a low cost option that would reduce the risk of dieback spread along tracks, whilst raising awareness of the dieback risk within the reserve. The need to move signs after 5 or so years is recognised (if the disease front moves). There are also opportunities to increase the effectiveness of such a station by installing sections of limestone along tracks.

This management plan assumes that access control is achieved as proposed in the draft Bungendore Park Strategic Directions Document 2009. Understanding the success in achieving access control across the Park will be of fundamental importance to determining the subsequent success of track hygiene control as proposed in this Plan.

- **Action 1**: Install dieback hygiene stations as shown on the Dieback Management Master Map at the ten locations where walk tracks enter dieback free vegetation. Accompany the dieback hygiene stations with appropriate community education to promote their use.

3.1.2 Hygiene management - management track vectors

Three types of tracks occur across the Park including named and unnamed walking tracks, management vehicle tracks and tracks no longer deemed necessary for walking or management purposes.

Minimising the risk of dieback spread along these vectors is proposed to be undertaken in the following manner.

- Named walk tracks – install ten dieback hygiene stations as identified in Action 1.
- Unnamed walking tracks – install dieback risk signs indicating the status of the vegetation as tracks cross dieback fronts.
- Management vehicle tracks including firebreaks – install dieback risk signs indicating the status of the vegetation as tracks cross dieback fronts and the need to comply with a code of conduct in the Park.
- Tracks no longer deemed necessary for walking or management vehicles - install signs to indicate the track is 'closed' to walkers and management vehicles.
- Entry signs should also be installed to advise walkers of dieback risk within the Park and to promote responsible walking practices.

A 'Code of Conduct' for management vehicles which is consistent with City of Armadale Managing Phytophthora Policy ENG9 should also be developed. The 'Code of Conduct' should consider on-site cleaning of vehicles.

Priority for the implementation of hygiene measures on management tracks should be afforded to areas of special conservation significance such as the Landscape Protection Area.

- **Action 2**: Install "Closed' signs at all unnecessary tracks within the Park as shown on the Dieback Management Master Map.
- **Action 3:** Install appropriate signage at all locations where management tracks cross dieback fronts as identified on Dieback Management Master Map and an additional three entry signs.
- **Action 4**: Develop a 'Code of Conduct' for management vehicles.

3.1.3 Management of vectors – plant and soil

The protection of the Park from further introductions of dieback in soil and plant stock is important. All soil or mulch used in the Park should be certified 'free of dieback', and plant stock should be grown in standards consistent with the City of Armadale Managing Phytophthora Dieback Policy and Management practice ENG9.

3.2 Understand the movement of dieback within the Park and the threat posed by these movement dynamics.

Bungendore Park was last mapped for Dieback in 2001. Current best practice procedure is to remap fronts every 5 to 6 years. Observations of dieback treatment contractors working in the park suggest that dieback fronts may have moved in the order of 5 metres since 2001.

Broad scale re-mapping of Bungendore Park is not considered a priority. Due to the cost savings associated with re-mapping being undertaken in conjunction with treatment, these two activities are proposed to occur together on a rotational basis across the Park.

However as treatment is not proposed in the Landscape Protection Area of the Park, mapping is proposed every five years in this zone to further inform management decisions about the rate

of spread of dieback by overland flow and root to root contact. These results can then be extrapolated to further inform management decisions across the Park.

The need to further understand the protectablity of the five cells of dieback free vegetation within the Park has already been identified as a priority.

- **Action 5**: Seek expert advice as to the protectability of the five cells of dieback free vegetation in Bungendore Park.
- **Action 6**: Re-map dieback fronts outside of the Landscape Protection Area in conjunction with treatment activities. All re-mapping should be demarcated on-site and electronically mapped.
- **Action 7**: Remap dieback front (approximately 9.1 kilometres) in the Landscape Protection Area in 2008 and 2013 to determine the rate of spread and to determine appropriate management responses such as treatment with Phosphite.

3.3 Treatment of vegetation with Phosphite

Phosphite treatment is undertaken to reduce the impact of dieback in areas of susceptibility. It is generally undertaken in dieback free vegetation which is subject to vectors of spread.

Treatment of vegetation with Phosphite does not cure dieback and is required to be repeated every four years.

Bungendore Park has been subject to Phosphite treatment activities since 2004. Expenditure has been in the order of $15,000 for treatment to date, and given the need to re-treat every 4 to 5 years, areas treated in 2004 will be need for treating with phosphite again in 2008.

The Dieback Management Master Map illustrates a rotational plan for dieback treatment, incorporating those works undertaken to date.

3.3.1 Treatment in special conservation areas

Whilst the conservation of biodiversity across the whole of Bungendore Park is the overall vision of the draft Bungendore Park Strategic Plan 2009, there are a number of areas of special significance where management of threats may be more intense to reflect the sensitivity of these areas to the impacts of threatening processes. Areas of special conservation significance in the Park include the Landscape Protection Area and areas of Declared Rare Flora.

