Redland CITY COUNCIL

Redland City Council's Conservation Land Management Strategy 2010:

A plan for the next ten years

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1 Introduction

1.1 Overview

Redland City in South-East Queensland is made up of the mainland, North Stradbroke Island (NSI), Coochiemudlo Island and Southern Moreton Bay Islands. It is located on Moreton Bay and borders Brisbane City, Logan City and the Gold Coast. Redland City covers large areas of natural coastline, the coastal islands of Moreton Bay, remnant bushland, and developed urban and rural areas totalling 53,700 hectares of which approximately17.73% is classed as reserve land. Effective and efficient management of conservation estate requires a set of principles for coordinated approach for improving biodiversity services, environmental planning and operational management. To date much of Councils accumulated knowledge regarding effective resource management is dispersed throughout a range of management plans, strategies, databases, working procedures and within the personal knowledge of past and present Council officers. The Redland City Council Conservation Land Management Strategy 2009 (CLMS) aims to consolidate available information and knowledge and apply it to the management of specific areas of the Councils conservation estate such as Conservation Areas, Bushland Refuges and Creek Corridors to name a few.

1.2 Main Outcomes

The main outcomes of this strategy are to:

1. **Identify and classify the conservation estate into discrete area types and provide intents/principles for their management and planning.**

Council has approximately 280 documented reserve areas currently in the City. The historical naming, acceptance of activities and provision of infrastructure has occurred prior to the development of this document. It is then expected then that many of the areas will fail to meet the expected area intents outlined under this strategy. This document will guide the classification of new areas, reclassification of older areas where they are not consistent with this strategy. This document is not meant to prescribe detailed actions to be undertaken but provide a broad set of guiding principles and practices.

A further aim of this document is to reduce Councils need for producing individual management plans. However, it is expected that exceptional circumstances may dictate specific management requirements out of the ordinary (although these specific management requirements may be recorded in the CI database).

2. **Facilitate the development of a 'living' user friendly electronic system for both planning and operational management of the Council's conservation estate.**

Council has to date produced a variety of management plans for areas under its management. The purpose of these plans is to guide management of the reserves for which they were produced. However, extant plans do not have the capacity to respond to evolving Council policy and legislative changes. Further, Council has many more areas than management plans and this figure is growing as Council increases its conservation estate. The production of management plans is an expensive and time consuming task. This document has been produced to

encompass and delineate principles and practices for all of Council's reserves thus changes to the 'management environment' can be captured in one document through revision of this strategy.

In addition to this document, it is envisaged that a data and information management system underpins and provides the link between this strategy and on-ground actions (Figure1). This 'living system' will be responsive to change, can be audited, reported on and provide immediate access to information required by planners and operational managers. This provides the key to implementation of sound and timely on-ground actions.

This information management system will allow a range of processes to occur such as:

- Identification of principles for the management of reserve types;
- retrieve information on specific reserves;
- update of information on a daily basis for those managing reserves Eg revegetation works;
- assessment and reporting eg State of the Environment (SOE);
- asset valuation and management ;and
- more informed budgeting.

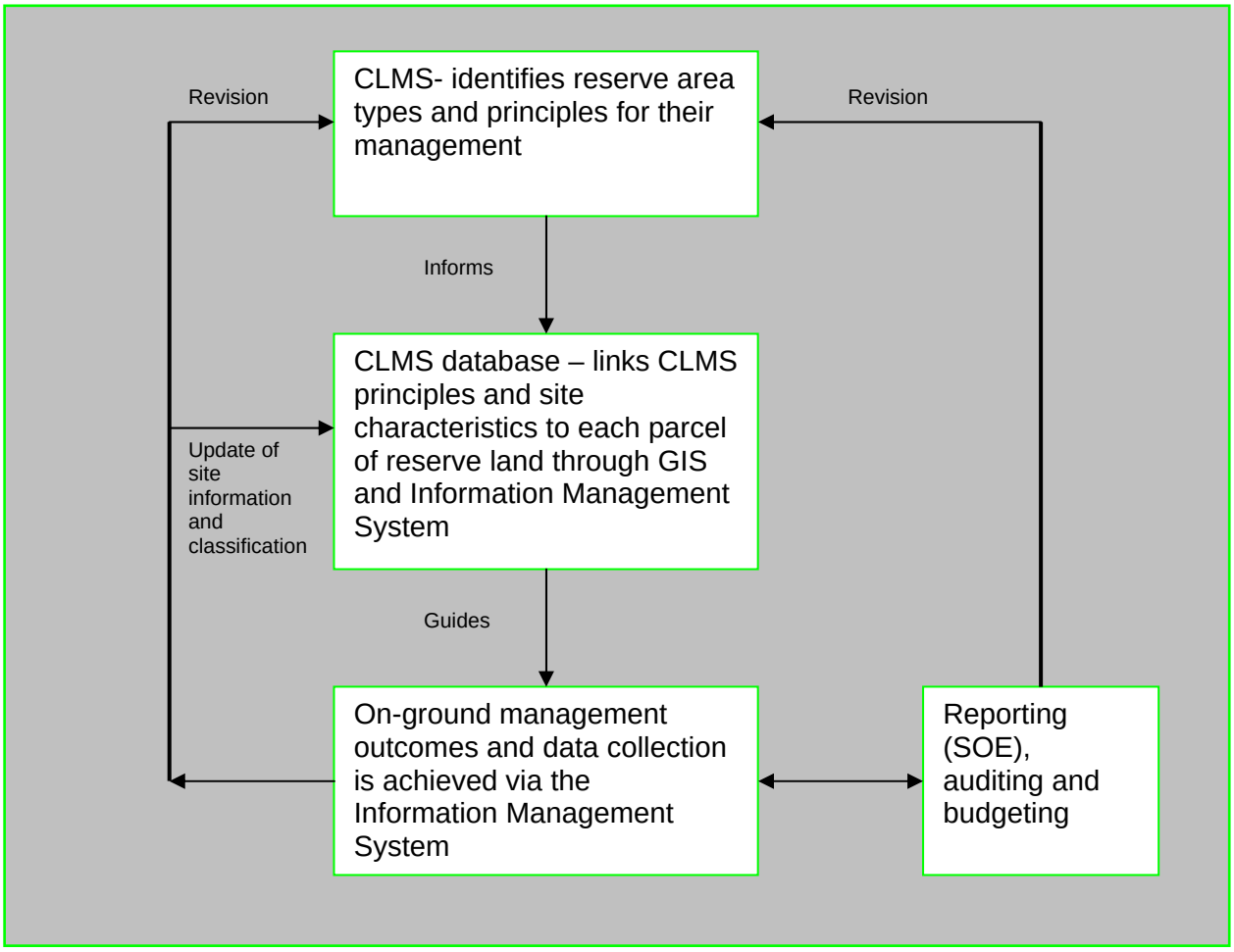

Figure 1. Outline of the overall objectives of this Strategy

2 STRATEGY FORMAT

This framework (Figure 2) will guide the readers through the process for understanding the principles behind addressing the objectives of the strategy.

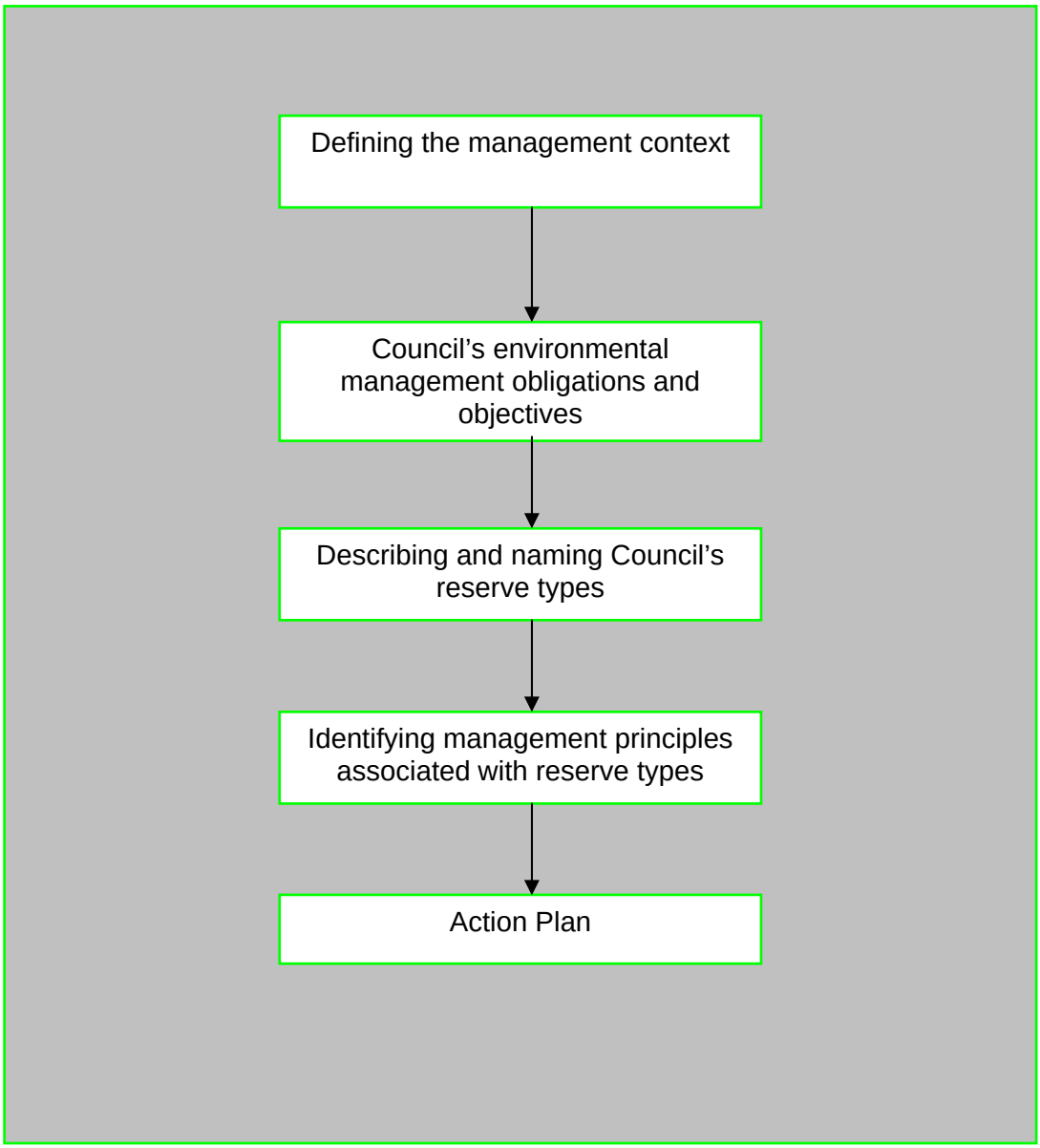

Figure 2. Strategy Framework.

3 A BASIS FOR MANAGEMENT OF CONSERVATION LAND WITHIN REDLAND CITY COUNCIL

3.1 The City's Conservation Estate

The total area of land under conservation control/management is 9524ha.

This is broken into the following categories:

- Conservation Area & Conservation Park (NCA) 1983.01ha
- Nature Refuge 16.34ha (NCA listed)
- Bushland Refuge 377.48ha
- Nature Belt (Corridor) 40.50ha
- Creek Corridor 253.18ha
- Urban Habitat 17.98ha
- Conservation Coastal Foreshore 6229.25ha
- Wetland 538.46ha
- Drainage Reserve 33ha
- Road Reserve 26.24ha

Whilst drainage reserves and road reserves have not been traditionally associated with conservation values, this plan recognises the value of road reserves and drainage reserves as being significant to the conservation estate and extending biodiversity values.

3.2 Biodiversity Conservation Goals and Objectives

The conservation of Redland City's natural assets - the Islands, the Bay, bushland, foreshores, flora and fauna - has been an intrinsic part of the development of the City. A dominant re-occurring theme throughout the Council's principal planning documents, the Corporate Plan and the Strategic Plan, is the conservation of the City's natural environment.

The Redland City Council has outlined in the Corporate Plan broad goals and future direction to support community vision. The Council's priority, in relation to community character and lifestyle, is to:

> *Preserve a balance with urban, rural bushland, village coastal and island character of the Redlands by managing growth.*

In recognition of the need for responsible and creative environmental management, another of the Council's strategic priority is to:

> *Ensure the enhancement of biodiversity including koala habitat, bushland, greenspace, waterways, catchments, air and coastal ecosystems of our unique location on Moreton Bay.*

The Redlands City Council seeks to deliver these goals by the strategies outlined in the Corporate Plan 2006-2010. The Plan's main aim of orderly and ecologically sustainable development is supported by a goal that the City will be planned and managed in a way that conserves the natural environment. This is to ensure that its ecological functions and biological diversity are protected and enhanced. This goal will be achieved and facilitated primarily thought the implementation of the CLMS in

conjunction with the Biodiversity Strategy, the Vegetation Enhancement Strategy and the Koala Policy and Implementation Strategy. However, it should be noted that a range of other local, state and federal legislation and agreements (see below) impact on Councils goals and must be considered in the context of any planning and operational actions.

3.3 Head of power

The Redland City Council Biodiversity Policy 2008-2012 acts as the head of power and dictates the broad goals for management of the City's natural environment. The CLMS supports principles that are a consistent with the requirements of the Biodiversity Strategy. It should be noted that although Figure 3 indicates an impermeable process, any and all of these strategies and plans inform each other at a number of levels.

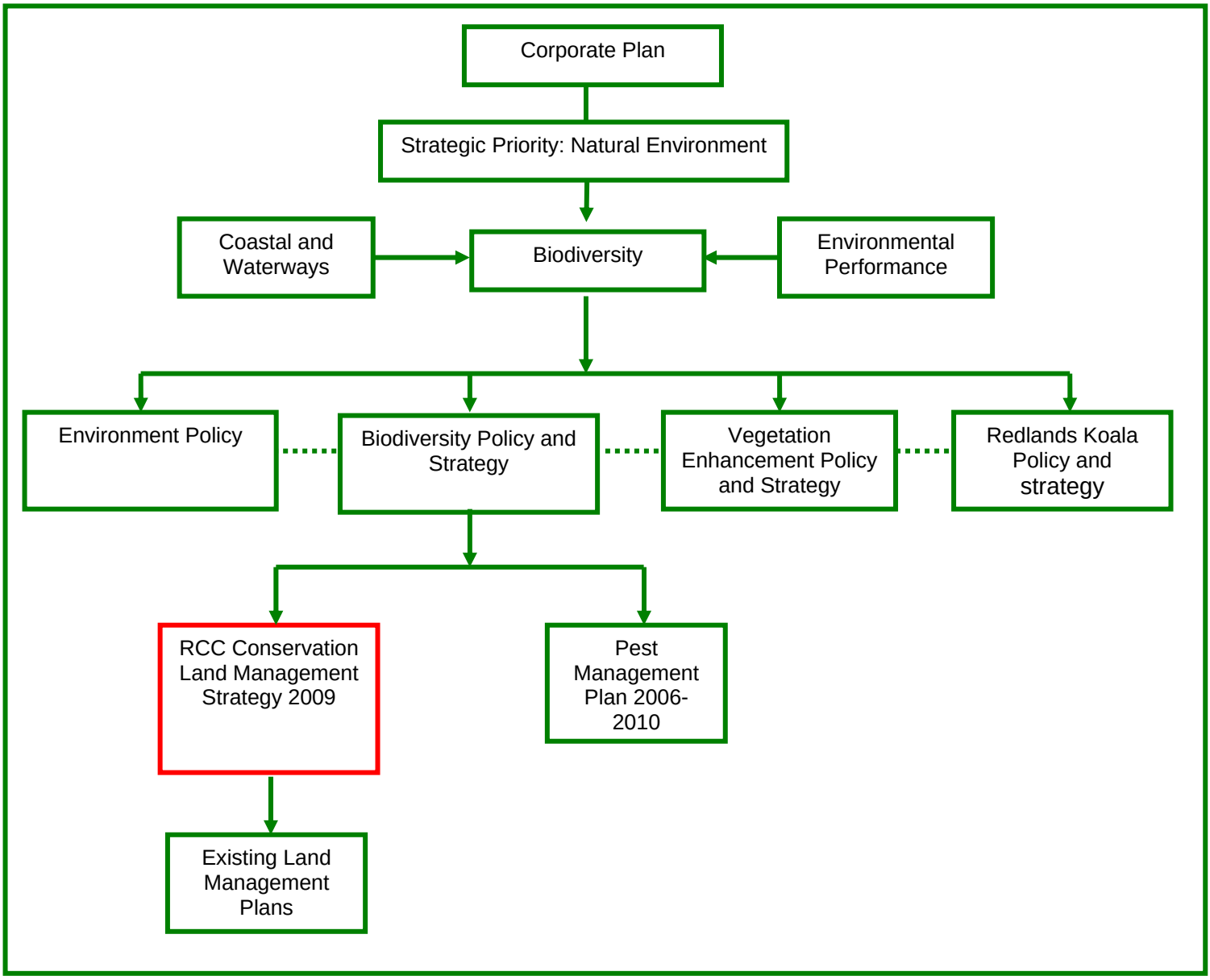

Figure 3. Current Structure for Head of Power

3.4 Council Policies and Strategies

This document is consistent with and supports a range of Council policies and strategies including:

3.4.1 Redlands 2030 Community Plan

Redland City Council has adopted the Redlands 2030 Community Plan, which outlines the Council vision outcomes and goals for:

- Health Natural environment
- Green Living
- Embracing the Bay
- Quandmooka Country
- Wise planning and design
- Supportive Vibrant Economy
- Strong and Connected Communities
- Inclusive and Ethical Governance

This document not only meets goals for Natural Health Environment also supports many of the goals under the other vision outcomes above. The goals that this document supports are identified in Section 12.3.

3.4.2 Redland Planning Scheme (RPS)

The Redland Planning Scheme (enacted 30 March 2006) provides a framework for managing development in a way that advances the overarching purpose of the *Integrated Planning Act 1997* (IPA) to achieve ecological sustainability. The 'Desired Environmental Outcomes' of the Planning Scheme interpret ecological sustainability in the City's local context and provides the basis for all other measures included in the Scheme.

The RPS introduced significant new initiatives to advance ecological sustainability through planning mechanisms such as: extensive conservation and environmental protection zones, habitat protection overlays and waterway protection and ecological impact policies. The RPS can achieve protection of environmental values through various mechanisms including nomination of land use through zoning (all public land for conservation purposed is zoned CN2) and required contributions (Developer Contribution) to the conservation estate.

However the RPS can offer limited management requirements for conservation land coming to Council. As such, the RPS should not be seen as the endpoint of conservation measures. Additionally, there are a range of other Council policies and strategies that must be considered and engaged in the determination of developer contribution and the general impact of developments on the City's biodiversity and conservation estate.

3.4.3 Local Government Act 1993 - Local Laws

The *Local Government Act 1993* provides local governments with discretionary powers to create Local Laws. Redland City Council is responsible for introducing and enforcing Local Laws covering a range of activities that are related to biodiversity protection specific to reserves. A summary of the Local Laws objectives include:

a) Local Law 15: Parks & Reserves – provide for establishment of parks and reserves under the Council's control, provide appropriate public access to parks and reserves for active and passive recreation, protect safety of persons using parks and reserves, preserve features of the natural and built environment and other aspects of the amenity of parks and reserves, regulate activities in parks and reserves and ensure appropriate standards of conduct.

b) Local Law 2: Keeping and Control of Animals – to protect the community against the risk of injury and damage, ensure that animals do not create a nuisance or hazard to health & safety, prevent pollution and other environmental damage resulting from the keeping of animals & protect amenity of the local environment, ensure keepers of animals meet their obligations regarding the keeping of their animals in a way that is consistent with the rights and expectations of the local community.

3.4.4 Environment Policy

The Environmental Policy POL-2644 states that Council is committed to achieving environmentally sustainable development. It aims to manage its operations and development to meet the needs of the present without compromising the ability of future generations to meet their own needs through the protection, enhancement, management and maintenance of the Redland's natural and built environment. This policy relating to biodiversity states that Council is committed to:

1. Protect, maintain and enhance the health of the City's:
   - bushland, natural areas, significant and native vegetation;
   - koala population;
   - waterways, foreshores, coasts and Moreton Bay, and;
   - biological diversity, maintaining viability of ecosystems and enhancing habitat.

2. Halt and then reverse the declining trend in the health of Redlands waterways and Moreton Bay, returning the native fish and macro-invertebrates to our (freshwater) waterways.

3. Protect natural ecosystems and the community from, environmental nuisance, air pollution, and land contamination arising from new and past human activities; through planning and management to avoid, minimise or manage the potential for negative impacts from these sources.

4. Reduce the greenhouse gases emitted by Council and the community to levels and within a time acceptable to the wider community.

5. Ensure that the consequences of climate change for Redland City are understood and planning mitigates potential adverse impacts on natural ecosystems and the community.

6. Provide a diversity of well-planned public open spaces, parks, streetscapes and pathways that foster improved community health and neighbourhood connections, recreation and sporting opportunities and support activities of everyday life.

7. Achieve optimal environmental outcomes by prioritising waste management practices to avoid, reduce, reuse, recycle, recover, treat, and dispose of waste (in order of preference) generated by Council and the community.

8. Assess the ecological footprint of the Council as a basis for environment planning and management.

9. Improve integration across Council Departments and Groups, and at the works and activities level, to achieve major environment planning and management responsibilities.

10. Monitor and report on Council's sustainability and environmental performance, and strive for best practice environmental management and performance standards in all operations and activities.

11. Provide public reporting on the state of the environment in Redland City; through this reporting, establish targets for the sustainable use and management of natural resources and track progress toward sustainability using indicators and ratings.

12. Develop awareness, extension and education programs for business and the public on environment and sustainability issues.

13. Promote adoption of sound environmental principles and practices by suppliers, consultants, developers, customers and the community.

14. Encourage research that strives to achieve best practice environmental management.

15. Implement the *Melbourne Principles for Sustainable Cities* to guide thinking and provide a strategic framework for action by the Council toward greater sustainability.

16. Ensure that all forms of development within the city seek to achieve ecological sustainability; encourage all new development to be compliant with 'green' building principles and practices.

17. Promote and encourage improved public transport facilities and patronage, facilitate a safe and accessible walking environment and encourage other low embodied energy forms of transport in the City.

3.4.5 The Biodiversity Strategy 2008-2012

The Council program for biodiversity outlines to plan, design, deliver and regulate activities to protect and restore the quality and quantity of our biodiversity. Long term objectives include protecting, maintaining and enhancing the health of the City's bushland, vegetation, koalas and native wildlife. This document is key to driving the conservation goals of Council and the management of reserves.

3.4.6 Vegetation Enhancement Strategy 2007

This Vegetation Enhancement Policy POL-2609 states that Council will provide clear specification for native species revegetation practices undertaken by Council, community, developers, Energex and other stakeholders to improve habitat value and management across City. The policy statements related to biodiversity conservation and associated reserve management that Council is committed to includes:

- Retaining, protecting, enhancing and linking remnant bushland areas to

maximise their ecological values through improved specification of vegetation standards;
- The use of 100% locally native and/or Australian native species in Council managed lands including streetscape plantings with special management for *Delonix regia* (Poincianas);
- Ensure at least 90% of development approvals meet the standards set in the Vegetation Enhancement Strategy through cooperative 'off maintenance' assessment of properties by Parks and Conservation and Development Assessment Services;
- Support ongoing SEQ regional initiatives for assessment and management of vegetation communities; and
- Recording and reporting on all rehabilitation and revegetation in the City annually.

Specifications are provided for species selection for all landscaping or restoration works conducted under the control or approval of Council to promote the proper use of indigenous species. Also weed schedules are included to control the use of weed species within landscaping or restoration projects.

3.4.7 Redlands Koala Policy and Implementation Strategy 2008

The role of this document is threefold:
- to provide a new vision and to meet community expectations to stop the rapid continuing decline of koalas by 2011 and take immediate action to recover the existing population to more than 5000 koalas in the Koala Coast by 2014;
- to educate the whole community that Redlands habitat and its koalas are special, unique and integral to the environmental, social, cultural, and economic wellbeing of our community; and
- to measure, map and recognise in the State Koala Plan the unique North Stradbroke Island koala population.

Redland City Council and its community in partnership with relevant state government departments, businesses, neighbouring local governments in the Koala Coast region have agreed to undertake a range of actions that will enhance koala populations across the City on both public and private land. Some actions that directly influence Council reserves are:
- investigate opportunities to revegetate cleared land within Council ownership (creek corridors, parks, streetscapes) with recommended species,
- assess all public land for suitability through RPS to be amended to Koala Sustainable Areas, and
- undertake assessment of unused road reserves for road closure throughout the Shire and gazette them for public open space purposes.

3.4.8 Pest Management Plan 2006 - 2010

Redland City Council has prepared a Pest Management Plan for 2006 - 2010. This plan identifies pests, their status and priority for treatment to prevent the establishment and spread of pests within our reserves and across the city in general. It also aims to control those species which are already prevalent. Pest Management Plans have been undertaken for Kudzu vine, pig, fox, Senegal tea, feral cats and rabbits.

3.4.9 Open Space Plan 2004-2016

The Open Space Plan provides a framework for the planning and management of the Redland's open space network. The plan covers all recreation, sporting and conservation open space including the mainland, North Stradbroke Island, Coochiemudlo Island and the Southern Moreton Bay Islands. Parts of the Conservation estate encompass or adjunct recreational space. This plan influences portions of the conservation estate through both use and impacts by directing the recreation level (infrastructure) required for recreational open space.

3.4.10 Land Management Plans

Redland City Council prepares Land Management Plans for state land which it manages under trust and for conservation land over which it has freehold title. These plans identify the flora and fauna, waterways, fire management and heritage issues of the land, along with any other issues of community importance. The plans identify how each of the issues identified during a community consultation process will be managed. Appendix 3 lists management plans developed and implemented by the Redland City Council.

There are other documents that have less direct impacts on the management of reserves including the Environment Charge Acquisition and Management Policy POL-3077 and the Unlawful Damage to Trees in Public Places POL-3025.

3.4.11 Indigenous Community Policy POL-3081

The objective of this policy is to recognize and respect all Aboriginal and Torres Strait Islander peoples who live with Redland City by:

a) Strengthening their ability to be actively involved in community planning,

b) Involving them in decision making processes about their people and country, and

c) Fully acknowledging their rights to uphold their responsibilities for future generations

To acknowledge as first peoples the Traditional Owners of the lands and waters within Redland City – the Quandamooka, the Turrbal and the Jagera peoples.

3.5 Other Statutory Protection

3.5.1 State

3.5.1.1 Land Act 1994

The Land Act 1994 has significant implications in terms of the tenure and management of land. The Act sets out a set of seven principles which must be followed in the administration of State land. These principles are sustainability, evaluation, development, community purpose, protection, consultation and administration.

The Minister for Natural Resources has delegated the Minister's power under the Act to officers and employees of the Department of Natural Resources and Water (DNRW) to enable efficient administration of State-controlled lands. That is, DNRW act as the managing agents for State controlled lands. A proportion of Council's reserves are state Lands that Council holds and manages as trustee and therefore must abide by the various management obligations (occupation rights) attached to any specific parcel of trustee Land. These principles are discussed further in Section 3.6 ('Management of Land by Tenure').

3.5.1.2 Vegetation Management Act (1999)

The purpose of the VMA is to regulate clearing of vegetation in a way that conserves remnant 'endangered', 'of concern' or 'not of concern' regional ecosystems and conserves vegetation in declared areas, ensures clearing does not cause land degradation, prevents loss of biodiversity, maintains ecological processes, manages environmental effects, and reduces greenhouse gasses. This legislation provides a framework for decision making related to vegetation clearing and conversely provides direction for the management of the City's plant communities.

3.5.1.3 State Coastal Management Plan

The State Coastal Management Plan (State Coastal Plan) describes how the coastal zone is to be managed. As a statutory instrument it has statutory effect under the *Coastal Protection and Management Act 1995* and guides relevant decisions by the State and local governments, and the Planning and Environment Court. The South-East Queensland Regional Coastal Management Plan (SEQ Coastal Plan) describes how the coastal zone within the South-East Queensland (SEQ) region is to be managed and provides direction for implementing the State Coastal Management Plan – Queensland's Coastal Policy and the SEQ Regional Plan.

The SEQ Coastal Plan identifies, protects and manages the important coastal resources and values through regional policies, a key coastal site, resource maps, the coastal management district and coastal building lines. State Coastal Policy 2.8 indicates policies for conserving nature, including:

a) 2.8.1 Areas of State Significance (natural resources) - aligns with DEO2 of SEQ Regional Plan. This includes maintenance, restoration and protection of significant coastal wetlands (Moreton Bay), coastal dunes of North Stradbroke Island and endangered regional ecosystems.
b) 2.8.2 Coastal Wetlands - outlines protection and maintenance of SEQ's coastal wetlands including Carbrook wetlands and wetland complexes within and adjacent to the southern Moreton Bay Islands.
c) 2.8.3 Biodiversity – outlines the key issues effecting ecological and ecosystem functioning such as the loss, fragmentation and degradation of coastal resources including; riparian vegetation, coastal wetlands, shorebird habitat, fish habitat and fish migratory pathways, marine species habitat, and benthic communities.

3.5.1.4 Nature Conservation Act 1992

The Nature Conservation Act 1992 (NCA) is based on principles to conserve biological diversity, ecologically sustainable use of wildlife, ecologically sustainable

development and international criteria developed by the World Conservation Union (International Union for the Conservation of Nature and Natural Resources) for establishing and managing protected areas.

The Act's object is the conservation of nature. It impacts the management of the city's protected areas and conservation reserves through influencing and conditioning:

- gathering, researching and disseminating information on nature, identifying critical habitats and areas of major interest, and encouraging the conservation of nature by education and co-operative involvement of the community;
- dedication and declaration of areas representative of the biological diversity, natural features and wilderness of Queensland as protected areas;
- management of protected areas;
- protection of native wildlife and its habitat;
- ecologically sustainable use of protected wildlife and areas;
- recognising the interest of Aborigines and Torres Strait Islanders in nature and their co-operative involvement in its conservation; and
- facilitating co-operative involvement of landholders.

3.5.1.5 Land Protection (Pest and Stock Route Management) Act 2002

The Land Protection (Pest and Stock Route Management) Act 2002 provides a framework and powers for improved management of weeds, pest animals and the stock route network with the premise that weeds and pest animals:

- degrade natural resources;
- threaten conservation of biodiversity;
- threaten remnant vegetation;
- reduce rural production; and
- interfere with human health and recreational activities.

As such, Council is under obligations to manage declared plants and animals on land under its control and is provided with the powers to require the management of declared animals and plants of other lands.

3.5.1.6 SEQ Natural Resource Management Plan

This plan has been developed to enable the community, industry and government to work together to manage our natural assets to ensure the liveability of SEQ is protected into the future. The SEQ NRM Plan establishes measurable regional targets for air and atmosphere, coastal and marine, community engagement, land, nature conservation, regional landscape, Traditional Owner engagement and water. The Plan influences the strategic management of the City's reserves by providing a range of Desired Regional Outcomes eg "By 2031, no net fragmentation of 2003 core tracts of vegetation and 20% of priority non core tracts are better connected". Source: www.seqcatchments.com.au.

3.5.1.7 Aboriginal Cultural Heritage Act 2003.

The main purpose of this Act is to provide effective recognition, protection and conservation of Aboriginal cultural heritage. The following fundamental principles underlie this Act's main purpose—

(a) the recognition, protection and conservation of Aboriginal cultural heritage should be based on respect for Aboriginal knowledge, culture and traditional practices;
(b) Aboriginal people should be recognised as the primary guardians, keepers and knowledge holders of Aboriginal cultural heritage;
(c) It is important to respect, preserve and maintain knowledge, innovations and practices of Aboriginal communities and to promote understanding of Aboriginal cultural heritage;
(d) activities involved in recognition, protection and conservation of Aboriginal cultural heritage are important because they allow Aboriginal people to reaffirm their obligations to 'law and country';
(e) there is a need to establish timely and efficient processes for the management of activities that may harm Aboriginal cultural heritage.

Management of cultural heritage issues is a significant obligation for a number of Councils reserves and directly influences the activities that occur.

3.5.1.8 Queensland Heritage Act 1992

The object of this Act is to make provision for the conservation of Queensland's cultural heritage and, for that purpose—
(a) to provide for the establishment of the Queensland Heritage Council;
(b) to provide for the maintenance of a register of places of significance to Queensland's cultural heritage;
(c) to regulate development of registered places;
(d) to provide for heritage agreements to encourage the conservation of registered places;
(e) to provide for the protection and conservation of submerged objects of significance to Queensland's cultural heritage;
(f) to regulate the excavation of sites that contain, or may contain, objects of significance to Queensland's cultural heritage;
(g) to provide appropriate powers of protection and enforcement.

As such, the Council should seek to achieve; the retention of the cultural heritage significance of the places and objects to which it applies, and the greatest sustainable benefit to the community from those places and objects consistent with the conservation of their cultural heritage significance.

3.5.2 Federal

3.5.2.1 Environmental Protection and Biodiversity Conservation Act 1999 (includes Ramsar listed sites)

The Environment Protection and Biodiversity Conservation Act 1999 (EPBC) lists threatened species, ecological communities and threatening processes. One of the major management considerations for Council is the management of RAMSAR wetlands which are listed under the EPBC.

3.5.3 International

3.5.3.1 Ramsar

Whilst Ramsar sites are listed under the EPBC, the Ramsar agreement provides Australia with the principles for protection of wetlands. The Convention on Wetlands is an intergovernmental treaty first adopted on 2 February 1971 in the Iranian city of

Ramsar, on the southern shore of the Caspian Sea. Thus, though nowadays the name of the Convention is usually written “Convention on Wetlands (Ramsar, Iran, 1971)”, it has come to be known popularly as the “Ramsar Convention”. Ramsar is the first of the modern global intergovernmental treaties on the conservation and sustainable use of natural resources.

The mission of the Ramsar Convention, as adopted by the Parties in 1999 and refined in 2002, is “the conservation and wise use of all wetlands through local, regional and national actions and international cooperation, as a contribution towards achieving sustainable development throughout the world”.

3.6 Management of Land by Tenure

Land that is managed by Council may not necessarily be owned by Council. This alters the way in which we can manage a parcel of land and our associated legal obligations. Therefore, knowing the tenure of a piece of land is paramount in performing appropriate management actions. There are two main tenures which apply to land managed by Redland City Council, namely: freehold and non-freehold.

3.6.1 Freehold

Freehold is the right in a property to hold it with a perpetual right. In freehold right there is no limit of time to hold the property like in case of leasehold property. A freehold property lies with the title holder unless he transfers it of his own accord. Ownership by the titleholder is not absolute however, as the State is empowered to withhold certain rights, such as the right to any minerals or petroleum. In addition, use of the land may be controlled by legislation (e.g. the Local Government Act 1993).

3.6.2 Non Freehold

Non-freehold land is land under the control of the State of Queensland but which may be subject to a lease, permit or licence, reserved for a community purpose, dedicated as a road or subject to no tenure at all.

3.6.3 Leasehold

The Land Act 1994 outlines the processes to be undertaken when dealing with State land, which includes any restrictions which may apply to an occupier of such land. The development of State land follows a sequence of allocation, regulation and management, as follows:

- the State allocates land to a potential user for specified uses;
- State departments, local government or some other public authority regulate activities in accordance with their own specific powers (e.g. the power to grant development approvals); and
- the land-holder (Council in this case) manages the allocated land in accordance with the conditions of the lease which covers the land.

The State may deal with unallocated State land in several ways. Depending on the circumstances, it may:

- lease land for a term of years or in perpetuity, or, in the case of a temporarily closed road, issue a licence allowing the land to be used in specified ways;

- issue a permit allowing a person to occupy the land on a short-term basis;
- sell the land as freehold;
- reserve the land for community, forest or conservation purpose (e.g. to be used as a park, State forest or national park, or for sport and recreation);
- dedicate the land as a road; and
- retain the land as unallocated State land.

3.7 Management of Land in Trust

The Land Act enable unallocated State land to be dedicated as a reserve or granted in fee simple in trust for community purposes; and ensure that reserves and land granted in trust are properly and effectively managed. Trust land is State owned land administered by a State agent but managed under trusteeship by local government or other incorporated body.

- General management

For day-to-day management, trust land is generally in the care of trustees. These are often the local government, but can also be groups such as a showgrounds trust or an incorporated sporting association. Trustees are responsible for managing the land subject to the provisions of the *Land Act 1994*. In essence, the trustee is responsible for identifying and managing the social, environmental and economic values of trustee land. A member of the public has the right to use this land for the purpose for which it was set aside.

- Revocation of trust land

Permission is required from NRW before a trust can be revoked or cancelled, and there must be a good reason for this (e.g. equally good local land made available elsewhere for a reserve). Native title may continue to exist on trust land, so no change can take place other than in accordance with state and federal native title laws.

- Public use

A member of the public has the right to use trust land for the purpose for which it was set aside. However, the precise details of this use are governed by laws (by-laws or local laws) made by the trustees. For example, by-laws may prohibit playing golf on a reserve in the interests of the safety of people using it for walking.

- Local Laws apply

Where the trustee is the local government, activities on the land are governed by local laws made by that government.

Trustees other than a local government may adopt model by-laws. For a copy of the by-laws that apply to a reserve or deed of grant in trust, contact the trustees.

- Right to lease

A trustee may also lease some or all of the land, or permit it to be occupied, and the State may lease a reserve or issue a permit over a reserve. This gives the lessee certain rights (e.g. though a member of the public may have the right to walk their dog on leased trust land, they do not have the right to enter a building constructed on that land).

Any lease must be consistent with, or must not diminish the purpose of the reserve. Generally, rent obtained from a trustee lease must be used to maintain or enhance the trust land.