The Landscape Protection Area does not contain any formal walk tracks and as previously detailed, hygiene measures are proposed for management tracks that provide access around this area.

Two dieback free cells of vegetation occur in this zone. Both occur on ridges where only minor overland flow and subsequent dieback spore transfer may occur. However, there is still potential for dieback to move upslope by root to root contact in these areas.

The dieback free cell near the Cooliabberra Spring contains the most diverse array of vegetation within the Park including *Corymbia calophylla – Eucalyptus marginata* woodlands and granite shrublands, heathland and sheoak woodlands. These vegetation types are likely to experience low to moderate impacts if further infected with dieback. However, this assumption is site specific and can change with factors such as disturbance and drainage. This area also

contains the Jarrah/Marri forest, where dieback impacts are likely to be moderate to high in infected vegetation.

All of the dieback treatment works to date have occurred outside of the Landscape Protection area in the upland Jarrah, and Jarrah/Marri vegetation type.

Assuming that vectors of dieback spread in the Landscape Protection Area present low risk, the assumption has been made that the main threat of further dieback spread in this area is by root to root contact. As a result, broad scale treatment of the area with phosphite is not considered a priority. However, the re-mapping of the area as described in Action 7 is required to ensure these assumptions are fair, and that further spread of dieback in this zone is not a threat to its special conservation values. Remapping should be undertaken by a qualified professional and be demarcated both on-ground and digitally.

The dieback susceptibility of the Declared Rare orchid is currently unknown. Communication with Department of Environment and Conservation staff responsible for the implementation of the Species Recovery Plan should be maintained.

- **Action 8**: Liaise with staff at the Department of Environment and Conservation to determine appropriate dieback management responses for the Declared Rare orchid.

3.3.2 Treatment of areas subject to vectors

Assuming that the spread and movement of dieback in the park will be greatest in areas exposed to vectoring factors, the treatment of dieback free vegetation adjacent to tracks and dieback free vegetation down slope of infected vegetation is considered a priority.

The treatment of walk tracks should be a priority as they are exposed to soil movement on a more regular basis than tracks used by management vehicles. Retention of vegetation in these areas is also of fundamental importance to maintaining ‘sense of place’ for Park visitors.

Of the five named and marked tracks that occur in Bungendore Park (including the bridle trail), dieback free vegetation is intersected at six locations. In addition, management tracks intersect dieback free vegetation at a further five locations. Only one of these areas has not been previously treated. The treatment of this area is identified as a priority for 2008, and the re-treatment of previously treated areas is based on a four year rotation.

An analysis of the 5 metre contours of Bungendore Park indicates that most of the dieback free areas are upslope of dieback infected areas. However, the area of dieback free vegetation north of Honeyeater Hike (west of gravel pit three) is down slope of dieback infected vegetation as well as being close by to vectors. In addition, this area has landscape and scenic value to Park visitors using nearby walk tracks. This area approximately 1km in length is a priority for treatment with phosphite. A small section of this front was treated for dieback in 2005 and is due for re-treatment in 2009. The remainder is identified as a priority for treatment in 2008.

Two additional areas of dieback free vegetation down slope of a an infected area occur east of Casuarina Road and west of Dryandra Drive between Honeyeater Hike and Red Gum Loop. These areas are approximately 300 metres and 500 metres in length and are a priority for re-treatment with phosphite.

Action 9: Implement Phosphite treatment priorities on a four year rotational basis as indicated on Dieback Management Master Map.

Also see **Action 6**.