- Entry to trust land

A person must not, other than under the authority of the trustee, drive a vehicle on to or from the trust land, unless—
(a) a regulatory notice designates a gateway or opening as a place for vehicles to enter and leave the trust land; and
(b) the person drives the vehicle through the gateway or opening.

- Behaviour

A person must not—
(a) act in a way or do anything that unreasonably disturbs, or is likely to disturb, another person's peaceful use of the trust land; or
(b) other than under the authority of the trustee, display, distribute, drop, scatter or throw down a handbill, ticket, notice or any other kind of literature on the trust land.

- Lighting fires

A person must not, on the trust land, light, keep going or use a fire other than in a fireplace or barbecue supplied by Council for the use of fire unless the person lights or uses a fire in a barbecue, stove or other appliance specially constructed for containing a fire; and the use of the barbecue, stove or other appliance is agreed to by Council.

- Litter

A person must not put, or allow to be put, litter on the trust land unless it is put in a receptacle installed on the trust land for receiving litter.

- Activities causing damage to trust land or improvements

A person must not, other than under the authority of Council, damage or interfere with—
(a) soil, gardens or turf on the trust land; or
(b) plants growing on the trust land; or
(c) improvements, signs or equipment on the trust land.

This section does not apply to damage of or interference with trees.

There are a number of types of trust land such as, 'Buffer, Public Open space, for which the permitted activities have been identified. **As such, any actions that take place on trustee land which may affect the purposes for which it is intended must be approved by the State agent.**

For example, Blakesleys Slip is trustee land and is designated as a Reserve for Park and recreation purposes in this case no camping is allowed but overnight camping may be allowed in emergency situations (due to its location).

3.8 Land Managed under the Nature Conservation Act

Coordinated Conservation Areas

These are areas such as Nature Conservation Act listed land (Nature refuges and Conservation Parks) and Coordinated Conservation Areas. This type of land can be freehold or State land and may be managed by a number of parties. Under the Nature Conservation Act 1992, an area of land can be declared as one of four classes of protected areas – National Park (scientific), National Park, Conservation Park or Resources Reserve. Generally conservation parks are declared over areas which make an important contribution to nature conservation at the regional or local level. Whilst a Conservation Park is managed to conserve the areas cultural and natural values and natural condition, in some cases ecologically sustainable use of some natural resources might be allowed.

4 NATURAL AREA MANAGEMENT OBJECTIVES AND STRATEGIES

The following table identifies a broad range of issues, objectives and strategies for managing the broad biodiversity values of Council's nature reserve areas. These reflect the Biodiversity Policy and Strategy 2008-2012. The Biodiversity Policy and Strategy should be referred to before undertaking specific actions.

Table 1. Objectives and Strategies

Issue	Objectives	Strategies
Maintenance priority	'Core areas' of high ecological integrity must be prioritised for maintenance.	Ensure no net loss in ecological integrity of core areas through prioritised weed and pest management actions
Vegetation management	Retain, protect and increase the distribution, abundance and diversity of native plant species and communities/Regional Ecosystems presently existing within the reserve (Minimum 30%)	Consider ecological requirements of any significant species
		Ensure fire management aims to maintain species diversity and community processes
		Establish monitoring sites
		Encourage research by students and local environmental groups
		Determine most appropriate method of weed control (e.g. hand clearing, mechanical clearance, use of chemicals, use of fire)
		Encourage natural regeneration
		Supplement with revegetation where necessary
		Selective replanting
		Regeneration and increase in extent of REs (Regional Ecosystems)
		Regeneration of non- remnant regional ecosystems
	Maintain or re-establish indigenous vegetation and Regional Ecosystems	Identify sites in nature areas for revegetation to original RE types
		Investigate opportunities for revegetation of land adjacent to reserves
	Control weed invasion	Undertake actions from PMP and VES in a systematic program of weed management
	Minimise the causes of weed invasion	Identify and manage risk for sources of weed stock
	Control declared noxious and environmental weeds	Undertake actions from PMP and VES in a systematic program of weed management
	Retain trees with hollows	Identify and GPS trees with hollows and provide protection

	Ensure areas designated to be handed over to council meet standards as set of the Vegetation Enhancement Strategy	Undertake pre-handover audit of developer contribution property coming to Council 'off maintenance'
	Provide a full set of Regional Ecosystem data for each conservation property	Undertake collation archive data such as hard copy reports.
	Ensure vegetation loss is offset	Any native vegetation that is removed from Council nature areas must be offset with new planting as per VES per metre of tree height of the appropriate RE
Riparian corridors	Support riparian protection and restoration practices	A minimum of 100 metres buffer on both sides of watercourse
Endangered/ vulnerable and threatened species	Identify specific threats to E/V/R species	Undertake risk assessment and management where E/V/R species are known or suspected.
	Assess areas for potential E/V/R species habitat suitability	Based on Environmental Education research, identify potential sites for inclusion of E/V/R propagules
Fauna	Deal with current threats to the distribution and abundance of wildlife	❖ Consider the needs of significant species in fire and weed management ❖ Conduct animal surveys and monitoring work ❖ Encourage work by students and local environmental groups ❖ Encourage the growth of habitat ❖ Maintain buffers between conservation zone and urban dwellings
	Ensure the longer-term survival of native animal populations	
	Minimise the adverse effects of feral and domestic animals	❖ Undertake systematic data collection and prioritised management of pest species populations
Fire	Maintain maximum species diversity with the use of fire	❖ Monitor fuel levels ❖ Maintain firebreaks/buffers ❖ Ensure best practice fire trail design ❖ Use control burning to reduce risk ❖ Undertake ecological burning
	Avoid putting any visitors or neighbours at risk	Undertake and regularly update fire break maintenance that is consistent with fire management planning
	Minimise occurrence and impact of wildfire to reserve and adjoining properties	Undertake fire break maintenance that is consistent with planning measures

Cultural heritage	Protect and manage any items or areas of Aboriginal or European heritage significance	❖ Seek expert advice on the specific management needs of cultural heritage items or areas ❖ Encourage interested groups to participate in management
	Consult with indigenous traditional owners and other heritage organisations	❖ Incorporate knowledge into management actions ❖ Refer to Cultural Management Agreements and plans for the management of cultural heritage. Refer Section 7.16 for more information
Recreation	Provide recreational opportunities where possible without compromising conservation values or visitor safety	❖ Monitor visitor impact ❖ Monitor condition of facilities for risk management ❖ List the range of recreational pursuits that may be permitted and are consistent with the environmental limits of the area ❖ Undertake 'whole of reserve estate' planning for recreation opportunities
Water quality	Maintain or improve water quality	❖ Perform basic water quality testing at regular intervals ❖ Support actions for water quality under the Biodiversity Strategy
Erosion	Minimise erosion	❖ Monitor and control erosion. ❖ Aim to maintain vegetative cover on very steep, erosion-prone slopes during prescribed burns. ❖ Consider possible erosion problems before any construction is undertaken taking into account the slope, soil type, local climate and potential uses
Education and interpretation	Ensure that visitors and the community appreciate, and are aware of, the natural values of the area and the importance of protecting these values	❖ Install, or upgrade, interpretive signs ❖ Encourage participation in community environmental groups
Weed plants	Undertake prioritised management of weeds that is consistent with the principles of the VES and the PMP	❖ Undertake weed eradication in manageable areas and involve volunteers and community groups ❖ Educate local residents about the dumping of garden waste and other rubbish ❖ Remove dumped garden waste and other rubbish as a matter of priority ❖ Increase public awareness of environmental weeds
Introduced animals	Reduce threatening processes due to pests.	❖ Develop an education program about the need to control domestic animals and their possible effect on native wildlife ❖ Erect and maintain boundary

		fencing where appropriate ❖ Explore methods of control, e.g. baiting, trapping, etc. ❖ Educate local residents and visitors about the impacts of domestic pets on wildlife
Plan implementation and monitoring	Ensure that the Management Plan is implemented efficiently	❖ Identify and develop electronic system for managing nature areas site data

5 MANAGEMENT AREA DESCRIPTIONS

To ensure that the conservation values highlighted in the Strategic Plan are recognised in natural areas under Council control, conservation land in the City is categorised into different types with broad intents stated for each type. This will ensure that when new areas are being classified and named, they meet certain criteria for that type of reserve. Further, when specific management practices are undertaken on a piece of reserve land, the actions will be consistent with the relevant intents for that type of reserve land. For this purpose, the following 10 descriptors and broad intents have been devised. The last two categories of Drainage Reserves and Road Reserves are not generally included in the 'conservation' estate. However, these reserve types are included as they have been recognised as having significant value and contribution to biodiversity planning and management for the city.

It is important to note that all ecological areas, (core, non-core and fragmented) are intrinsically important and aid Koalas and other fauna movement through both the urban and rural environment. However, the way in which area types are prioritised and managed may be different due to the prevalence of specific pressures common to that area type. This might include disturbance, edge effects or resilience.

5.1 Conservation Areas and Conservation Parks

This category includes Conservation Areas (CA) and Conservation Parks (CP) and Coordinated Conservation Areas (CCA) which are essentially managed the same. The main difference between them is that a CP and CCA are listed under the NCA. Bayview Conservation Park is the only CP area in the City is managed by Council but DERM may need to be consulted if certain management actions are undertaken which fall outside the scope for which the area was listed. Examples of CCA's are Don and Christine Burnett Coordinated Conservation Area and Ford Road Conservation Area. These areas involve a number of stakeholders including Queensland Parks and Wildlife Service, DERM, Logan City Council and Redland City Council. This means that partner consultation may be required regarding some management decisions.

DESCRIPTION
The primary function of CA's and CP's and CCP's is the conservation (protection, maintenance and monitoring) of natural communities, ecosystems, habitats and environmental features.

In general, these areas exhibit either one, or all, of the following features:

- Trusteeship or owned and managed council (conservation areas);

- Partly owned and managed by Council (coordinated conservation area);
- Listed under the Nature Conservation Act 1992 (Conservation Park);
- Mostly owned by State;
- Greater than 15 hectares in area, i.e. large area of land;
- Significant habitat areas that have that have high ecological integrity and capacity to support self sustaining ecosystems including those habitats for macrofauna;
- May contain rare or threatened fauna and/or flora species;
- Minimal disturbance but can include small patches of degradation associated with weeds, pests, erosion, development, etc);
- Access generally restricted and managed;
- May contain rare and threatened plant and animal communities eg Regional Ecosystem types; and
- Managed mainly for ecosystem conservation and recreation. A natural area of land, designated to:

  a) protect the ecological integrity of one or more ecosystems for this and future generations;

  b) exclude exploitation or occupation detrimental to the purposes of designation of the area; and

  c) provide a foundation for spiritual, scientific, educational, recreational and visitor opportunities, all of which must be environmentally and culturally compatible.

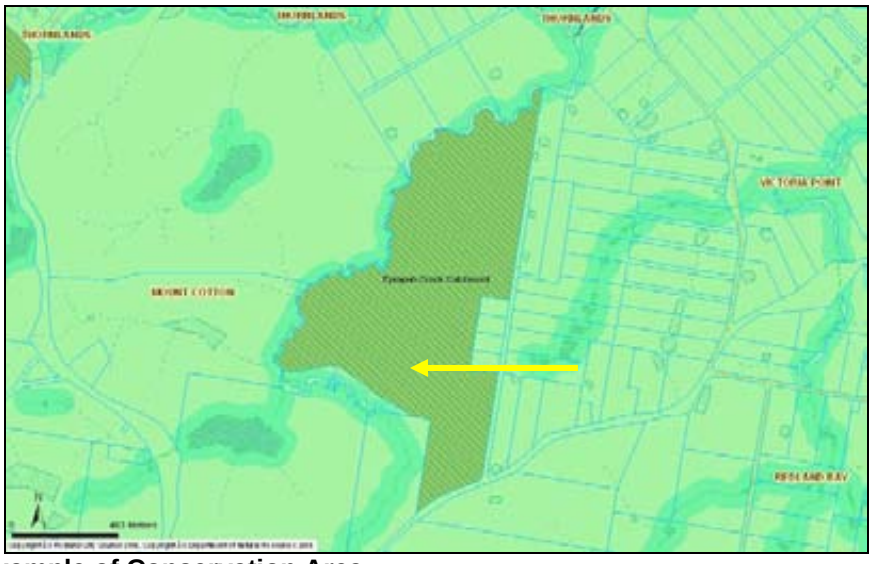

Figure 4. Example of Conservation Area

FUNCTION- CORE

The primary function of Conservation Areas is the conservation (protection, maintenance and monitoring) of natural communities, ecosystems, habitats and environmental features.

ISSUES

- Conservation of rare and threatened species
- Generally access managed on tracks primarily sited for fire management purposes
- Terrestrial weed management
- May include areas disturbed as a result of previous land use

- Fire management for the conservation of biodiversity and protection of adjoining property

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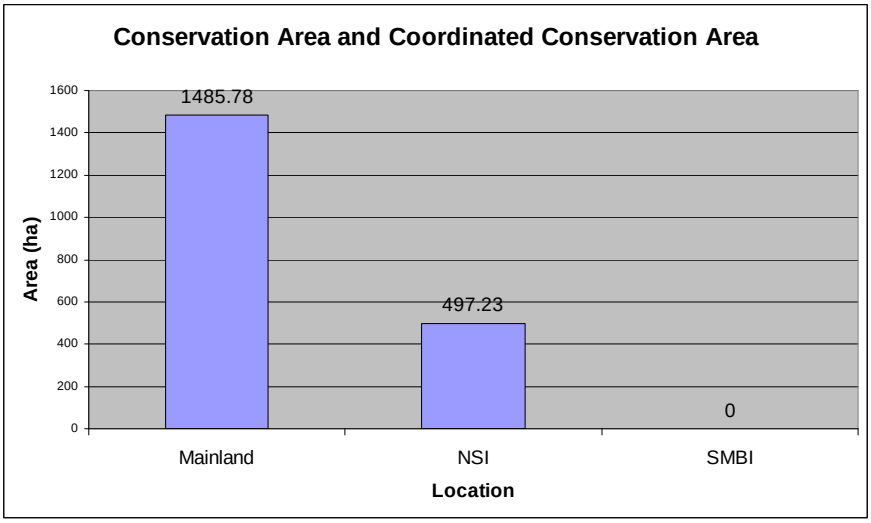

Figure 5. Distribution of Conservation Areas

5.2 Nature Refuge

DESCRIPTION

In general, these areas exhibit either one, or all, of the following features:

- An area declared under the Nature Conservation Act 1992 as a Nature Refuge;
- This is the lowest tier of protection under the NCA although the specific property in the Redland City has values akin to 'conservation areas'
- Generally freehold tenure;
- Is based on a voluntary agreement between a landholder and the Queensland Government that acknowledges a commitment to preserve land with significant natural and/or cultural heritage values in perpetuity. Each nature refuge agreement is negotiated directly with the landholder and tailored to suit their management needs;
- Allows sustainable activities that do not impact on the reasons for which the area was listed;
- Listing as a nature refuge under the NCA does not alter tenure;
- These areas are jointly managed through agreement between the Queensland Government and Redland City Council and thus major decisions impacting the management of the area requires approval of State also.

Figure 6. Nature Refuge

FUNCTION- NON -CORE

In general, a Nature Refuge is to be managed to:

- Conserve the area's significant natural resources;
- Provide for the controlled use of the areas natural resources;
- Provide for the interests of landholders to be taken into account;
- May be made up of specific management areas such as:

- **Scientific Conservation Area-** To protect and conserve the areas of significant conservation value by restricting access to these areas.
- **Conservation Corridor-** To provide for fauna movement while allowing for pedestrian/cyclist movement between adjacent residential properties along designated trails
- **Eco- Adventure Area-** To provide for bushland based education and recreation whilst maintaining the conservation values of the area.
- **Fire Management Strip-** To provide a 3 to 5 metre wide management strip adjacent to private property boundaries, and to provide access for general maintenance and fire management purposes.

ISSUES:

- The values for this area and the partial ownership by the Queensland Government indicates that this area should be upgraded to a Conservation Park;
- Conservation of rare and threatened species;
- Generally access managed on tracks primarily sited for fire management purposes;
- Terrestrial weed management;
- May include areas disturbed as a result of previous land use; and
- Fire management for the conservation of biodiversity and protection of adjoining property.

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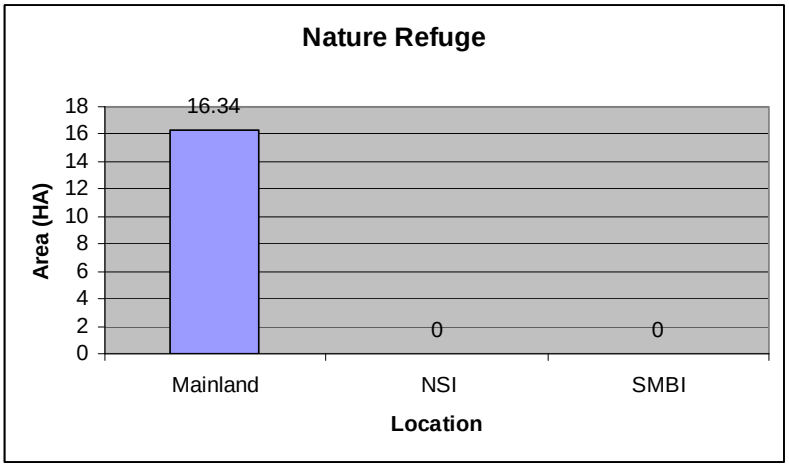

Figure 7. Distribution of Nature Refuge

5.3 Bushland Refuges

DESCRIPTION

Generally, Bushland Refuges exhibit the following features:

- Between 1 and 15 hectares in area;
- Significant habitat areas that have that have good ecological integrity but reduced capacity to support self sustaining ecosystems;
- May be discrete patches of bushland isolated from other patches;
- Have limited resilience to buffer populations from disturbance events such as natural events and urban pressures (eg. Dumping, illegal tracks, erosion, vandalism, weed invasion etc);
- Edge effects are high potential;
- Mostly existing remnant vegetation in fragmented rural or urban landscapes;
- Access may be restricted or managed in some site-specific instances, but mostly unrestricted;
- May provide critical habitat for a particular species;
- May provide habitat “islands” within developed areas, or have future potential for conservation.

Figure 8. Example of Urban Habitat

FUNCTION- NON-CORE

1. The primary function of Bushland Reserves is related to conservation of specific values (e.g. preservation of a single species, potential for habitat link, communities or regional ecosystems) through management intervention.
2. Area of land subject to active intervention for management purposes so as to ensure the maintenance of habitats and/or to meet the requirements of specific species.
3. Informal recreation where it does not impact on conservation values.