3.3.3 Treatment and revegetation of dieback infected areas

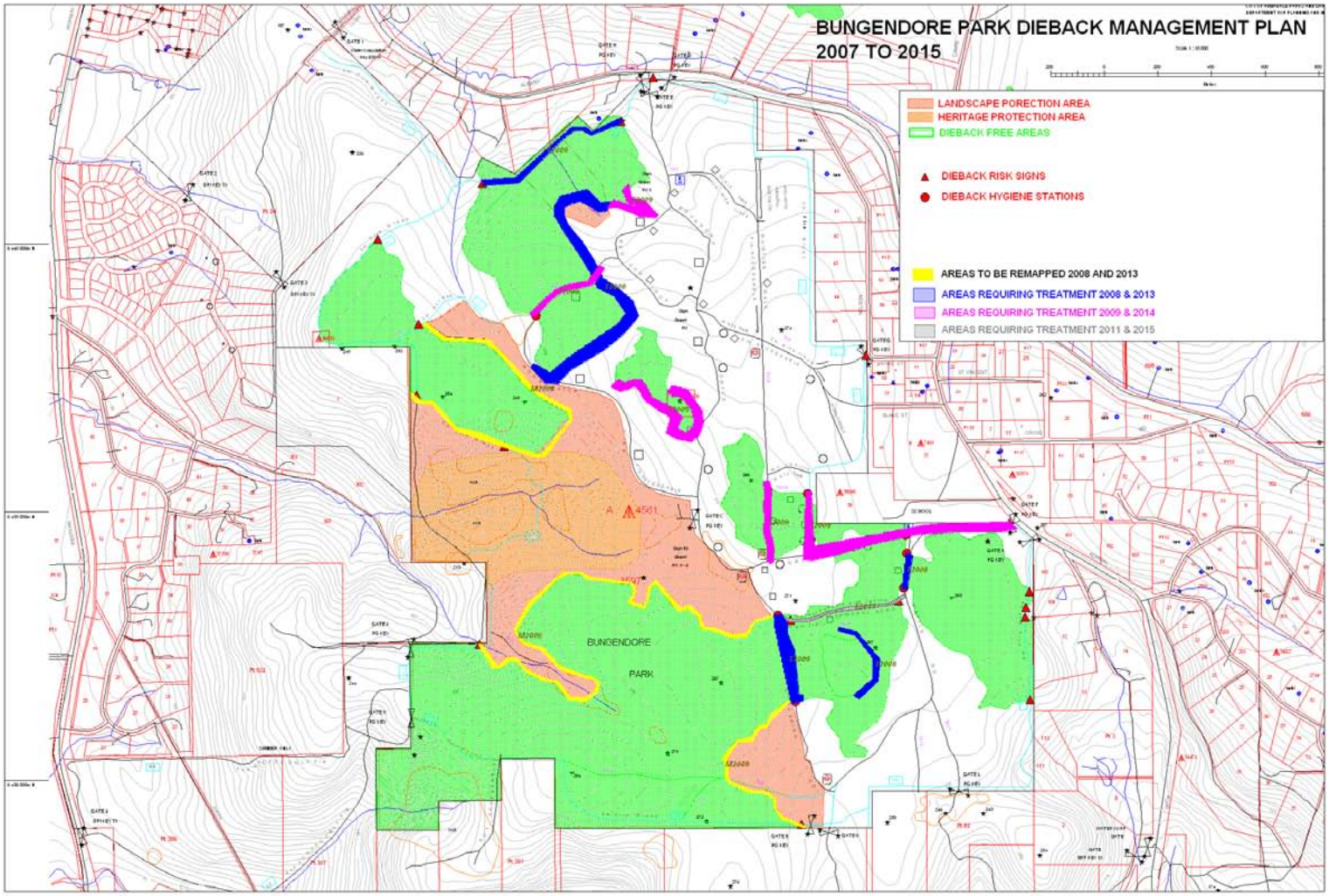
Dieback infected areas occur throughout the Park. The revegetation of these areas coupled with a phosphite treatment program will have positive implications for the conservation of biodiversity and for the protection of landscape and scenic values of the Park. However, revegetation activities in these areas should only be undertaken if sufficient funding is available to protect areas of dieback free vegetation within the Park as a first priority.

In some instances, the treatment of large trees along tracks may be necessary to reduce future risk of dead tree stags to visitor safety, protect nesting hollows and enhance landscape and scenic values of visitor areas.

Bungendore Park Management Committee has a trial planting site located south of Dryandra Drive near Track E2. The site is severely impacted by dieback and seedlings have been planted and over-sprayed with phosphite. This trial is ongoing.

- **Action 10:** Identify and treat large trees along tracks with Phosphite to enhance landscape and scenic values of visitor areas.

4.0 Dieback Management Master Map



5.0 Cost Estimates

The following table details cost estimates for the implementation of this Dieback Management Plan.

Action	Estimated Cost	Details
1: Install dieback hygiene stations as shown on the Dieback Management Master Map at the ten locations where walk tracks cross dieback free vegetation. Accompany the dieback hygiene stations with appropriate community education to promote their use.	Ten stations at $321.75each. Total = **$3217.50**	Material required for a Dieback hygiene station includes: o 2 signs – one indicating which way is dieback free – the other indicating which way is dieback infected @ $60 each = $120 o 1.5 meter timber bollard @ $25 per meter = $37.50 o 3 metres heavy duty link chain - $15 o 1 heavy duty wire brush - $10 o 1 timber bench – 4 metres of timber @ $25 p/m = $100 o 1 bag cement for bollard installation $10 Total = $321.75 per station inc GST and 10% contingency
2: Install track closed signs at all unnecessary tracks within the Park.	**$450**	Three areas where tracks are required to be closed have been identified (see Dieback Management Master Map). Track closed signs are estimated to cost $150 each installed.
3: Install appropriate signage at all locations where management tracks cross dieback fronts.	Dieback front markers cost approximately $184.25 each * 15 (includes three entry signs) = **$2,763.75**	Materials required for dieback front markers include o 2 signs – one indicating which way is dieback free – the other indicating which way is dieback infected - $60 each = $120 o 1.5 meter bollard timber - $25 per meter = $37.50 o 1 bag cement for bollard installation $10 Total = $184.25
4: Develop a 'Code of Conduct' for management vehicles.	In kind	To be undertaken by City of Armadale Officers in liaison with stakeholders.
5: Seek expert advice as to the protectability of the five cells of dieback free vegetation in Bungendore Park.	In kind	To be undertaken by City of Armadale Officers in liaison with stakeholders.
6: Re-map dieback fronts outside of the Landscape Protection Area in conjunction with treatment activities.	See treatment estimates	See treatment estimates
7: Remap dieback front (approximately 9.1 kilometres) in the Landscape Protection Area in 2008 and 2013 to determine the rate of spread and to determine appropriate management responses such as treatment with Phosphite.	Quote in progress	

Action	Estimated Cost	Details
8: Liaise with staff at the Department of Environment and Conservation to determine appropriate dieback management responses for the Declared Rare orchid which occurs in the Landscape Protection Area.	In kind	To be undertaken by City of Armadale Officers in liaison with stakeholders.
9: Implement Phosphite treatment priorities on a four year rotational basis as indicated on Dieback Management Master Map.	Quote in progress	2008 and 2013 – 2.73km of dieback front requires a 20m wide treatment with phosphite either side of the track. 2009 and 2014 – 2.75 km of dieback front requires a 20m wide treatment with phosphite either side of the track. 2011 and 2015 – 0.49km of dieback front requires a 20m wide treatment with phosphite either side of the track.
10**:** Identify and treat large trees along tracks with Phosphite to enhance landscape and scenic values of visitor areas.	In kind	To be undertaken by City of Armadale Officers in liaison with stakeholders.

Appendix 6 - Bungendore Park Fire Management Plan 2009 to 2019

1. Introduction

Bushfires have historically been part of the Australian environment and wildfires have occurred in the Park throughout its history. Documented control burns have occurred since 1977. Within the Neerigen Ward, the City of Armadale has worked with the Bedfordale Volunteer Fire Brigade to achieve fire safety from this date.

This Fire Management Plan proposes a strategy to ensure that planned and unplanned fires that occur in Bungendore Park are managed in a manner that protects life and property and meets the conservation objectives of the park

The following are objectives for management of fire in Bungendore Park.

2. Fire Management Objectives

1. **Protect life and property**

The protection of life and property is the first objective for the Park, and over-rides other objectives. The risk to neighbouring properties from wildfire spread from the park must be minimised to acceptable levels, and vice versa.

Management approaches to achieve this priority includes the maintenance of well defined fire access tracks (see Fire Control Master Plan Map). These access tracks are numbered and signposted and copies of the maps are held by the Bedfordale Volunteer Bush Fire Brigade. Fire access tracks also reduce the incidence of unplanned fires by ensuring access throughout the reserve is controlled and access to spot fires can readily be achieved before they spread. Specifications and procedures for the management of fire access tracks in Bungendore Park is considered further in subsequent sections.

The adequacy of the network of fire access tracks has been reconsidered as part of this management plan. Within the Landscape Protection Area the number of fire management tracks is minimal and further tracks have been proposed to enable adequate fire management. The installation of these tracks is further considered under "Minimise potential adverse impacts from fire prevention operations" below.

Perimeter tracks generally follow property boundaries and some properties allow access into the Park in the incidence of a wildfire.

Embers from areas that have been unburned for 30 years often travel up to 5km, and can then start new fires and have the potential to set fire to houses. In order to reduce the risk of fire and embers in the Park to acceptable levels, low fuel load areas will buffer areas of the Park closest to homes and all areas will be managed to a fuel load level and size to ensure appropriate fire management can be undertaken. This is further considered under the section "Balancing objectives – the fire management plan".

2. Reduce the incidence of unplanned fires

Reducing the incidence of unplanned fires is primarily achieved through the implementation of a prescribed burning program. The 1997 Bungendore Park Management Plan identified a prescribed burning program which was considered adequate to manage the fire objectives as stated.

The Park is vulnerable to attack from nearby fires due to the strong winds that can be generated by the heat from fires in severe weather conditions. The City is not responsible for management of the adjacent bushland but seeks to work with land managers (e.g. the Department of Environment and Conservation) to manage fire across the landscape. The City understands that some areas nearby are rarely burnt to protect important fauna habitat, and recognises that these areas could be a source of embers which could create unplanned fires in Bungendore Park if the rarely burnt areas are set alight.

Prescribed burning plays a crucial role in protecting the community from large wildfires and our bushland from the impacts of uncontrolled and intense wildfires. Prescribed burning reduces the amount of 'fuel' or combustible material such as leaf litter. Areas burnt by prescribed burning also provide 'low loading' buffers that slow the rate of spread of fires. Prescribed burning is generally carried out in mild weather with less intensity that wildfires. They often result in the burning of litter and debris without scorching the canopy.

The undertaking of fuel reduction activities is also important on lands adjacent to the Park. Park neighbours should be encouraged to participate in these activities on their own lands.
As is further discussed in subsequent sections, the control burn plan developed for Bungendore Park in 1997 is modified in this plan.

3. Minimise the spread of weeds and disease by fire operations

The spread of weeds and disease can occur during fire operations such as the maintenance of fire access tracks, the undertaking of control burns, response to wildfire and the undertaking of inspection activities.