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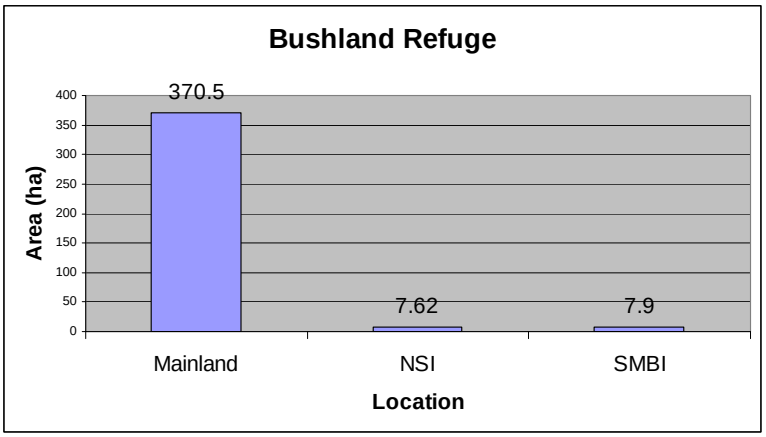

Figure 9. Distribution of Bushland Refuge

5.4 Nature Belt

DESCRIPTION

In general, these areas exhibit either one, or all, of the following features:

- Usually 1-5 ha in area;
- Linear strips or 'stepping stones' of natural, near-natural or modified habitat that may be broken by other forms of landuse and often have open areas adjacent to them;
- Serve as a habitat link between conservation land or creek corridors, or as a link through suburban areas that enables native species to disperse into habitat areas;
- Serve to link across catchments, that is, they do not follow and incorporated watercourses or drainage lines;
- May consist of 'stepping stones' of vegetation within the landscape;
- Significant habitat areas that have that have varying ecological integrity but reduced capacity to support self sustaining ecosystems;
- Have limited resilience to buffer populations from disturbance events such as natural events and urban pressures (eg. dumping, illegal tracks, erosion, vandalism, weed invasion etc); and
- High potential edge effects.

Figure 10. Example of Nature Belt

FUNCTION- FRAGMENTED

The main purpose of Nature Links is to accommodate and allow for fauna movement from one habitat to another. Nature Links will also have secondary functions, such as:

1. Providing habitat, cover and refuge for fauna in their own right;
2. Supplementing/supporting corridor frameworks identified at regional and sub-regional levels;
3. Providing pathways for dispersal of native flora species; and
4. Allows for informal recreation.

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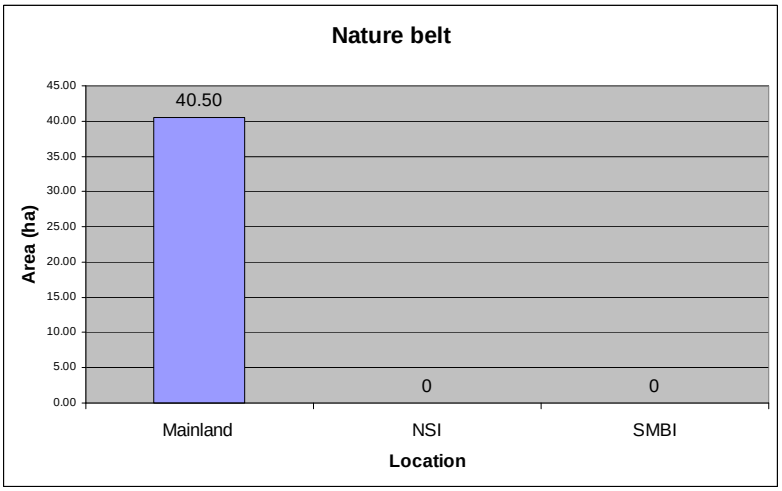

Figure 11. Distribution of Nature Belt

5.5 Creek Corridor

DESCRIPTION

In general, these areas exhibit either one, or all, of the following features:

- Creek corridors include riparian and terrestrial vegetation;
- Along the city's creek systems;
- Creek Corridors contain significant areas and may contain rare and threatened species and community types;
- May be associated with or adjacent to open space areas;

- Often contain species at limits of their environmental range;
- May include areas disturbed as a result from previous land use;
- Varying degrees of stability (erosion and stream channel changes);
- Aquatic and terrestrial weed management issues;
- Storm water management infrastructure (eg outflows from surrounding areas);
- Adjoining development impacting on edges (eg dumping view pruning, weed invasion from garden escapees); and
- Fire management for the conservation of biodiversity and protection of adjoining property.

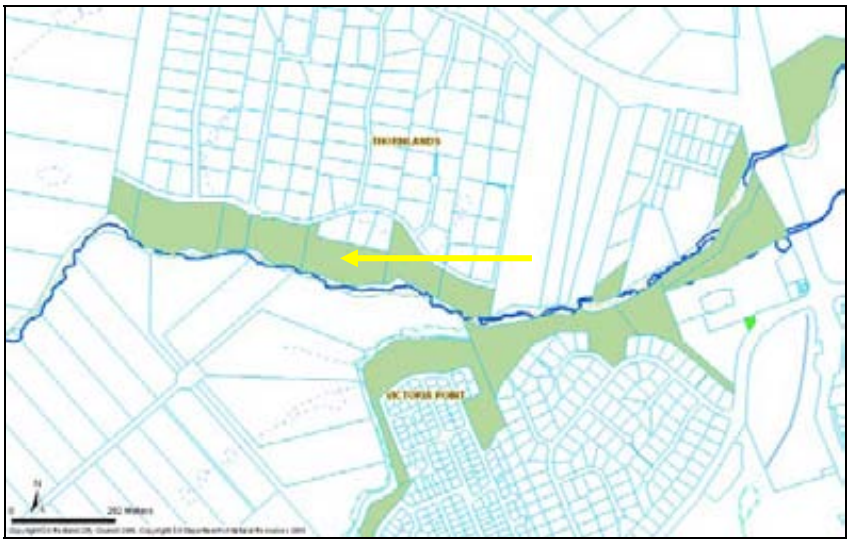

Figure 12. Example of Creek Corridor

FUNCTION- CORE

- Protection of water quality and the conservation of riparian vegetation and significant species and habitats.

ISSUES

- Protection of water quality;
- Management of stormwater;
- Aquatic and terrestrial weed management;
- Adjoining development impacting on edges (eg dumping, view pruning, weed invasion;
- May include areas disturbed as a result of previous land use;
- Fire management for biodiversity purposes and property protection;
- Climate change impacts;

DISTRIBUTION

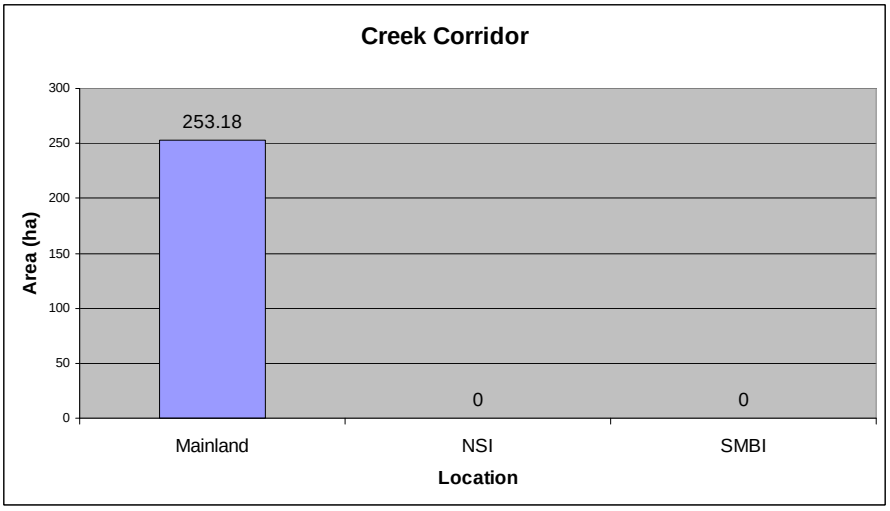

Figure 13. Distribution of Creek Corridors

5.6 Urban Habitat

DESCRIPTION

In general, these areas exhibit either one, or all, of the following features:

- Less than 1 ha in area;
- In general, an urban habitat includes those RSC managed lands that can contribute to the promotion of indigenous flora for habitat enhancement purposes;
- Areas indicated as urban habitat will usually provide a primary function other than conservation;
- May be patches of remnant or non remnant vegetation which may or may not be linked;
- Limited habitat value for a small range of species;
- May be formed as part of development process (developer contribution); and
- Site significance may be related to specific species, habitat, or landscape values eg large koala habitat trees.

Figure 14. Example of Urban Habitat

FUNCTION- FRAGMENTED

- Integration of vegetation within available open space;
- Management of street trees;
- Realised and potential environmental value for koalas and revegetation.

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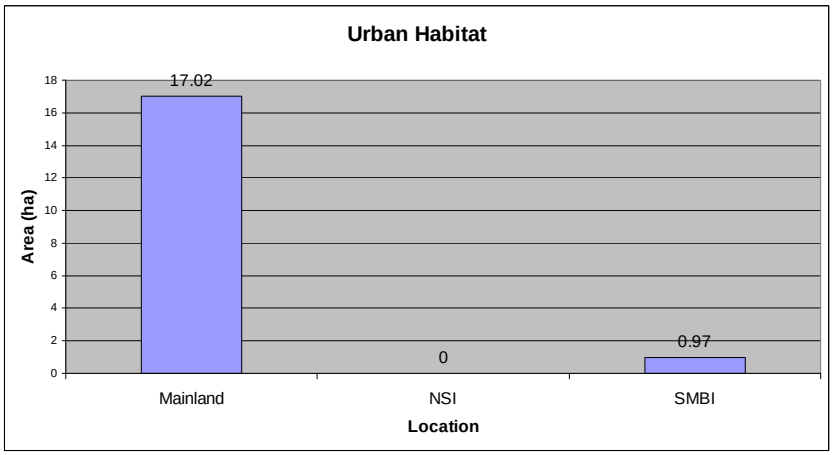

Figure 15. Distribution of Urban Habitat

5.7 Conservation Coastal Foreshores

DESCRIPTION

In general, these areas exhibit either one, or all, of the following features:

- Areas directly adjacent to Moreton Bay that support coastal vegetation;
- Foreshores may include the land lying between the high water mark and low water mark as is ordinarily covered by the ebb and flow of the tide at spring tides and the terrestrial land located adjacent to the above;
- Potential to be significantly impacted by climate change (See Section 7.14-climate change);
- A significant proportion this category is found on NSI;
- Three main categories:
    1. Those attached to areas of high integrity eg many areas of NSI
    2. Those attached to recreation open space eg Wellington Point reserve.
    3. Those serving primarily as functional zones and highly modified

Figure 16. Example of Conservation Foreshore

FUNCTION- CORE

- To provide protection of the interface between the terrestrial and marine environment, while also recognising the high recreational pressures placed on these areas.

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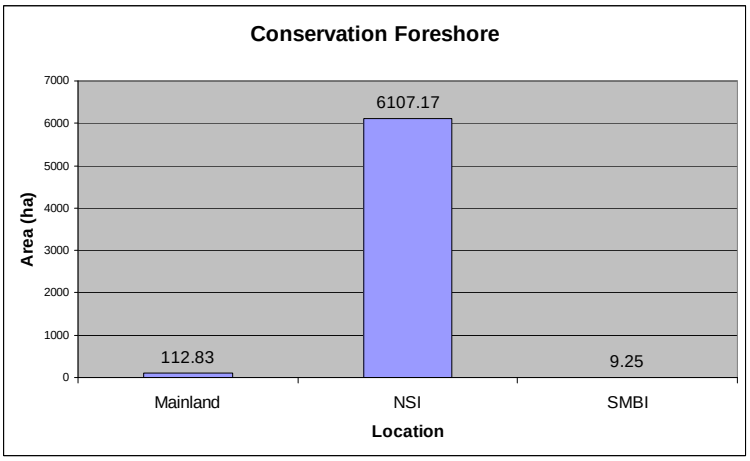

Figure 17. Distribution of Conservation Foreshore.

5.8 Wetlands

DESCRIPTION

In general, these areas exhibit either one, or all, of the following features:

- Areas covered substantially or wholly by a body of water and representative of vegetation types;
- Land is regularly or intermittently inundated with water that is static or flowing, fresh, brackish or salt;
- Supports an assemblage of plant and animal species;
- Includes coastal wetlands (mangrove forests, salt marshes, dune lakes, lagoons, lakes, swamps);
- Includes riverine wetlands (billabongs, overflows or backswamps, anabranches, channels and ephemeral wetlands of inland waterways); and
- Includes International RAMSAR listed wetlands.

Figure 18. Example of Wetland

FUNCTION- CORE

The primary function of wetlands is to support an appreciable number of plant and animal species (or individuals) and, in particular, to provide a nursery and breeding grounds for waterbirds and aquatic animals. These areas also provide an essential ecosystem service in improving water quality.

DISTRIBUTION

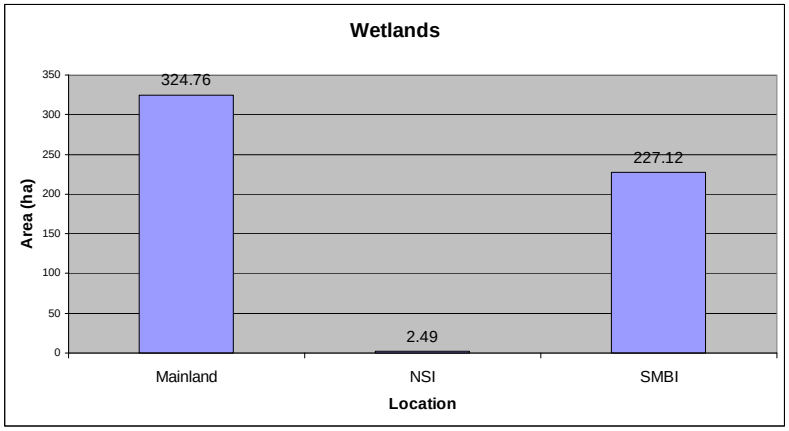

Figure 19. Distribution of Wetlands

5.9 Drainage Reserve

DESCRIPTION

In general, a drainage reserve is an area which exhibits one or more of the following:

- Used for drainage of surrounding areas;
- Natural, highly modified or man made system;
- Salt or fresh water;
- Sparse to highly vegetated;
- May link wetland areas;
- May be utilised by aquatic and terrestrial fauna;
- Aquatic and terrestrial weed management issues;
- May be attached to other conservation areas;
- May be associated with path and track systems; and
- Is associated with 'flood constrained' mapping.

Figure 20. Example of Drainage Reserve

FUNCTION- FRAGMENTED

- Management of water flow and quality associated with conservation and enhancement of the City's natural communities, ecosystems habitats and environmental values.

- Forms the basis for strategic revegetation for improving wildlife movement and increasing extent of remnant vegetation communities. However revegetation should not compromise the primary function of drainage.

- Has a role to play in management of water quality.

DISTRIBUTION

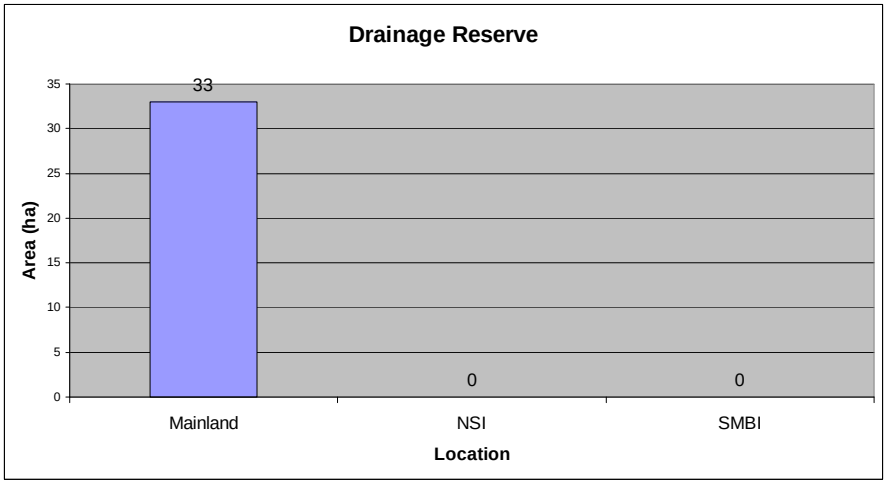

Figure 21. Distribution of Drainage Reserves

5.10 Road Reserve

DESCRIPTION

Road reserve is an area which exhibits one or more of the following:

- A gazetted Local or State Rd;
- May or may not currently be formed roads;
- May or may not become formed roads;
- May be concrete bitumen, gravel, track and may or may not be curbed;
- Formed roads may fragment adjoining consolidated bushland areas;
- May facilitate or reduce fauna movement;
- May be in un-vegetated state to having complete canopy closure over road;
- May show a range of erosion management states from good to poor;
- May be used for fire management purposes;
- May have varying verge widths;
- Incorporate power, communications and drainage infrastructure.

Figure 22. Example of Road Reserve

FUNCTION- FRAGMENTED

- Meeting city infrastructure requirements with integration of biodiversity conservation values where possible.
- Facilitation of fauna movement.
- Value as areas for revegetation through assessment and closure of non-required roads.

DISTRIBUTION

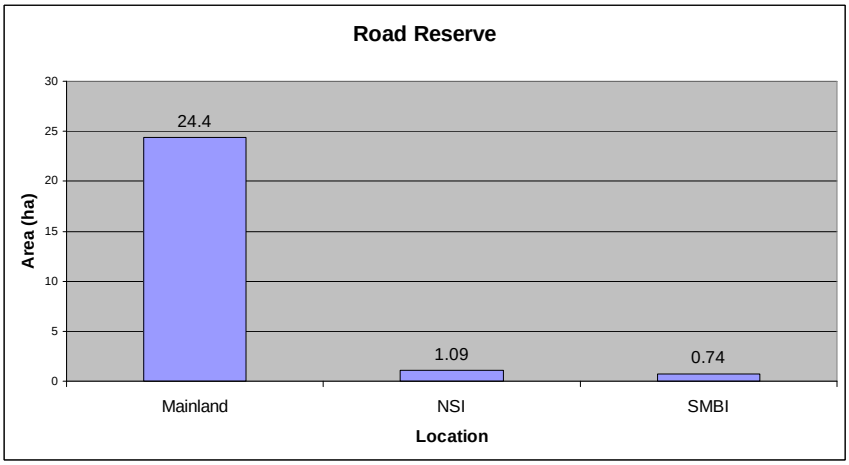

Figure 23. Distribution of Road Reserves

6 CRITERIA FOR NAMING AND CLASSIFICATION OF RESERVES

Table 2. Criteria for Naming and Classifying Reserves

Attribute	Criteria	Conservation Area	Nature refuge	Bushland refuge	Nature Belt	Creek Corridor	Urban Habitat	Conservation Foreshore	Wetlands	Drainage Reserve	Road Reserve
Size		>15ha	> 15ha	1-15ha	1-5ha	Usually > 15ha	< 1ha	variable	variable	variable	variable
Shape		variable	variable	Usually patches	linear	linear	Usually patches	Linear -may vary greatly in depth	variable	linear	linear
Dominant landform	Type and %	Terrestrial 90% although it may also include creek corridors	Terrestrial 70-90% although it may also include creek corridors	Terrestrial 90% although it may also include creek corridors	Terrestrial	Water course 80% but includes terrestrial buffer either side of watercourse	Terrestrial 90% although it may also include creek corridors	Littoral zone and associated vegetation communities 90%. (marine wetland, dunal and rainforest)	80-90% marine or freshwater wetland community types	80-90% natural or manmade drainage landforms	Terrestrial 95% formed or unformed roads with crossings at creek and drainage lines
Ecological integrity	H/M/L	H	H	M	M	H	L	M	H	L	L
Self sustaining habitat	H	H	H	M	L	H	L	M-H	H	L	L
Disturbance eg dumping, illegal tracks, erosion, vandalism	H/M/L	L-M	L-M	M-H	H	M	H	M	L	M-H	H
Access restriction	H/M/L	H	M	L	L	M	L	M	H	L	L
Legislation	Type	NCA	NCA						EPBC/		

		(conservation park)							RAMSAR		
Edge effects	H/M/L	L	M	H	H	H	H	H	M	H	H
Potential for Rare threatened species	H/M/L	H	M-H	L	L	M-H	L	M-H	H	L	L
Remnant vegetation REs present	H/M/L	H	M-H	M	L-M	H	L	M-H	H	L	L
Isolation	H/M/L	L	L	M-H	H	L	H	M	M	H	H
Resilience	H/M/L	H	H	L	L	M	L	M	M	L	L
Critical species habitat	H/M/L	M-H	H	M	L	H	L-M	M	M-H	L	L
Modification	H/M/L	L	L	M	M-H	L-M	H	M	L	H	H
Habitat	Core/Link	Core	Core	Link	Stepping stone	Link	Link/ stepping stone	Link/Core	Core	Link	Link

Decision criteria:

- Acceptance of a reserve type should be based on the area meeting at least 10 criteria
- Areas listed under the NCA will be named as either Bushland Reserve or Conservation Area (Park)

7 MANAGEMENT PRINCIPLES AND PRACTICES

7.1 General management

Relevant to Conservation area										
Principle	CA&CP	NR	BR	NB	CC	UH	CF	W	DR	RR
1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

7.1.1 Trustee land

Principle 1: Any actions that take place on trustee land which may affect the purposes for which it is intended must be approved by the State agent.