Installation of tracks will need to occur in such a way as to minimise the impact of the track on the surrounding bushland from disturbance factors. In particular, tracks will need to be located and contoured so as not to create future erosion problems, where near watercourses should be located in previously disturbed areas or more than 30m from the watercourse where practicable, and should be constructed in accordance with the City's Policy ENG 9 Phytophthora dieback to ensure dieback is not spread. Except where dual purpose use of tracks is proposed (e.g. as a walking route and fire access track), track entrances should be as inconspicuous as possible to help ensure walkers are not disoriented by the number of tracks, to help ensure that public access to areas which are intended to have minimal human intrusion remain so, and to minimise the likelihood of tracks being used by illegal users (i.e. motor bike riders) that may cause damage to the area. Too many tracks can threaten biodiversity conservation values through opening up the area to unauthorised access, by spreading dieback and weeds and potential erosion.

Potential spread of weeds and disease as a result of fire operations are further discussed in the Strategic Directions Document Section 11.1 Disease and Dieback and 11.2 Weeds. Potential for these activities to cause erosion is also further considered in Section 11.9 Erosion.

The maintenance of fire access tracks is usually undertaken by the City of Armadale in consultation with the Bungendore Park Management Committee. Specifications and procedures for the maintenance of firebreaks is further considered in subsequent sections of this plan.

4. Maintain existing diversity, composition of vegetation and wildlife habitats

The undertaking of prescribed burning is considered an essential component of reducing the risk of unplanned fire to life, property and the environment.

Fire can both promote and threaten biodiversity especially when combined with other threatening factors such as weeds or dieback. No fire regime or history of fire interval, season, intensity or patchiness is optimal for all species. A diversity of fires intervals and patchiness is subsequently considered the best management option to promote biodiversity.

Climate indicators suggest that Bungendore Park would be classified as highly fire prone given the flammable nature of the vegetation and climate variables such as rainfall and lightning (Burrows *et al* 1999). Some scientists consider that historically the South West of Western Australia was burnt by low intensity fires every three to four years with riparian areas and valley floors burnt at longer intervals.

Research suggests that approximately 70 to 75% of all understorey species on drier upland Jarrah forest re-sprout following fire and the remainder regenerate form the seed stored in the soil or the woody fruits stored in the canopy (Christensen and Kimber 1975; Bell and Koch 1980; Burrows and Friend 1998, Burrows *et al* 1999). These species are then thought to flower within 3 to 4 years of the fire (Burrows and Friend 1998). However, some obligate seeders such as those that occur around granite outcrops and around riparian zones are thought to take approximately 6 to 8 years to flower following fire.

Studies suggest that the minimal interval between fires should be double the juvenile period of the slowest maturing species to allow sufficient replenishment of seed banks (Gill and Nichols 1989). Based on this criterion, the minimum, sustainable fire frequency for upland Jarrah forests is about 6 to 8 years (Burrows *et al* 1999).

Studies of the response of fungi to fire in south west Jarrah forest suggest that a flush of fungi occurs following fire and that whilst diversity of fungi in frequently burnt and long unburnt sites is similar, species composition is different. Specifically, mycorrhizal roots are significantly lower in frequently burnt sites (Robinson 2002) which could inturn have impacts on the availability of food for mycophagous mammals.

Identifying an optimal fire regime for fauna is complex. However, similar to concepts of mosaic and patch burning a low intensity suggested for flora biodiversity management, fauna generally prefer a heterogeneous landscape with various states of post fire succession (For more information on invertebrate response see Van Heurck 2002 and for more information on reptile response, see Roberts 2002).

The severity and duration of the impact on fire and bird populations is directly correlated with the size and the intensity of the fire. Small, low intensity fires have little long-term impact but

birds take longer to recover following large, intense fires (Burrows *et al* 1999, Christensen *et al.* 1985).

The impact of fire on mammal species is again dependent on the habitat requirements, life history of the mammal and on the scale, intensity and patchiness of the fire (Whelan 1995, Burrows and Friend 1998, Burrows et al 1999). Research suggests that a number of mammals require dense cover of vegetation or thickets (older than 5 to 7 years) in areas such as creeks, swamps and valleys (Burrows 1999). However, infrequent moderately intense fire is required to regenerate these habitat thickets approximately every 20 to 30 years. For mammals such as the Honey Possum (*Tarsipes rostratus*) 10 to 15 year old vegetation is optimal for pollen and nectar availability for these species (Burrows and Friend 1998, Burrows 1999).

Due to the Parks interconnectivity with the Wungong Gorge, and the importance of Fauna and Fauna corridors between the water supply of the gorge area and the Park itself, a landscape scale approach to fire management is considered a necessary as the less frequent burning of the sensitive habitats that occur in the Wungong Gorge may be of key importance to the protection of wildlife corridors. These areas should subsequently be burnt on a mosaic pattern similar to Bungendore Park to ensure adequate fuel age patches across the landscape.