7.1.2 Open Space Strategy

The Redland Shire Council's Open Space Plan 2004 - 2016 provides a framework for the planning and management of the Shire's open space network, including all recreation and sporting open space. It identifies requirements for local, district and regional parks in the city.

Principle 2: Actions taking place or planned for reserves must consider and integrate open space values where appropriate.

7.2 Administration of Reserves

Relevant to Conservation area										
Principle	CA&CP	NR	BR	NB	CC	UH	CF	W	DR	RR
1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Principle 1: All activities Subject to Local Law 15 that are to occur in Council reserves must be approved by Operations and Maintenance and Environmental Management Group to ensure biodiversity values and legislative and policy obligations are being met. Some activities subject to LL No.15 (Parks and Reserves) are golf, archery and public meetings.

Principle 2: All projects should be assessed against Council strategic direction and policy position.

Principle 3: Works in reserves will be undertaken and scheduled to provide a strategic, cohesive, efficient and mutually beneficial management of effort and resources. This necessarily requires internal consultation.

Principle 4: All data and information will be recorded for works undertaken in each reserve.

Principle 5: A yearly audit of all works including restoration works and reserve maintenance should be undertaken via the data management system.

Principle 6: Audits should be used as the basis of 'State of the Environment' reporting.

Principle 7: Audits should be used to inform capital and operation works programs.

Principle 8: DERM should be notified regarding any actions or impacts to Nature Refuges.

7.3 Compliance activities

Relevant to Conservation area										
Principle	CA&CP	NR	BR	NB	CC	UH	CF	W	DR	RR
1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
6	Y	Y	Y	Y	Y		Y			

Local Law 15 (Parks and Reserves) acts as the head of power for management of Councils reserves. A range of unlawful activities do occur in Council reserves such as dumping, motorbike use and damage to vegetation. These can have a detrimental effect on biodiversity and impact on other users. The management actions that are undertaken to mitigate unlawful activities depend on the type of unlawful activity and the scale to which it is occurring.

7.3.1 General compliance process

Principle 1: Education and promoting ownership/stewardship of reserves should be seen as the first option for management of unlawful activities.

Principle 2: Compliance should be seen as the second option for management of unlawful activities.

Principle 3: Surveillance and site alteration (eg fencing) should be seen as the third option for management of unlawful activities.

Principle 4: Where unlawful activities are occurring, increasing public surveillance through providing infrastructure (such as paths) should be considered as a further management option. For example, it has been shown that installation of pathways to increase public traffic reduces the incidence of unlawful activities occurring in that area.

7.3.2 Specific issues- vegetation damage

Principle 5: Where unlawful activities relate to view pruning or other damage to vegetation, (Policy 3025 'Unlawful Damage to Trees in Public Places') should be utilised to enable resolution.

Principle 6: Where areas are or have been subject to unlawful view pruning activities, Council should not facilitate view pruning on foreshores that benefits one or a small number of adjacent private dwellings. This includes pruning of native understory regrowth.

7.4 Acquisition and consolidation of reserves

Relevant to Conservation area										
Principle	CA&CP	NR	BR	NB	CC	UH	CF	W	DR	RR
1	Y	Y	Y	Y	Y	Y	Y	Y		
2	Y	Y	Y	Y	Y	Y	Y	Y		
3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
5	Y	Y	Y	Y	Y	Y	Y	Y		
6	Y	Y	Y	Y	Y	Y	Y	Y		
7										Y
8	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Acquisition of reserves is primarily attained through POL- 3057 'Environmental Charge Acquisition and Management Policy' which commits Council to take opportunities to buy land or development rights offered for sale. Opportunities for acquisition are also supported via the Biodiversity Strategy and Koala Policy and Implementation Strategy. Areas newly acquired by Council may be in good condition with very few issues or have significant issues associated with them, for example, unlawful use of motorbikes, erosion and dumping.

Principle 1: Reserve type must be decided based on Conservation Intents 'criteria for naming of reserves'

Principle 2: Where a new property has been acquired, the property must be made ready for uses that are considered compatible with its reserve type and site specific attributes/issues. This will require the provision of appropriate resources based on 5% of the purchase price and is funded through Council's Environment charge.

Principle 3: An initial assessment should be undertaken to identify key threats and management priorities identified. This may include high erosion areas (protection of waterways), fire trail development /maintenance, toxic dumped materials (eg asbestos) and signage and security ie perimeter fencing.

Principle 4: Follow-up site assessments should be made to determine and map flora values, fauna values, ecosystem values, pest mapping, risk assessment etc. This may need to be outsourced and funded through the operational budget as required.

Principle 5: Opportunities should be identified for attracting NRS (National Reserve System) funding pre or post acquisition of new reserve areas.

Principle 6: Opportunities should be sought from NRS for funding the development of management plans and flora/fauna assessment for those reserves listed as Nature Reserves under the NCA.

Principle 7: Unused road reserves should be identified, closed and consolidated into existing reserves.

Principle 8: Individual allotments within parcels of reserve land should be consolidated via a 'Realignment of Lots'.

7.5 Developer contributions

Relevant to Conservation area										
Principle	CA&CP	NR	BR	NB	CC	UH	CF	W	DR	RR
1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Principle 1: All developer contributions should aim to provide open space (conservation and recreation) that strategically links to other areas of conservation land and connections.

Principle 2: All developer contributions (revegetation areas) coming to Council as 'off maintenance' must meet the requirements of the VES and be approved by Parks and Conservation as being of appropriate standard.

Principle 3: Developer contributions should clearly identify how the contributed area meets intents of the reserve type and open space category for which they are intended. It should be noted that some areas include a number of landscape elements such as creek corridors, drainage areas and general habitat and this should be considered in the design of the contributed area.

Principle 4: Specific areas should be clearly identified for the use for which they are required for example, an areas use must be consistent with the open space type eg community creek corridor.

Principle 5: Park maintenance standards should be applied as per the Councils Open Space Plan.

7.6 Coordinated Management Areas

Relevant to Conservation area										
Principle	CA &CP	NR	BR	NB	CC	UH	CF	W	DR	RR
1	Y	Y								
2	Y	Y								
3	Y	Y								
4	Y	Y								
5	Y	Y								
6	Y	Y								
7	Y	Y								

There are reserves that are a number of areas in the City that are cooperatively managed with other Local Governments and State agencies some of the principles.

Principle 1: Overall management should be consistent with conservation reserves management principles and specific management obligations of Council.

Principle2: Cooperation with management partners should occur to achieve outcomes acceptable to all.

Principle 3: Protection and management still allow Council to manage in its own right.

Principle 4: The following must be used to guide the management of specific areas zones applicable to Nature Refuges.

Table 3. Management Zones

Area	Intent	Permitted use	Prohibited uses
Scientific Conservation Area	To protect and conserve the areas of significant conservation value by restricting access to these areas.	Scientific investigation upon receipt of written permission from the Manager, Environmental Management Redland City Council.	All other activities unless prior written permission is granted by the Manager, Environmental Management Redland City Council.
Conservation Corridor	To provide for fauna movement while allowing for pedestrian/cyclist movement between adjacent residential properties along designated trails	Public access (pedestrian/ cyclist) via designated trails only	All other activities unless prior written permission is granted by the Manager, Environmental Management Redland City Council.
Eco- Adventure Area	To provide for bushland based education and recreation whilst maintaining the conservation values of the area.	General public access and education programs such as revegetation, local management and water watch; Cyclist access via designated trails only.	All other activities unless prior written permission is granted by the Manager, Environmental Management Redland City Council.
Fire Management Strip	To provide a 3 to 5 metre wide management strip adjacent to private property	Public access (pedestrian/ cyclist) as permitted by the Manager, Environmental	All other activities unless prior written permission is granted by the Manager,

	boundaries, and to provide access for general maintenance, risk management and fire management purposes.	Management Redland City Council	Environmental Management Redland City Council.

Principle 5: Make reasonable efforts to prevent the invasion or spread of pests and weeds and to remove any existing pest or weeds (including declared plants) by environmentally sympathetic means.

Principle 6: Allow regular access by public at large for nature based recreation

Principle 7: No access to be given to those areas zoned as scientific conservation areas

7.7 Infrastructure and Services

Relevant to Conservation area										
Principle	**CA&CP**	**NR**	**BR**	**NB**	**CC**	**UH**	**CF**	**W**	**DR**	**RR**
1	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
2	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
3	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
4	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
5	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
6	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
7	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
8	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
9	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
10	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**

Principle 1: The provision of infrastructure should conform to Redland Shire Council Open Space Strategy 2004-2016.

Principle 2: The provision of seating must meet the provisions of Corporate Policy POL-3068.

Principle 3: Infrastructure should be minimised to that essential to maintain appropriate level of service.

Principle 4: Where overhead powerlines exist, the capacity to improve biodiversity extent, condition and continuity of vegetation communities through undergrounding and bundling should be identified and mapped.

Principle 5: A priority list of potential undergrounding sites for council reserves should be forwarded to Energex by 30 March annually as per “Memorandum of Understanding on Vegetation Management near Powerlines between Energex and Redlands City Council”.

Principle 6: Council should act to ensure that all revegetation near powerlines seeks to comply with the Redland’s Vegetation Enhancement Strategy 2007 and the

"Memorandum of understanding on vegetation management near powerlines between Energex and Redlands City Council".

Principle 7: Vegetation management practices in the proximity of infrastructure such as paths, underground services should aim to meet the principles outlined in the Vegetation Enhancement Strategy 2007

Principle 8: Pathways or other infrastructure should be considered on routes where revegetation is not possible or very limited due to underground or overhead service provision.

Principle 9: Where development related infrastructure such as drainage outlets is to impinge upon Council Reserves, it must be minimised or amalgamated to reduce it's ecological and aesthetic impact and must be approved by EMG.

Principle 10: Pathways, sewerage and other telecommunications services should be combined into one route to reduce ecological impact.

7.8 Environmental Themes for Structure and Master Planning

Relevant to Conservation area										
Principle	CA&CP	NR	BR	NB	CC	UH	CF	W	DR	RR
1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

The structure planning of 'Greenfield' areas and master planning of existing developed areas can identify new conservation reserves or impact on existing reserves.

There are 5 main principles that are seen as being essential as considerations for structure or master planning to ensure the resilience of ecological communities.

Principle 1: Consolidate infrastructure
Master or structure planning ensures infrastructure provision is sited and consolidated to maximise regeneration of 'endangered ecosystems'.

Principle 2: **No harm to RAMSAR sites**
Minimise and investigate adverse or potentially adverse impacts on RAMSAR sites.

Principle 3: Ensure full habitat connectivity throughout site
Master or structure planning must ensure habitat connectivity along littoral zones and along and between riparian corridors is maintained and enhanced.

Principle 4: Protect strategic habitat corridors
Any other strategic habitat corridors within or adjoining the master or structure planned areas must be identified and connectivity provided.

Principle 5: Ensure habitat is risk managed and buffered against climate change.
Endangered species, sedentary species, species with narrow habitat niche and sensitive ecosystems will be most affected by predicted climate change whilst robust ecosystems

will survive leading to overall changes in the City's biological composition from species to landscape level. Master or structure planning must allow for the maintenance and enhancement of habitat and Regional Ecosystems that allows for longer term dispersion and survival of species that are sensitive to temperature and general climate change.

Principle 6: Conserve Regional Ecosystems
Existing identified remnant REs must be conserved and, where possible, enhanced in scale and quality. No development should occur on, or impact upon, these ecosystems.

7.9 Media – Documentaries, commercials

Relevant to Conservation area										
Principle	CA&CP	NR	BR	NB	CC	UH	CF	W	DR	RR
1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

This intent applies to the following range of media related activities including but not limited to: commercials, documentaries, short television segments, private and public functions.

Principle 1: Permits
All permits required under the provisions of Local Law No.15 (Parks and Reserves) must be obtained.

Principle 2: Parks and Conservation and Environmental Management must be consulted and approvals acquired before any activity takes place that occurs within a Council Reserve.

Principle 3: Environmentally sensitive area
Environmentally sensitive 'No Go' areas must not be used for the purposes of any activity that impacts or has the potential to impact the values for which the area was identified. Identification of potential sensitive areas can occur on application of permits.

Principle 4: Endangered, Vulnerable and Rare species
E/V/R flora and fauna may be filmed or photographed in reserves where approved but the location of the species must not be made available to the general public through any media without the express permission of the Environmental Management Group manager.

7.10 Environmental Health

Relevant to Conservation area										
Principle	CA&CP	NR	BR	NB	CC	UH	CF	W	DR	RR
1	Y	Y	Y		Y	Y	Y	Y	Y	Y
2	Y	Y	Y		Y	Y	Y	Y	Y	Y

With increasing knowledge on mosquito species and mosquito borne diseases, the aim is to reduce breeding sites and in turn reduce the use of chemical treatments through habitat modification.

Principle 1: Where public health is at risk from mosquitoes, habitat modification may be used to reduce ponding and incidence of mosquito breeding.

Principle 2: Habitat modification in reserves must be undertaken in consultation with Parks and Conservation and must not impact on significant wildlife habitat.

7.11 Catchment Management – (water quality and biodiversity)

Relevant to Conservation area										
Principle	CA&CP	NR	BR	NB	CC	UH	CF	W	DR	RR
1	Y	Y	Y		Y			Y	Y	Y
2	Y	Y	Y		Y			Y	Y	Y
3	Y	Y	Y		Y			Y	Y	Y
4	Y	Y	Y		Y			Y	Y	Y
5	Y	Y	Y		Y			Y	Y	Y
6	Y	Y	Y		Y			Y	Y	
7	Y	Y	Y		Y	Y	Y	Y	Y	
8	Y	Y	Y	Y	Y	Y	Y	Y	Y	
9	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
10	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
11	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
12	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
13	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
14	Y	Y	Y		Y			Y	Y	
15	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
16	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
17	Y	Y	Y	Y	Y		Y	Y	Y	Y
18	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
19	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
20	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
21	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
22	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

7.11.1 Pest plants and animals

PRINCIPLE 1: Actively manage terrestrial and aquatic weeds in riparian zones to improve conditions for fish and bugs.

Weed invasion in riparian zones and aquatic weeds in waterways should be actively managed to maintain or improve the structural integrity and ecosystem processes in creeks and wetlands. Excessive terrestrial and aquatic weed growth negatively affects both in-stream water quality and ecosystem health. Terrestrial weed management should occur in conjunction with either replacement revegetation or active regeneration from natural seed stock. Large areas of creek bank should not be left exposed for extended periods, to reduce the opportunity and potential for erosion and sedimentation. Aquatic weeds should be managed using an integrated pest management framework including biological controls and / or physical removal (to reduce nutrient loading) in preference to chemical treatments.

PRINCIPLE 2: Trap and remove exotic fish species in conjunction with a program of habitat rehabilitation and native fish introduction.

Many reaches of waterways are populated with a large proportion of introduced fish species (based on sampling results), this effects ecosystem health processes and values. Trapping and removal of introduced fish species should only be undertaken in conjunction with habitat rehabilitation and native fish replacement and monitoring to measure and report on the results of the activity.
Suitable sites for introduced fish trapping and removal and rehabilitation are stable, deep pool, drought refuge reaches.

7.11.2 Riparian landforms and soils

PRINCIPLE 3: Protect, maintain or enhance the condition of riparian buffer zones.

Riparian buffer zones (areas of protection and / or revegetation) should either be based on landform mapping (not commenced) or by default use the lineal distances specified in the RPS (100 and 60 metres for major and minor waterways). Overland flow paths (or natural drainage lines) that carry intermittent flows and stormwater runoff, should have a minimum lineal vegetated buffer of 10 metres either side of the defined flow path.
Landform factors that will define the extent of a riparian buffer zone are: soils, topography and vegetation.

There are also management and rehabilitation issues that must be considered in riparian buffer zones. Issues include: weed management, erosion control and historic uses and modifications.

7.11.3 Aquatic ecosystem processes

PRINCIPLE 4: Manage catchments and terrestrial lands to maintain or improve aquatic ecosystem processes.

Aquatic ecosystem processes in creeks and wetlands are driven by catchment or terrestrial processes. Attempts to rehabilitate a riparian zone or aquatic ecosystem are difficult if degrading processes or pollution is continuing from an external catchment or adjacent terrestrial site. Therefore, priority should always be placed on identifying and where possible managing or mitigating degradation impacts before undertaking aquatic ecosystem rehabilitation activities.

PRINCIPLE 5: Manage or rehabilitate degraded aquatic ecosystems to support stable native fish and aquatic bug populations.

Aquatic habitat rehabilitation should aim to re-create habitat and conditions that favour and support viable native fish and aquatic bug populations. The conditions necessary to support native fish and bug populations includes specific water quality conditions which are specific to catchment and waterway reach / water type.
Management issues affecting ecosystem processes are: pest plants and animals, flow management, erosion and sedimentation, nutrient inputs, water quality and community environmental values.

7.11.4 Community environmental values

PRINCIPLE 6: Manage recreational uses of the reserve to ensure no loss of waterway environmental values.