The response of two Declared Rare species to fire is occur in Bungendore Park is unknown. The draft species recovery plans for *Diuris micrantha* and *Thelymitra stellata* identify that fire will kill adult plants during vegetative and flowering stages – around May to November. Actions of these recovery plans identify that a fire management strategy for the species will be determined by the Department of Environment and Conservation (DEC) in liaison with local authorities. This should be progressed with appropriate staff at DEC and considered in the development and implementation of a prescribed burning program for the Park.

The Bedfordale Volunteer Bush Fire Brigade in coordination with the City of Armadale and the Bungendore Park Management Committee has undertaken prescribed burning consistent with the Bungendore Park Management Plan 1997.

3 Balancing objectives - the Fire Management Plan

The 1997 Bungendore Park Management Plan identified prescribed burn plan and split Bungendore Park into three areas – each area with a different prescribed burn regime. As a component of preparing this Bungendore Park Strategic Plan 2009, this has been reviewed with consideration of the priorities above.

Landscape Protection Area

The first Prescribed Burn area identified in the 1997 Bungendore Park Management Plan for "Extended Rotational Burns" was noted to have low risk to adjacent property and high conservation values and it was identified that no prescribed burning was to occur in this area (which correlated with the Landscape Protection Area of the Park). It was noted that in this area, the fuel loading is likely to be higher than other areas and was to be monitored by the Bungendore Park Management Committee and the Bedfordale Volunteer Bushfire Brigade to consider the need for long term (approximately 25 to 30 years) rotational burns are to be considered.

A time interval of 25 to 30 years for the Landscape Protection Area was considered desirable to allow the replenishment of the seed back following fire, and provide optimal habitat for some mammals, providing dense thickets of habitat. However, re-sprouting flora may not flourish with such an extended interval and these thickets may require regeneration after 20 to 30 years.

However due to the high risk of ember attack and the threat to surrounding properties a distance of up to 5 km away, the fuel load accumulated in a 20 to 30 year time period would be too great.

In the event of an ember landing in the Landscape Protection Area of the Park the fire would not be able to be stopped within this area and there is a high risk that the entire area would be lost. Subsequently, if a fire was to start in the Landscape Protection Area with a fuel load of 30t/ha, properties some distance away would be under threat from embers travelling long distances due to the winds generated by the fire.

It is therefore proposed that:

- As shown on Fire control Master Map, the Landscape Protection Area be divided into smaller sub-units (suffix c) burnt on a rotational extended and low intensity basis to achieve heterogeneity within the parks most significant conservation area, with prescribed burning not being undertaken in areas with a fuel loading less than 8-10 tonnes per hectare (t/ha) unless deemed necessary for safety. Within these sub-units, the prescribed burning shall also occur in a mosaic pattern.
- Burning of Balga skirts be considered, where necessary, to minimise fuel and maximise the heterogeneous nature of the zone.
- Caution be applied to increase the heterogeneous nature of sensitive areas such as granite outcrops and riparian zones whilst ensuring if these areas are not burnt as a result of prescribed burning, the fuel surrounding these areas is relatively low to minimise spread.

It is also proposed, due to the high risk posed by the large land area the Landscape Protection Area, to install three strategic fire access tracks to easily divide the area into smaller units. This will help with the on-ground control of prescribed burns as well as fire management should a bushfire occur in the Park. Installation of gates at strategic points may need to be considered to restrict access to unauthorised vehicles. The locations of these tracks are shown on the Fire Control Master Map. The tracks are described as follows:

1) Installation of a mechanically cleared fire access track from W2 along the western boundary to Gate C. The track location will use areas of cleared or sparse vegetation and will occur only in dieback infected areas.
2) Track 7 will be reinstated from W2 to where it meets the junction of Tracks 6 and 8. It will be a hand cleared track as the track would traverse both dieback free and infected areas, and to minimise the impact to the landscape and vegetation.
3) Track 6 will be reinstalled. It will be a hand cleared track as the track would traverse both dieback free and infected areas, and to minimise the impact to the landscape and vegetation. The entrance to the track near pit 6 will be camouflaged into the landscape to stop unauthorised vehicular access to the track.

Medium Fuel Load zone

The second prescribed burn area identified in the 1997 Bungendore Park Management Plan was noted to be a medium fuel load area (below 8.5 tonnes per hectare), to be burnt rotationally every 6 to 8 years. These areas occur through the mid-section of the Park. A rotational burn of 6 to 8 years is still considered sufficient to allow the replenishment of the seed back following fire and the establishment of thickets for habitat.

Research suggests that in a Jarrah forest environment and dependent of rainfall, litter accumulates a rapidly in the first 3 to 5 years, reaching approximately 8 tonnes per hectare after 6 to 10 years and stabilising at 10 to 16 tonnes per hectare after approximately 15 years (Burrows and Friend 1998 and Burrows 1999). Based on the estimate the medium fuel load area would be burnt rotationally every six to eight years.