Waterways that are covered by waterway management plans have defined waterway environmental values that should be maintained or enhanced by management of the reserve. Recreational activities in the reserve should be managed to maintain or where possible enhance the waterways environmental values.

PRINCIPLE 7: Use education methods to promote awareness of waterway and wetland values and ecosystem processes.

7.11.5 Groundwater systems

PRINCIPLE 8: Do not interfere with the undisturbed runoff of water from a groundwater spring.

PRINCIPLE 9: Do not interfere with collection of water in freshwater wetlands or other known groundwater recharge areas.

Groundwater interacts with surface water flows in creeks. There is currently little documentation about the mechanism that this follows in Redlands waterways. Therefore, every attempt should be made to protect the quantity and quality of groundwater at springs (as runoff) and wetlands / recharge locations to minimise disturbance to this element of the water cycle.

7.11.6 Rehabilitation and management

PRINCIPLE 10: Rehabilitation of waterways in a reserve should contribute to improving the waterway environmental values of that entire catchment.

PRINCIPLE 11: Rehabilitation of waterways (a reach) in a reserve should treat the reserve and its surrounding catchment / sub-catchment as one planning unit to identify pressures on waterways external to the reserve site.

PRINCIPLE 12: Rehabilitation and other waterway management work must address site specific hydrological and hydraulic processes and fluvial dynamic processes.

PRINCIPLE 13: Rehabilitation of streams should occur from top of catchment down.

PRINCIPLE 14: Site specific issues on mid or lower catchment areas may be managed as long as the issue will not re-emerge in the future as a result of upstream issues.

7.11.7 Erosion and sedimentation

PRINCIPLE 15: Reserve management and rehabilitation activities should aim to stabilise sources of active man induced erosion where this directly contributes to excessive loads of fine or coarse sediment and degraded water quality in a waterway adjacent to, or within, the reserve.

Both fine and coarse sediment from active erosion sources is known to have direct impacts and consequences for water quality and waterway health (habitat and ecosystem processes for aquatic fauna).

PRINCIPLE 16: Where stream bank erosion is occurring, efforts to stabilise erosion should be justified in regards to risk and natural stream migration processes.

7.11.8 Watercourses (including fish barriers, instream habitat, maintenance, etc)

PRINCIPLE 17: Management and maintenance of watercourses (including ephemeral creeks, springs, natural drainage lines) in a reserve should be based on provision of natural aquatic ecosystem processes in the watercourse and its linkage to adjoining riparian land.

Natural aquatic ecosystem processes require uninterrupted flows, removal of artificial barriers to fish movement within perennial creek reaches, shading, food and habitat connectivity provided by native riparian vegetation, and natural channel features (deep drought refuge pools, riffles, open water channels, snags and habitat diversity).

Note: A fish barrier is a barrier that prevents movement of native fish and may include natural barrier (waterfalls), dams, weirs, sand dams / crossings, tidal intrusion barrages – ponded pasture bunds, weed / macrophyte choked reaches, road and rail crossings (culverts, causeways and fords) and other instream structures (e.g. water control gates).

PRINCIPLE 18: Sustainable management of aquatic ecosystems in a reserve can only be achieved through balanced, integrated planning and management with other uses of the reserve.

7.11.9 Wetlands

PRINCIPLE 19: Management, rehabilitation and maintenance of wetlands in Council reserves should be based on the hydrological regime of the wetland and catchment.

This applies to freshwater, estuarine and coastal foreshore wetlands. Excessive stormwater or concentrated flow runoff should not be directed to a wetland other than through a natural watercourse. There are also management and rehabilitation issues that must be considered in wetlands. Issues are: pest plants and animals, riparian landforms and soils, aquatic ecosystem processes, community environmental values, groundwater systems and erosion and sedimentation.

PRINCIPLE 20: Apply best practice to delination of wetland buffer zones to guide planning and management of wetlands in reserves.

The Queensland Government DERM-EPA is developing a Wetland Buffer Design Guideline that when completed will be best practice for definition and delineation of buffer zones for marine, estuarine and freshwater wetlands. The guideline is based on identification of waterway environmental values and threatening processes and separation distances to minimise the threats to the waterway environmental values posed by the main threatening processes. The guideline process only applies to certain categories of wetlands identified by the guideline.

7.11.10 Nutrient inputs

PRINCIPLE 21: Incorporate reduction of nutrient source inputs in runoff to waterways into the management goals and actions for reserves.

Identification and analysis of specific nutrient sources and their potential impact on water quality or waterway health must be assessed for each property and appropriate management responses put into place based on the level of risk from each contaminant source. Issues which may affect the identification and analysis of nutrient sources include riparian landforms and soils and erosion and sedimentation.

7.11.11 Conservation of rare and threatened riparian and aquatic species

PRINCIPLE 22: Ensure appropriate planning and management is in place in Council reserves to improve the conservation status of (current) significant flora and fauna species occurring in watercourses, wetlands or riparian zones.

Previous planning (Waterway Management Plans) and specific investigations have identified locally significant flora and fauna species and the need for conservation management actions to improve the viability of threatened populations and address specific pressures on habitat, food sources etc. Practical management of Council reserves can respond to these issues. Other issues of relevance to conservation of rare and threatened species include: pest plants and animals, rehabilitation and management, and watercourses.

7.12 Biosecurity-Pest Management

Relevant to Conservation area										
Principle	CA&CP	NR	BR	NB	CC	UH	CF	W	DR	RR
1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
8	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
9	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Principle 1: Actions undertaken for managing Council reserves should aim to incorporate the following 6 principles outlined in the 'Queensland Biosecurity Strategy 2009-14" in acting to protect local and regional biosecurity (DPI&F 2008).

1. Prevention
Regulatory and physical measures to ensure that emergence or re-emergence of weeds, pest and diseases are prevented or their impacts mitigated.

2. Preparedness
Arrangements to ensure that, should an outbreak occur, all those resources and services needed to address the outbreak can be efficiently mobilised and deployed.

3. Surveillance
The systematic investigation of a population or area to collect data and information about the presence, incidence, prevalence or geographical extent of a pest or disease.

4. Response actions
Taken in anticipation of, during and/or immediately after an outbreak to ensure that its effects are minimised.

5. Recovery
The reconstruction of the physical infrastructure and environment and restoration of emotional, social, economic, environmental and physical wellbeing following an emergency response to an outbreak of a pest or disease.

6. Ongoing management
Activities that occur after an initial emergency response to an outbreak of a pest and disease has been unsuccessful, is not considered feasible, or has ceased; and/or the management of established pests and diseases.

Principle 2: The aim is "to work cooperatively to prevent and reduce the negative impacts of pest plants and animals".

Principle 3: Systematic annual surveys of pest plant and animal populations in Council reserves must be resourced and undertaken.

Principle 4: Council should aim to engage private landholders which adjoin reserves for management of identified pest populations.

Principle 5: All high priority weeds on Council land are managed in strategic locations as part of a regular works programme.

Principle 6: Operational programmes are established for the surveillance, enforcement and control of declared animals in Council reserves.

Principle 7: The supply or transport of declared weeds must be controlled by the management of operational activities.

Principle 8: Operational programmes for the surveillance and control of non-declared pests should be undertaken where strategically and economically viable and where risks are assessed.

Principle 9: Where possible research should be engaged to improve pest management practices.

7.13 Rehabilitation and Enhancement and Maintenance

Relevant to Conservation area										
Principle	CA&CP	NR	BR	NB	CC	UH	CF	W	DR	RR
1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
8	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
9	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
10	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
11	Y	Y	Y	Y	Y	Y	Y	Y	Y	
12	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
13	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
14										Y

Principle 1: The following general restoration process should be followed in conjunction with the Vegetation Enhancement Strategy and Policy 2007. It should be noted that these principles may need to be modified and utilised for differing site specific issues.

Table 4. Restoration Process

1. Identify areas to undergo restoration	Assess, identify and mark areas to undergo natural regeneration before restoration works take place.
2. Reduce degrading factors and protect site	Reduce degrading factors such as uncontrolled fire, nutrient run-off, rubbish dumping, erosion and clearing processes prior to undertaking work.
	This process is likely to be achieved through the undertaking of other management actions, (for example, the control of pedestrian traffic, fencing of reserve).
3. Establish areas of natural Regeneration vs revegetation	Natural regeneration is preferable to revegetation. This will depend largely on mature seeding trees, shrubs and other plants, natural soil, modifications to the site.
4. Primary weed clearance	Remove major weeds from site in stages.
	Weeds will exist in varying degrees of

	infestation- prioritise and remove those weeds which pose major threats to the ability of native vegetation to regenerate.
5. Native plant and weed regeneration	Some native plants and also weed species will regenerate. Weed species may be the same as those originally removed, indicating a soil seed bank or vegetative propagules remaining in the soil or hanging from branches (eg Maderia vine) Weed species may be different to those originally removed, indicating successional weed infestation, or opportunistic weed species.
6. Secondary weed clearance	Re-weeding of primary site to remove re-infestations of weeds. Techniques of removal may be the same or different to those initially used – depending upon weed species present and intensity of native plant regeneration.
	Secondary clearance is crucial to the establishment of native regeneration and must be undertaken as soon as possible to remove germinated weed species
7. Maintenance	After secondary weed clearance has been undertaken, monitor the area and undertake preventative weed control as necessary. Weed control will be dictated by the establishment and growth rates of the weed species themselves.
	It is likely that the care needed with weeding shall increase as more native plants become established but will decrease as native plants out-compete weeds.

Principle 2: Site selection should maximize ecological benefits to the entire remnant system.

Principle 3: Corridors should be placed to link remnant vegetation which is of high biodiversity value to enable maximum dispersal of species and create larger remnants which have sustainable populations. Less diverse remnant clumps of scattered trees can be incorporated into the linkage between diverse areas.

Principle 4: Restoration works should be chosen with the aim to utilise natural regeneration via the “Bradley Principle”, That is:

- Work from good areas to poor areas;
- Don't over-clear;
- Let the rate of natural regeneration dictate the rate of weed removal; and

- Minimise disturbance through preferred use of hand tools above heavy machinery (although some disturbance may also be useful in promoting natural regeneration).

Principle 5: A planting and management plan of restoration sites is to be provided where rehabilitation/revegetation is over an extensive area. This would give some idea of the impact of the proposal on the site.

- The plan should provide a strategic, integrated and planned implementation of the revegetation work allowing integration of vegetation across City between RcC and private landholders.
- It must provide a detailed species list that is consistent with the Regional Ecosystem for that site.
- It must allow potential for natural regeneration and recruitment to occur where possible.
- It must consider landform, soil types soil nutrients, maintenance requirements, planting method, chemicals to be used etc.

Principle 6: All restoration sites must be identifiable via GIS polygon.

Principle 7: An annual condition report undertaken to establish relative success of all restoration sites. Annual monitoring is to include photographic sampling along with information such as average height of canopy, Foliage Projective Cover (FPC,) plant loss, natural recruitment, and weed incursion/reinfestation.

Principle 8: Ensure that rehabilitation/regeneration means the restoration of degraded systems to as near as is practical to the species consistent with pre-clear Regional Ecosystem and species lists in the VES.

Principle 9: Restoration sites are not to be planted with species (e.g. *Lomandra Spp*.) to ratios that inhibit the movement of fauna species. If planting plans are consistent with the VES and reflect natural communities then this issue should not arise.

Principle 10: Where site species lists are not available an assessment must be undertaken that determines what species occur in the general area in which the restoration works are occurring. This sub-catchment species list will be used as a basis for restoration works.

Principle 11: Maintenance of parks should meet requirements of the Redland Shire Council Open Space Plan 2004 -2016.

Principle 12: Weed and pest management work is to be documented and should show how it meets all restoration principles set out in this section (section 7.4).

Principle 13: Council's Pest Management Plan should be used to define management techniques for specific declared pest species.

Principle 14: Identify unused road reserves for permanent closure and restoration where possible.

7.14 Recreation

Relevant to Conservation area										
Principle	CA&CP	NR	BR	NB	CC	UH	CF	W	DR	RR
1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
6		Y								
7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
8	Y	Y	Y	Y	Y	Y	Y			Y
9	Y	Y	Y	Y	Y	Y	Y			Y
10	Y	Y	Y	Y	Y	Y	Y			Y
11	Y	Y	Y	Y	Y	Y	Y			Y
12	Y	Y	Y	Y	Y	Y	Y			Y
13	Y	Y	Y	Y	Y	Y	Y			Y
14	Y	Y	Y	Y	Y	Y	Y			Y
15	Y	Y	Y	Y	Y	Y	Y			Y
16	Y	Y	Y	Y	Y	Y	Y			Y
17	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
18	Y	Y	Y	Y	Y	Y	Y			Y
19	Y	Y	Y	Y	Y	Y	Y			Y
20	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
21	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
22	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
23	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
24	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
25	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
26	Y	Y	Y	Y	Y	Y	Y			Y
27	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
28	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
29	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Principle 1: The overarching philosophy of Council is to provide ‘multiple-use’ nature based recreation venues that appeal to, encourage and engage the community.

Principle 2: The management of recreation in the city should aim to meet the requirements of the SEQ Regional Plan: “Establish and maintain a network of accessible outdoor recreation areas, including regional parks, trails and waterways, as well as private lands with the voluntary agreement of landowners”.

Principle 3: Not all nature based activities are compatible with all parts of the landscape and may in some cases cause degradation of biodiversity values and experience of other users. Reserves planning for recreation should be designed to encourage recreation that does not impact on natural communities.

Principle 4: Where reserves are adjacent to residential areas, ‘open space’ should be allocated where appropriate and designed to meet the recreational needs of the community to minimise adverse impacts on natural reserves areas. This is especially important where open space facilities for higher impact recreation activities are required. The Open Space Plan and Open Space Planning Team should be consulted regarding requirements of open Space.

Principle 5: Allow regular public access and recreational activities for nature based recreation as per Local Law No.15 (Parks and Reserves).

Principle 6: No recreation access to be given to those areas zoned as scientific conservation areas. This is specific to Nature Refuges (Coolynwinpin Nature Refuge).

7.14.1 Walking tracks

Principle 7: Where intra reserve walking tracks are planned or managed, the following Australian Standards for walking tracks should be considered (AS 2156.1-2001: Walking Tracks Classification and Signage).

Table 5. Walking Track Classification

Class	Conditions	Signage	Infrastructure	Terrain	Example[1]
1	1.2m wide, hardened surface, suitable for wheelchairs	Arrows at intersections and frequent interpretive signage	Lookouts, seats, and barrier rails	No previous walking experience required, ramps required if steps present	Access path in urban parkland
2	90cm wide, modified or hardened surface, few intrusions	Arrows at intersections and frequent interpretive signage	Lookouts, seats, and barrier rails	Gradient usually less than 1:10, no previous walking experience required	Nature circuit in urban park
3	Generally modified, sometimes hardened, less than 1.2m wide	Signage and track markers for direction only, limited interpretive signage	Specific safety/ environmental considerations only	Gradient usually less than 1:10 but with some steep sections, some natural hazards (eg: water crossings) potentially present	Well-trodden walking track
4	Generally distinct but without substantial modification to the	Minimal signage for management and directional purposes	Specific safety/ environmental considerations only	May require map/ compass skills, users to be self-reliant	Walking track in large Conservation Areas

	ground, fallen debris/ obstacles likely				
5	Limited modification, track may be indistinct in places	Signage limited to management purposes	Specific safety/ environmental considerations only	Requires map/ compass and other specialised skills, users need to be self-reliant	Less-used walking track in a distant area of a Conservation Area
6	No modification of the natural environment	Not provided	Not provided	Requires high degree of competence in map/compass and other specialised skills, users need to be self-reliant	Little-used path in a remote area

7.14.2 Mountain Bikes

Bicycle riding is an appropriate recreational activity in parks and reserves and a legitimate, nature-based activity.

Principle 8: When constructing or closing mountain bike trails, consultation must occur between P&C, T&I, bushcare/trailcare group and other relevant mountain bike groups. Track formation/ closure must meet P&C operational and strategic requirements as priority.

Principle 9: Mountain biking will be encouraged in all parks and reserves where it is considered environmentally appropriate.

Principle 10: Trails constructed for the use of mountain bikes must also be compatible with, and may be used by bushwalkers. Signage should indicate that this is dual use.

Principle 11: Mountain bike use should be contained to trails designated as mountain bike compatible or general cycling compatible trails.

Principle 12: Where construction, upgrade or management of specially designated mountain bike trails is to be undertaken, refer to IMBA (International Mountain Bicycling Association) trail construction and management principles. Additional resources may be found on the IMBA website and the MTBA (Mountain Bikes Australia) websites (see Section 11 for web links).

Principle 13: An assessment sheet (based on IMBA design rules) should be developed and utilised to assess and guide:

- The construction of new tracks

- Assessment and upgrade of existing track sections where they do not meet guidelines

Principle14: Formation and maintenance of Bushcare/trailcare group should be based on engaging locally run groups first.

Principle 15: That track closures, maintenance and design must be based on understanding of broader strategic network of tracks within and between the city's conservation reserves.

Principle 16: Stay out of streams and wetlands unless crossing by direct route (See Principle 14). Mountain bike tracks should not to be constructed within 30m of a waterway or area identified as being a sensitive area (e.g. riparian zone, littoral zone, bat colonies, high erosion areas etc).

Principle 17: To protect water quality and habitat, only cross streams where absolutely necessary. Where crossings are necessary, use natural rock features or bridges. If a track is considered essential to cross a watercourse, it must be sited to cross by the shortest and most environmentally considerate route.

Principle 18: Bridges and other track infrastructure for dedicated mountain bike trails (singletrack) should be constructed of' natural' material consistent with natural elements of the environment and be consistent with IMBA guidelines. For example, where short crossings are required, a large log can be laid across the steam (not to block water flow) and the top flattened with the use of a saw.

Principle 19: The degree of difficulty for the mountain bike experience should be determined as per the following table: Trail Difficulty Rating System.

Table 6. MTB trail classification -Source: IMBA, 2007

	Easiest (may include fire trails) 	***Easy (may include fire trails)*** 	***More difficult*** 	***Very difficult*** 	***Extremely difficult*** 
Trail width	1800 mm or more	900 mm or more	600 mm or more	300 mm or more	150 mm or more
Tread surface	Hardened or surfaced	Firm and stable	Mostly stable with some variability	Widely variable	Widely variable and un[predictable
Average trail grade	Less than 5%	5%or less	10%or less	15% or less	20% or more
Maximum trail grade	Max 10%	Max 15%	Max 15% or greater	Max 15% or greater	Max15% or greater
Natural obstacles	None	Unavoidable obstacles	Unavoidable obstacles	Unavoidable obstacles	Unavoidable obstacles

and technical features (TTF)		50mm tall or less	200mm tall or less	400mm tall or less	400mm tall or greater
		Avoidable obstacles may be present	Avoidable obstacles may be present	Avoidable obstacles may be present	Avoidable obstacles may be present
		Unavoidable bridges 900mm or wider	Unavoidable bridges 600mm or wider	May include loose rocks	May include loose rocks
			TTF's 600mm high or less, width of deck is greater than ½ the height	Unavoidable bridges 600mm or wider	Unavoidable bridges 600mm or narrower
				TTF's 12mm high or less, width of deck is less than ½ the height	TTF's 1200mm high or greater, width of deck is unpredictable
				Short sections may exceed criteria.	Many sections may exceed criteria

7.14.3 Horses

Council understands that there are large numbers of horse riders in the city who seek venues for satisfying nature riding experiences. However, it is also recognised that horses may not be compatible with all parts of the landscape and may in some cases cause degradation of biodiversity values and experience of other users. As such, the following principles have been outlined to minimise impacts that horse based recreation that has limited impact on natural communities whilst still recognising this user group's needs.

Guiding intent

Protected areas are managed primarily for the conservation of natural and cultural resources, and non-native animals are not generally compatible with the management principles defined in the Nature Conservation Act 1992.

Desired outcomes

The desired outcome is that reserves are not generally subject to the environmental impacts of horse riding. However, horseriding may be permitted on selected conservation reserves where this use is considered environmentally and socially appropriate. Provision of these services will be guided by EDAW principles (Appendix 1).

Principle 20- When considering horseriding the following factors need to be taken into account:

Community factors

- The extent to which horseriding has been established and accepted actively in the protected area, especially by the local community;
- The level of use which may be anticipated if horseriding is officially permitted; Alternative opportunities for horseriding in the district; and
- Potential problems of access and parking (eg people with horse floats adjacent to the area).

Environmental factors

- The current level of disturbance, especially weed invasion, water pollution and land degradation;
- The resilience or vulnerability of the ecosystem/s in question to cope with increased trampling, nutrient input, weed sources etc resulting from horseriding. Specifically, the slope, soil type, drainage and rainfall patterns, presence of rare or threatened plants or animals, and function of the areas as a water catchment needs to be considered;
- Anticipated effects on native plants and animals, including the possibility of introducing pathogens (eg phytophora).

Management considerations

- Current or projected conflicts between horseriders and other park users and the potential to resolve these conflicts;
- The existence of suitable trails and places for horses to be tethered watered and fed;
- Suitable rest, picnic and toilet facilities for anticipated numbers of riders;
- The ability of management to define the permitted area and enforce and to enforce any restrictions considered necessary;
- The potential for accidents to horseriders or other users of the area; and
- The cost associated with the management of horseriding and environmental protection.

Principle 21: Horses are to be kept to fire trails. Horses, pedestrians and bikes can use fire trails whereas ‘single track’ can only be used by pedestrians and bikes.

Principle 22- Horseriding should only be permitted where it is considered there will be minimal impact to the environment and little conflict with other users of the area. The considerations for deciding what areas may be suitable for horseriding must include:

- The restriction of horses to existing fire trail systems (Horses are known to create or exacerbate erosion due to high weight to foot area ratio and hard hooves);
- Limits of the total numbers and groups size of riders;
- Restricting the use of tracks when they are wet; and
- Restricting the use of tracks to certain times of day.

Principle 23: Where horseriding is to be permitted, a regulatory notice must be erected and specify the areas to which the notice applies and the intent for horse use. This is also to inform other uses (for safety reasons) that horseriders may be using the area.

Principle 24- Horse riding may be permitted as per provisions of Subordinate Local Law No. 2 (Animal Management) 2007 Section 33.

7.14.4 Motor Bikes

Principle 25: Motor bikes are not currently approved to be ridden in any Council reserve.

Principle 26: Research into appropriate sites for motor bike use should be established via robust empirical studies.

Principle 27: Council should work with user groups to limit environmental impacts associated with unlawful use of motorbikes in reserves. This may be achieved through education and engagement of unlawful users into recognised clubs.

7.14.5 Orienteering and Rogaining

Council recognises the use of reserves for off-track cross country navigational activities conducted by orienteering and rogaining groups

Principle 28: For an organisation to conduct such activities it may be necessary for representatives to prepare detailed maps and plan the layout of courses.

Principle 29: When issuing permits for such events Council may consider:

- Conflict of use- whether the proposed activity will interfere with others.
- Fire management- whether some or all of the reserve is scheduled for burning in the week of the event or has been recently burnt and the possibilities of tree or branch fall in the burnt sections.
- Assembly areas and numbers participating- whether there is a suitable assembly areas to accommodate the number of persons and their vehicles expected to attend the event, and whether the number of participants will be sufficiently dispersed to minimise impact through trampling in the forest.
- Sensitive areas- Whether there are sensitive areas or rare and endangered species that should be declared out of bounds for the event.
- Safety- whether the organisers have made adequate provision for first aid and search and rescue in the event of an incident involving injury or of a displaced person not returning from a course by closing time.
- Insurance- Whether the organisation conducting the event provides insurance protection for the landholder.
- Control markers- Control site markers and any necessary signage must be of a temporary nature, tied but not nailed to trees, shrubs and fixtures and removed immediately after the conduct of the event.
- The event must comply with Local Law No 15 (Parks and Reserves).

7.15 Climate change and management of conservation reserves and biodiversity

Relevant to Conservation area										
Principle	CA&CP	NR	BR	NB	CC	UH	CF	W	DR	RR
1							Y	Y		
2							Y	Y		
3	Y						y	Y	Y	
4	Y	Y	Y		Y	Y	Y	Y	Y	
5	Y	Y	Y	Y	Y	Y				
6	Y				Y			Y	Y	
7							Y	Y		
8	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
9	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
10	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
11	Y	Y	Y	Y	Y	Y	Y	Y	Y	
12	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
13	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
14							Y			
15	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
16	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
17	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Climate change is now established as a significant threat to conservation reserves and the biota they encompass. Climate change cannot be defined as going to happen by any particular date. However, changes to ecological systems are inevitable. The capacity of the city's reserves to buffer against climate change aspects such as temperature rise, sea level rise, and ingress of biota not normally found in this region will become more significant. When planning conservation reserves and the surrounding landuse impacts managers should consider the following:

7.15.1 Water rise issues

Principle 1: Planning and infrastructure provision must take into account effects on nesting sites for marine/ littoral zone species such as water mouse and turtle nesting sites in regards to reduction of habitat landward.

Principle 2: Planning of reserves must allow for general reduction in extent and condition of RAMSAR sites and wader bird roosts.

Principle 3: Planning, siting and management of reserves must consider the potential reduction in extent of 12.1 and 12.2 Regional Ecosystems due to water rise.

Principle 4: Planning, siting and management of reserves must consider effects on 12.3.6 and other 12.3 REs as salt water ingresses further inland with possible associated changes to pH values.

Principle 5: Planning, siting and management of reserves must consider growing pressure to develop on higher ground with associated pressure on inland reserves.

Principle 6: Planning, siting and management of reserves must consider loss of habitat connectivity along littoral zones and low lying riparian corridors (12.3 Regional Ecosystems).

7.15.2 Temperature issues

Principle 7: Management of foreshores should consider potential changes in species composition of mangroves is likely to occur as temperature increases. Species composition is likely to increase as warming occurs.

Principle 8: Endangered species, sedentary species, species with narrow habitat niche and sensitive ecosystems will be most affected whilst robust ecosystems will survive leading to changes in overall changes in the city's biological composition from species to landscape level. Planning, management and siting of reserves must allow for the maintenance and enhancement of habitat that allows for longer term dispersion and survival of species that are sensitive to temperature and general climate change.

Principle 9: General ecosystem monitoring must allow for the identification of new pests and disease. Temperature changes are also likely to change affect the presence or absence of pathogens and pests and potential for ingress of species we are not usually exposed to such as jellyfish and crocodiles moving southward. That is, some reserves may get populated by species not already present in the City.

Principle 10: Research into individual plant management should include monitoring changes in reproductive capacity and timing of reproduction associated changes to pollinators and fauna through climate change.

Principle 11: Fire regime changes are likely which may expose some sensitive ecosystems to retrogressive changes.

Principle 12: Changes in general Regional Ecosystems eg woodland to rainforest may occur. It must be decided whether to try and buffer these communities or let retrogressive of progressive processes occur.

Principle 13: Reserves should be assessed for their refuge value for climate sensitive animals and plants.

7.15.3 Weather

Principle 14: Destabilisation and remobilisation of dune systems – blowouts caused from extreme weather. Management practices should not increase risk of destabilisation of dune systems.

Principle 15: Appropriate ecological risk management procedures should be developed via research, for reserves for managing flooding /erosion and broad scale vegetation damage from cyclones and extreme weather events.

7.15.4 Planning

Principle 16: The 'unknowns' management of conservation areas must allow for the identification and protection of biodiversity and ecosystems. This may entail identifying

areas that need to be defended and collection and storing for genetic diversity as well as 'biological insurance' systems. Land use planning must thus allow for predicted changes caused from climate change and their regional and localised effects on ecosystems.

7.15.5 Regional Ecosystems

Principle 17: Table 7 indicates Regional Ecosystems at risk from climate change and should be considered when applying long term planning and management of reserves.

Table 7. Regional Ecosystem Threats

THREATS (1-3) 3 HIGHEST					CONSIDERATIONS (1OR 0)			OVERALL RISK RATING HIGH MEDIUM LOW
Regional ecosystem	**Sea level/tidal effects**	**Fire**	**Drought**	**Risk of local extinction**	**VM status-OC/E**	**Bio Status OC/E**	**Sensitive or VER flora/Fauna eg limits of range/ specific niche requirements**	
12.1.1	3			3	1	1		**8**
12.1.2	3			3				**6**
12.1.3	1.5			1				**2.5**
12.2.1	1.5	3	3	3	1	1	1	**13.5**
12.2.2	2	3	3	3	1	1	1	**15.5**
12.2.5	1.5	1	1	1		1		**5.5**
12.2.5a	2	3	2	2		1	1	**11**
12.2.6		1	1.5					**2.5**
12.2.7		1	2.5			1		**4.5**
12.2.8		1.5	1					**2.5**
12.2.9		1	1.5					**2.5**
12.2.10		1	1					**2**
12.2.12		1	2					**3**
12.2.13	2	1	1	1	1	1	1	**8**
12.2.14	1.5							**1.5**
12.2.15	3	1	2	2			1	**9**
12.2.16					1	1		**2**
12.3.1		3	3	3	1	1	1	**12**
12.3.5	3 (lower reaches)	1	3	2	1	1	1	**12**
12.3.6	2 (lower reaches)	1	2	1			1	**6**
12.3.8		1	2.5	1.5	1	1		**7**

12.3.11		1.5	1		1	1		**4.5**
12.3.13	3	1	2	2	1	1		**10**
12.5.2		1.5	1	2	1	1		**7.5**
12.5.3		1	1	2	1	1		**6**
12.5.9	1	1	1	1	1	1	1	**7**
12.9-10.4		1	1					**2**
12.9-10.17		1	1					**2**
12.9-10.17a		2	1.5	1				**4.5**
12.9-10.19a		1	1					**2**
12.11.3a		1	1					**2**
12.11.5		1						**1**
12.11.5a		1						**1**
12.11.5e		1						**1**
12.11.5h		1						**1**
12.11.5j		1	1					**2**
12.11.5k		1						**1**
12.11.10		3	3	3			1	**10**
12.11.23		1	1	1	1	1		**5**
12.12.14		1	1	3-Classed as extinct in city although fragments exist	1	1		**8**
12.12.19		1			1	1		**3**

7.16 Cultural heritage

Relevant to Conservation area										
Principle	CA&CP	NR	BR	NB	CC	UH	CF	W	DR	RR
1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Heritage sites listed under legislation

Principle 1: Projects related to acknowledged listed cultural heritage sites must not impact on the heritage values associated with the site and as defined in the cultural significance statements associated with the listing of the site.

Management of cultural heritage sites will be in accordance with the following defined cultural heritage management principles. *The Australia ICOMOS Charter for the Conservation of Places of Cultural Significance adopted 1979).* Any work that is consider may impact on cultural heritage should not be undertaken without direct consultation with the Redland City Council Environmental Management Group, Community and Social Planning, Local Historian, DERM and traditional (Aboriginal) owners. Works that are proposed for places of registered or known or potential cultural significance should be undertaken as per requirement of legislation or cultural heritage agreements. The following table outlines major areas in Redland City under known agreements and/or cultural heritage legislation. It should be noted that other specific sites may have Federal, State or Local Heritage protection. If in doubt, heritage registers should be consulted. Exemption certificates for some works may be

Table 8. Heritage Related Documents

Area or location	Documents	Location of document
Point Lookout	Point Lookout Cultural Heritage Agreement. Aboriginal Cultural Heritage Act 2003 Qld Heritage Register.	Environmental Management State State
Point Lookout Gorgewalk	Conservation Management Plan- Point Lookout Gorgewalk (Draft)	Environmental Management
Cylinder Beach	Conservation Management Plan- Cylinder Beach Reserve (draft)	Environmental Management
Weppin Street Conservation Area	Weppin St Cultural Heritage Agreement	Environmental Management
Serpentine Creek Cemetery	Qld Heritage Register.	State
General heritage sites	Qld Heritage Register.	State/website
	Redland City Council	RCC website

	heritage register	
	Aboriginal Cultural Heritage Act 2003	State
	Queensland Heritage Act 1992	State
	Indigenous Community policy POL-3081	Redland City Council
	SEQ -Natural Resources Management Plan- target to involve indigenous community in Natural areas management.	State
	Exemption Certificates for minor work	State website

Principle 2: Indigenous connections to country and all stakeholders roles and responsibilities should be acknowledged and supported when making decisions about land management.

Discovery of potential culturally significant artefacts and landscape elements

Principle 3: Leave artefact/landscape elements insitu/alone and mark position and protect site if necessary. Inform RCC Parks and Conservation, Environmental Management and Local Historian. Note: an artefact may be something made by human beings, such as a tool or a work of art but may also include anything that be reasonably considered to have aboriginal connection or cultural significance.

Management of known general cultural elements

Principle 4: In cooperation with Redland City Council, Bushcare, monitor integrity of site components for degradation. Any proposed works must be approved by Council via Social and Community Planning and Environmental Management. Maintenance should only be undertaken where the fabric of cultural significance and its maintenance is necessary to retain that cultural significance as per the Burra Charter.

Management of sites with cemetery monuments

Principle 5: All actions related to the care and repair of cemetery monuments must consider 'Redland Shire Cemeteries, Conserving the cemetery monuments. Condition and conservation needs of the cemetery monuments and training of volunteers' (David Young, 2005). (Available from RCC on request).

7.17 Interpretive and other regulatory signage

Conservation area										
Principle	CA&CP	NR	BR	NB	CC	UH	CF	W	DR	RR
1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Principle 1: Each access should have a regulatory sign that is pictorial, easy to read and is positive in its message.

Principle 2: Interpretive signage should aim to engage the community to both increase their awareness and highlight their responsibilities to protecting their surrounding environment.

Principle 4: Encourage other forms of interpretation through other mediums to reduce signs.

Principle 3: Councils Signage manual should be used for all signs associated with reserves.

Council has developed a signage manual to be used whenever signage is required. The signage style manual gives information about Council's visual identity standards for Parks and Conservation and Corporate Signs. This manual specifies clearly how the logo and design elements are to be applied to various signage requirements. These standards must be strictly followed to ensure that brand strength is maintained. It should be noted that this signage manual does not explicitly include safety signage.

This manual covers the following types of signs:

- Corporate Identification Sign
- Corporate Directional Signs
- Corporate Information Signs + Width Variations
- Parks and Conservation Sub Brand Icons (Sports Parks ,Recreation Parks, Conservation Parks, Catchment Areas, Community Bushcare)
- Wildlife Awareness Icon Manufacture
- Parks and Conservation Identification Signs
- Parks and Conservation Directional Signs
- Parks and Conservation Information Signs (Icon Placement + Support Authority Logo Placement, Catchment Areas, Wildlife Awareness & Community Bushcare Information Sign Exception)
- Parks and Conservation Interpretive Signs (Catchment Interpretive sign)
- Parks and Conservation Walking Track Signs(Route Markers, Finger Boards, Trail Courtesy and Totems)
- Parks and Conservation Bicycle Track Signs (Route Markers)
- On Road Bicycle Signs - Australian Standards (Route Markers, Bicycle Parking Signs)

7.18 Safety signage[1]

Relevant to Conservation area										
Principle	CA&CP	NR	BR	NB	CC	UH	CF	W	DR	RR
1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
8	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
9	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
0	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
10	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
11	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
12	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
13	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
14	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
15	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
16	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Principle 1: Safety signage will be used primarily to reduce risk of visitor injury or death, and also reduce the liability of Council when accidents occur.

Principle 2: Signs will be part of a coordinated risk management program following a risk assessment.

Principle 3: The use of signs will be managed to be compatible with the provision of desired visitor experience.

Principle 4: Safety signage is all or any of the following categories levels 1-4

- **Level 1- General Safety information sign**: General safety information provided on stand-alone signs or as part of interpretive signs or displays (See RCC Signage manual also).

General safety warnings will be included near the entrance to a park or reserve, camping area or walking track. Wherever possible, safety messages should be incorporated into a larger orientation sign or wayside sign. The safety section should be distinct from the rest of the sign. Messages should cover the major risks people may take in the area. Appropriate behaviour to minimize these risks and prevent accidents should be advised.

- **Level 2- 'For your safety' sign**; Specific signs advising of risk features in a less severe manner than warning and danger signs

These signs will advise visitors of specific risks and appropriate behaviour to avoid injury. They will be placed along tracks or beaches and at picnic areas, lookouts or waterbodies where a specific hazard has been identified through a risk management assessment.

[1] *The principles outlines here support RCC's Risk Management Framework and Risk Management Standard AS/NZS-4360.*

They will be used where the assessment identifies that:

i. The danger is not extreme enough to justify a warning or danger sign; or
ii. There are so many hazards in the areas that warning and danger signs would become inappropriate; or
iii. The hazard is located in an area identified as being generally inappropriate for warning and danger signs.

- **Level 3**- d**anger sign:** A sign warning of high risk situations that may lead to serious injury or death.

Warnings signs convey the same content as danger signs (Level 4) but are located on approach to the danger area rather that at it. It identifies a serious warning where a high to very high risk of serious accident has been identified. They can be used in most management settings and track classes. Their appearance is intended to have high impact.

- **Level 4- danger sign**: A sign warning of high risk situations that may lead to serious injury or death–used where there have been one or more serious or fatal accidents.

These are located at the danger site and display the same information as Level 3 signage. Danger signs give a serious warning where a high to very high risk of serious accident has been identified and where there have been one or more serious or fatal accidents e.g. Pt lookout. They can be used in most settings and track classes. Their appearance is intended to have high impact.

Principle 5: Use and placement of signage will be decided according to management setting (considering the site character, the ease of access and expectation of self reliance at different sites) balanced with the consequences and likelihood of the risk (considering the risk assessment and accident history).

Principle 6: As a guideline, signs may be placed according to the use and intent of the area. In easily accessible sites with facilities, visitors should be warned where there is an easily identified ‘substantial’, ‘high’ or ‘very high’ risk. Conversely, in areas with a remote or wilderness character, there should be no safety signs except in extreme circumstances. Sites which can only be reached by extended periods of walking (even if services by a graded track system) should be kept free of signage.