This burn regime may be unfavourable for some species such as the Mardo that require fuel ages of 10 to 15 years.

It is therefore proposed that:

- The boundaries of the medium fuel area remain as identified in the 1997 Bungendore Park Management Plan and Fire control Master Map.
- That the Medium Fuel zone be split into 6 to 10 subunits (suffix b) to identify one area to be burnt each year from 2008 to 2011 as illustrated on the Fire control Master Map.

Low fuel load zone

The final prescribed burn area identified in the 1997 Bungendore Park Management Plan was the Low Fuel Area where fuel is to be maintained at 4-6 t/ha and be prescribed burnt every five years. These areas are generally adjacent to surrounding residential areas or areas known as ignition points. They also include fire access tracks adjacent to residential areas.

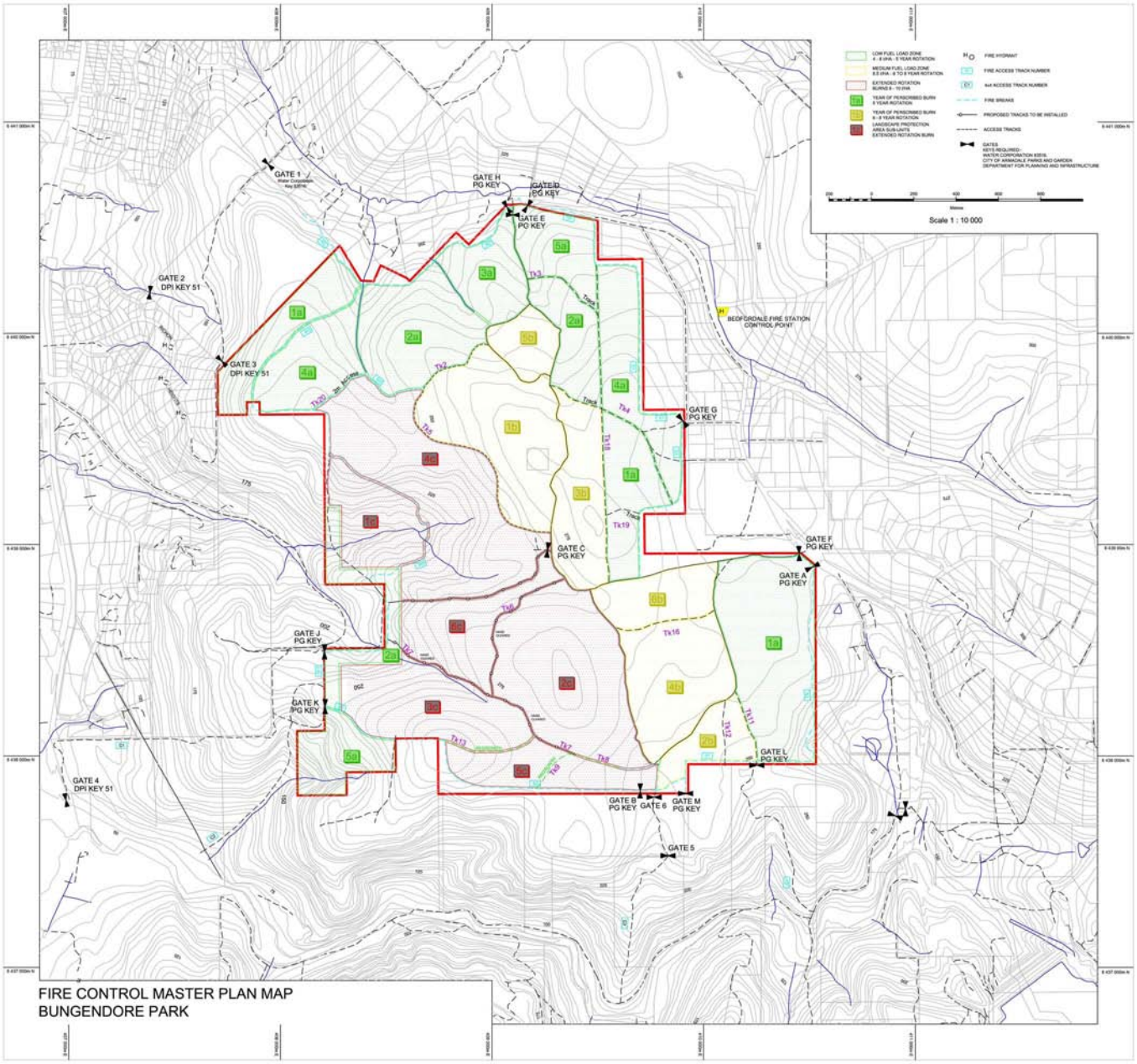
This low fuel zone if burned on a five year rotational basis may respond with a dominance of re-sprouting species and a loss of re-seeders as the time period for seed bank regeneration is minimal. Again for the Low Fuel Area of the Park, a heterogeneous burn pattern is the preferred approach. It is also likely to be unfavourable to mammals such as the Mardo.

Whilst this zone may not be optimal for biodiversity conservation, it is considered essential for the protection of life and property and the protection of other areas of value within the Park in the incidence of wildfire.

A width of 300m is considered adequate for a buffer to isolate the areas with higher fuel.

In areas of the Park bounded by lands vested in the Department of Planning and Infrastructure, managed by the Department of Environment and Conservation, the possibility of changing the buffers at these points to 300m may need to be considered depending on whether it is deemed that the management regimes implemented on these lands is sufficient to meet the fire management objectives of the Park. Discussions are proposed to occur between the Department of Environment and Conservation, the City of Armadale, the Bungendore Management Committee and the Bedfordale Volunteer Bush Fire Brigade in regards to this. This Low Fuel Area (sub-units identified as suffix a) is illustrated on Fire Control Master Map.

3. Fire control Master Map



4. Procedures and specifications

Fire break network

The adequacy of the current firebreak network as detailed on Fire Management Master Map shall be annually discussed by the City of Armadale, the Bungendore Park Management Committee and the Bedfordale Volunteer Bush Fire Brigade prior to the fire seasons.

Proposals for new firebreaks

If new fire access tracks are proposed, the matter is to be discussed between the City of Armadale, Bungendore Park Management Committee and the Bedfordale Volunteer Bush Fire Brigade to determine the necessity, location and installation techniques.

When new fire access tracks are deemed as necessary as a part of emergency response, where possible, they will be installed with due regard to dieback, erosion, weed, and track planning principles identified in this report. Following the installation, the necessity to remain open, and therefore be maintained is to be considered by the Bungendore Park Management Committee and the City of Armadale and subsequently managed.

Firebreak inspections

Fire access tracks should be annually inspected by the City of Armadale.

Firebreak maintenance

General reserve maintenance will be undertaken by the City of Armadale Parks Department or, contractors engaged by the Parks Department, on advice supplied by Ranger Services following annual firebreak inspections, and following advice from the City's Environmental Officer.

Fire breaks will be maintained with due regard to the following specifications:

- All firebreaks mapped on Fire Management Master Map shall be maintained at a minimum width of 3 metres and height of 4 metres and be passable by a Tanker.
- Firebreaks are strips of land from which combustible fuel has been removed or reduced. Some fire access tracks double as walking tracks and bridle paths in the park, and the maintenance of these dual-use tracks should be considered.
- The condition of the firebreak should be such that it provides access for fire fighting units to directly attack a fire.
- All firebreak maintenance and installation shall comply with City of Armadale Dieback Policy and Management Practice ENG9 and be consistent with objectives to minimise track erosion as discussed in Section 11.9 Erosion of the Bungendore Park Strategic Directions Document 2009.
- Firebreaks that require upgrading shall be upgraded by the City of Armadale or contractors employed by the City of Armadale directly. Works are to be consistent with the biodiversity conservation priorities identified in this report.
- No new firebreaks shall be established unless deemed necessary in an emergency or considered essential to achieve the protection of life and property. In situations where

this is deemed to be the case, new firebreaks shall consider the erosion, dieback and access management principles of the Bungendore Park Strategic Directions Document 2009.
- Where possible, existing roadways and tracks should be used as primary access routes to firebreaks.
- Maintenance activities should avoid the use of heavy machinery where possible.

Prescribed Burns

Prescribed burning activities shall be undertaken in the following manner:
- The Bungendore Park Management Committee shall annually review the Prescribed Burn regime and Fire Control Master Plan Map for the coming year and communicate recommendations to the City of Armadale. These recommendations shall be considered by the City of Armadale Chief Bush Fire Control Officer in liaison with the Environmental Officer.
- If prescribed burning is deemed necessary, the City of Armadale Chief Bush Fire Control officer will arrange a prescribed burn order for the City of Armadale Parks Department who will in turn engage the Bedfordale Volunteer Bush Fire Brigade to undertake the prescribed burn consistent with the objectives detailed in this strategic plan.

Emergency Response Guidelines

Post fire incident analysis allows fire authorities to review procedures, strategies and tactics and to use this information to refine fire management practises. All fires that occur within the Park should be recorded and this information used for long-term fire management planning.

Safety of the facilities and the bushland environment should be assessed soon after a fire by the City of Armadale and the Bungendore Park Management Committee. Tracks should be closed until the area is declared safe and overhanging branches in areas near tracks and access points should be pruned. The removal of trees damaged by fire should be undertaken by the City of Armadale Parks Department in consultation with the Bungendore Park Management Committee and should only occur if deemed a safety issue. Nesting sites for obligate hollow breeders occur in very old stag trees and these should be considered and retained unless the tree has been assessed to be a safety hazard.

Bushland is highly sensitive following a fire. An initial assessment following a fire should be undertaken to assess potential for erosion of bare ground, weed invasion and vegetation regeneration. These should be monitored for a year following a fire and adaptive management techniques implemented as necessary in line with the Bungendore Park Strategic Directions Document.