Principle 7: Safety signage relating to remote areas should be placed at entrances or junctions on the boundary of a more developed management setting. This may some distance form the risk feature. It may be desirable to advise visitors when they are entering a zone where there may be no signage and where they are expected to make their own judgments of risk.

Principle 8: Remote sites with a high level of usage and a repeated history of very serious or fatal accidents may require on site danger signs regardless of the accessibility of the sites. For example, Point Lookout Gorgewalk has known danger spots and is very accessible and requires danger signage in particular sites.

Principle 9: All signs must be placed so they are clearly visible to passers by, but not excessively obtrusive. Warning and Danger signs need to have high impact, but should not interfere with the visitor experience. For example, where a track leads out to a cliff, signs should be placed against vegetation before the visitor reaches the exposed site, rather than obstructing the view at the cliff edge.

Principle 10: Appearance and wording of Warning and Danger signs must:

i. Inform people of the nature of risk;
ii. Inform people of the possible consequences of certain actions (eg serious injury or death);
iii. Inform people of how to prevent injury (eg do not dive, stay away from cliff) and
iv. Incorporate a pictogram.

Principle 11: Signs must be maintained in a readable state and located where they are visible and easily read.

Principle 12: Risk assessments should be carried out on all reserves as part of integrated strategy of risk management.

Principle 13: Safety signs should not be regarded in isolation, but as part of the total park signage system. A sign plan should be developed or amended for each reserve to incorporate safety signage as required.

Principle 14: Sign design and approval and sign requests are to be handled by Operations and Maintenance in conjunction with Environmental Management and Risk and Liability services with reference to Council signage manual.

Principle 15: Signs should be erected according to specifications in Councils signage manual.

Principle 16: Maintenance of safety signs must be high priority in Council operations and addressed risk management sign planning. In areas more prone to fire or vandalism, it may be most cost efficient to produce more than one copy when ordering original signage to facilitate rapid replacement.

7.19 Endangered species

Relevant to Conservation area										
Principle	CA&CP	NR	BR	NB	CC	UH	CF	W	DR	RR
1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
8	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
9	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
10	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
11	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
12	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
13	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

7.19.1 Identification

Principle 1: Endangered species locations should be identified through prior knowledge, systematic survey or incidental sightings and recorded with Environmental Management.

Principle 2: Educate Council crew on how to identify known endangered species, scratchings, scats etc. and what community types/ reserves in which they are most like to occur.

Principle 3: Possible sightings should be immediately reported to RCC Environmental Management Group and identity validated by Queensland Herbarium and Queensland Museum.

Principle 4: The following table should be used as a guide to listed plant species found in the City.

Table 9. Species of Concern

Scientific name	Common name	NCA status	EPBC status	RPS status
Melaleuca irbyana			CE	S
Corchorus cunninghamii	Native jute		E	S
Olearia hygrophila	Swamp daisy	E	E	S
Phaius australis	Lesser swamp orchid	E	E	S
Phaius bernaysii	Golden swamp orchid	E	E	S
Acacia baueri subsp. baueri		V		S
Acacia fimbriata var perangusta	Eprapah wattle		V	S
Baloghia marmorata	Marbled baloghia		V	
Bosistoa selwynii	Heart leaved bosistoa		V	
Bosistoa transversa	Three leaved bosistoa		V	
Cryptostylis hunteriana	Leafless tongue-orchid		V	
Hydrocharis dubia	Frogbit		V	
Macadamia integrifolia	Small fruit Queensland Nut	V	V	S
Marsdenia coronata	Slender milkvine	V	V	
Marsdenia longiloba	Clear milkvine		V	
Prasophyllum fuscum			V	
Thelypteris		V		S

confluens S				
Blandfordia grandiflora	Christmas bells	R		S
Durringtonia paludosa	Durringtonia	R		S
Leptospermum purpurascens		R		
Schoenus scabripes		R		
Endiandra floydii				S
Phaius tancarvilleae	Swamp orchid			S
Amorphospermum whitei				S
Caustis blakei subsp macarantha	Foxtails			S
Halloragis exaltata				S
Macadamia tetraphylla	Macadamia Nut			S
Eucalyptus curtisii	Brisbane or Plunkett mallee			S
Parastilochia praevenosa				S

Sources: NCA Status = Nature Conservation Act (Qld) status sourced from EPA Wildlife online Extract; EPBC status = Environment Protection Biodiversity Conservation Act status sourced from Protected matters online report; RSC Status – Redlands Planning Scheme Policy 4 status from Redlands Planning Scheme Policy 4.
CE = Critically endangered; E = Endangered; S = Locally significant species; V = Vulnerable; R = Rare

7.19.2 Threats

Principle 5: Protect actual and potential habitat of species of known endangered species.

Principle 6: Secure an appropriate level of protection for the habitat of existing populations.

7.19.3 Protection

Principle 7: Possible or validated sightings or locations of EVR species are not to be made pubic without the express permission of Environmental Management Group manager.

Principle 8: Known sites or areas with ‘Listed’ species populations should be afforded regular six monthly monitoring and treatment of risk factors that may affect the population.

7.19.4 Management

Principle 9: For monitoring and management purposes, locations of known endangered species must be identified via GIS layers and a proxy landmark.

Principle 10: Maintain or enhance existing populations through genetically appropriate population management.

Principle 11: Rehabilitate habitat where populations occur.

Principle 12: Seek opportunities for creating other populations within the City in the appropriate Regional Ecosystem.

7.19.5 Urban koala habitat management

Principle 13: Protect and support urban koala populations through vegetation management and enhancement.

7.20 Fire Management

Relevant to Conservation area										
Principle	CA&CP	NR	BR	NB	CC	UH	CF	W	DR	RR
1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
8	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
9	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
10	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
11	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
12	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
13	Y	Y	Y	Y	Y	Y	Y	Y		Y
14	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
15	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
16	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
17	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
18	Y	Y	Y	Y	Y	Y	Y			
19	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
20	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
21	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
22	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
23	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

7.20.1 Overarching Principles

Principle 1: Fire operations managers should aim to answer the question of 'what are we managing for?' This is fundamental to fire management planning and operations.

For most fire adapted habitats there is the general acceptance that an appropriate approach is one of mosaic burning- the aim being to create spatial and temporal variation in the fire regimes (frequency, intensity and season) at the landscape level

across fire - prone communities. Given that many flora and fauna species have adaptations to living in a fire prone environment and that different species prefer different successional stages, it is reasonable to undertake active and adaptive management that seek to provide for the diversity of requirements of those species.

A diversity of fire regimes will generate a diversity of habitats and thus support a diversity of species. This approach is also likely to minimise widespread and damaging wildfire. Current information suggests (source FABCON) that, as a minimum 10% of fire prone communities expressed as an area will need to have fire applied to them to maintain ecological processes and keep fuel loads to an acceptable level in terms of community safety.

Principle 2: Fire management must be undertaken within legislative guidelines and balance the requirement to protect life, property and the environment.

In undertaking fire management within bushland/ conservation area estate, Council is fulfilling its legislative requirement under the *Queensland Fire and Rescue Authority Act (1990)* to prevent fires from escaping Council land and ensuring fire hazards are reduced. In addition, there is a recognised need to implement ecological sustainable management of Council's bushland parks to ensure that there is a balance between protection of life and property and the maintenance of biodiversity.

Principle 3: Fire management must be undertaken in a whole of landscape approach, through a system of zoning, and managed in a manner that protects maintains and enhances biodiversity with consideration for specific vegetation and fauna communities.

That is, fire blocks or management zones are identified through vegetation community types with tracks and trails identified through these communities allowing them to be broken into management zones previously called blocks. Single trails and fire access trails should be used for fuel reduction, fire suppression or ecological burns thus providing the mosaic approach. Mosaic approach requires that within and between these zones there is variability in intervals between fires, time of fire, and intensity of fire.

Fire management for flora, fauna and recreational values of Council reserves needs to be done in significant consideration and cooperation with the fire management practices of neighbouring properties; this includes both private and public land.

Principle 4: Council will work with QF&RS officers to deliver consistent fire education messages and programs.

The education and awareness raising of residents is essential to prepare community for the impact of wildfires and to create a greater understanding of the role of fire in the environment.

Principle 5: Council will work in partnership with all areas of the QF&RS to provide training and research opportunities to develop a greater understanding of fire in the environment and improve fire fighter knowledge and safety.

Principle 6: All fire management should include continuous monitoring for fuel load, fuel structure, vegetation community changes, fire history, fire intensity, fire patchiness, fire

weather. All fire related data should be recorded in a format that increases Councils capacity to manage fire and which is compatible with other agencies data sets.

The SEQ Fire and Biodiversity Monitoring manual should be used as a minimum requirement for data recording with the results send to SEQFAGC on a regular basis.

Principle 7: Where information is required, the latest information must be consulted including: Bushfire Hazard Planning Review, Review of the bushfire hazard overlay Code, the Redland Planning Scheme V3, Conservation Fire Management Framework and Operational Guidelines 2009 and Individual Fire Action Plans (2009). P&C and EMG should also be consulted.

Principle 8: A Risk Management Framework needs to be taken in the approach to fire management. This frame work needs to cover:
A. Research, information and analysis;
B. Risk Modification;
C. Readiness;
D. Response; and
E. Recovery.

7.20.2 Fire Management Zones (Source - QPWS Fire Management Systems 2003)

Principle 9: Council Managed bushland must be zoned as follows to ensure consistent management over time of these areas. Note: Not all zones will be necessary in all bushland areas.

Table 10. Fire Management Zones

Fire management zone	Purpose	Guidelines	Fire regime
Asset Protection Zone (Fuel Reduction Areas)	To create an area of reduced fuel to provide a high level of protection to life, property and infrastructure. The zone therefore typically abuts or surrounds property and key infrastructure and in some cases the whole of an area may be designated as a Protection Zone (e.g. the whole 'yard' area of the protected area headquarters rather than just a 'strip' around it). It may also be used along sections of a boundary where fires are known to regularly enter or leave the protected area. In most cases it will not be possible, necessary or desirable to maintain a Protection Zone around the entire boundary of a protected area. (The width / size of the zone needs to be indicated on a map and also stated as a width measurement on a side table.) It may sometimes be necessary to create an area of reduced fuel around sensitive natural and cultural resources for which fire exclusion is critical. For example, a fire sensitive community would be placed in an Exclusion Zone but to achieve this it may be appropriate to surround it and a buffer area with a Protection Zone. Fuel can be reduced by burning or other means e.g. mowing.	• Fuel loads will be managed to enable wildfires to be contained under fire weather conditions which are typical for a particular area and season. • Tracks which allow ready access to fire fighting vehicles may be maintained in this zone but the use of other features, such as fuel and vegetation moisture gradients, to contain fire is encouraged. • All hazardous fuels which are likely to jeopardize wildfire suppression, in particular back-burning operations, must be removed from the area or if they are an essential part of the work environment they must be maintained according to work place health and safety standards (e.g. fuel-free zone around flammable chemicals).	Intensity: low Season: cooler months or any conditions which will ensure a low intensity burn Frequency: as often as there is sufficient fuel to carry a fire. Mechanical fuel management (i.e. slashing) may be used in situations where fire is not appropriate.

Wildfire Mitigation Zone	The location and management of these zones is aimed at increasing the likelihood of controlling a wildfire in strategically important areas within the protected area. The zone will often be located adjacent to a Protection Zone to provide maximum protection to life and property. The zone may also be used to reduce the potential for extensive areas to be burned in a wildfire and the likelihood of fires escaping from the protected area. They should, therefore act to slow the spread of wildfire and thereby facilitate the implementation of wildfire suppression operations. They may be established along the boundary, particularly where the level of risk is too low to warrant a Protection Zone. Where consistent with the primary objectives of a Wildfire Mitigation Zone, it should be managed to conserve biodiversity. Wildfire Mitigation Zones will be most effective when the surrounding fire-prone vegetation has been burned in a mosaic pattern (refer to Conservation Zone).	• Fuel loads are to be maintained in a mosaic pattern ranging from low to moderate. • As far as possible the zone should be wider than the average spotting-distance to be expected in a 'normal' fire season. Desirable width will vary from one location to another but may need to be up to 1 or 2 km, in some sensitive, high risk areas. • Wherever practicable/acceptable this zone will be located to take advantage of natural fire control lines. • The zone should be burned in sections to generate a mosaic burn pattern such that the vegetation is not simplified to a single age class but maintains the ecological values of a range of age classes (within the constraints of the primary purpose of the corridor). • It is preferable for this zone to be bordered by well defined and accessible vehicle tracks on all sides, but in particular the edge along which most wildfire suppression activities are likely to be required.	Intensity: consistent with the ecological requirements of the vegetation communities Season: consistent with the ecological requirements of the vegetation communities Frequency: within the range acceptable for the ecological requirements of the vegetation communities but generally towards the shorter end of that range.
Conservation Zone	The purpose of fire management in this zone is to maintain the natural role of fire as an ecological process in vegetation communities and fauna habitats. Habitat diversity is critical to the maintenance of fauna diversity (Recher 1986). In fire-tolerant communities the most widely accepted	• This zone is usually located in areas remote from assets and property. • The purpose of planned burns is to produce and/or maintain a mosaic pattern of vegetation with areas of varying age since fire. Ideally, areas	The fire regimes applied in this zone will vary according to the ecological requirements of the flora and fauna communities present in the zone, and

	means of achieving this is to burn in a highly variable, mosaic (or patchwork) pattern. Each community needs to be 'broken up' into a complex system of interlocking patches, each with a different fire history. These patches must provide a high degree of variation in fire-interval within each vegetation community (consistent with its ecological limits). Some of each community should be left for the maximum fire free interval (consistent with its ecological limits) to facilitate formation of tree hollows, accumulation of litter and logs and to enhance soil formation and stability. How much should be left will depend on the regional context (e.g. the protected area may be surrounded by lands burned at short intervals), extent of the community and the requirements of the flora and fauna comprising the community. To establish such a mosaic requires the use of natural as well as artificial fire control lines, taking advantage of suitable weather conditions (such as high soil moisture and dew), as well as considerable time and effort. Once established however, a mosaic is easier to manage because previously burnt patches act as barriers to assist with containment of each patch burn (Stanton 1993). Burning in this way also allows strategic selection of areas that can remain long unburnt without increasing the fire risk to life and property. Management of this zone indirectly supplements the objectives of the other zones including the Protection Zone and the Wildfire Mitigation Zone. Events/practices which are likely to promote weed invasion (e.g. lighting off road edges) should be avoided.	of the same or similar age will be linked across the landscape to allow movement of fauna which may be dependent upon the particular habitat type created by a vegetation type of that age class. • Strategically located tracks, natural fire control lines and previously burnt vegetation will be used to contain planned burns in this zone. • As mosaic burning practices become well developed the reliance on tracks and other constructed control lines should diminish because fires (planned burns or wildfires) can be allowed to burn until they reach areas where the fuel has previously been reduced and the fire can be more easily controlled (Stanton 1993).	take into account the requirements of cultural resources.

Rehabilitation zone	This zone should encompass areas which are intended to be included in a Conservation Zone in the future but whose current management is aimed at combating a threatening process which can not be addressed by the 'usual' fire management practices used in a Conservation Zone to promote and maintain biodiversity.	• The zone will only encompass areas where disturbance has resulted in a highly modified environment which is to be rehabilitated to its original state (or some other more natural state) and where fire exclusion or manipulation is required to achieve this aim. • The zone should be bounded by fire control lines (preferably temporary, if not natural) or a surrounding buffer should be burnt in such a way so as to minimise the risk of the rehabilitation Zone being burned in an inappropriate way.	The fire regime will be determined by the particular needs of the community or communities within the zone.
Reference zone	This zone is established to allow monitoring of the long-term effects of fire regimes, wildfires or fire exclusion on nature conservation values. Any Reference Zone established on a protected area should also have a documented and approved research and/or monitoring project/s. Not all protected areas will require a Reference Zone/s.	• Representative areas of vegetation communities/habitats, of adequate size (the size will depend on the research/ monitoring program to be undertaken), should be included in this zone. • The zone, or buffer around the zone, must be bordered by existing roads, tracks or natural control lines to facilitate the exclusion of unplanned fires from the area. • Wherever practicable/appropriate, the zone will be located in close proximity to Protection and/or Wildfire Mitigation Zones because the planned burning of these areas will maximise the protection of the Reference Zone. • It is generally advisable to distribute the Reference Zones widely across a protected area	

		to minimise the potential for all the areas to be burnt in a wildfire. • Every reasonable precaution should be taken to ensure that Reference Zones can be adequately protected from unplanned fires. • Active wildfire suppression will be carried out, if possible, when Reference Zones are threatened, unless a wildfire will achieve the purpose of the research/monitoring program being undertaken in the zone. • Ideally the fire history of each Reference Zone should be accurately known. • A thorough (preferably quantitative) vegetation (and in some cases fauna and other biota) assessment should be undertaken when the Reference Zone is first established. Monitoring should thereafter be undertaken on a regular basis. Results from the monitoring program must feed back into the Fire Strategy and Planned Burn Program. • Monitoring environmental conditions, including weather, is a critical aspect of Reference Zone management.	
Exclusion Zone	The objective for Exclusion Zones is the total exclusion of fire. To the greatest possible extent wildfires threatening this zone will be actively suppressed (protection of life will always be	The following community types will generally be included in this zone: − all rainforest types − mangroves, salt marshes, salt flats	Exclusion of all fire from the zone. Active suppression of wildfires threatening the zone.

	regarded as a higher priority).	− coastal foredune communities. • The following community types may be included in this zone (alternatively they may be included in a Conservation Zone) at least for the 'life' of the Fire Strategy:− riparian communities including those along dry creeklines. • Communities should not be included in this zone if, although not planned to be burned, no attempt will be made to prevent wildfires entering them. • A buffer zone, on both sides of the main bed of creeks/rivers, should be protected from fire to promote the recovery/development of riparian systems - these being critical fauna habitat. This may be difficult/ impossible to achieve in the short term and it may therefore be more appropriate to leave such areas within a Conservation Zone. Steps should be taken, where possible, to reduce the risk of these communities being damaged in a planned burn (e.g. light the fire away from the buffer; burn when soil moisture content is high). • It may not be feasible to include the aforementioned communities in the Exclusion Zone when they occur as small stands surrounded by vegetation communities requiring active management with planned burning. In these situations, the closed/wet communities are	

		likely to remain largely unburnt during planned burning operations because of their micro-climate (e.g. moister, cooler). Steps should be taken, where possible, to reduce the risk of these communities being damaged in a planned burn (e.g. light the fire away from the sensitive community). • Assets, other than vegetation communities/habitats may be included in an Exclusion Zone. e.g. cultural sites for which fire exclusion is critical.	

Principle 10: The following should be used as a guide to identify the management requirements of specific fuel reduction areas.

Table 11. Fuel Reduction Areas

Fuel Reduction Area Types							
Level of Protection & Firebreak Type No.	**Slope**	**FFZ (m)**	**FRZ (m)**	**Vegetation**	**Access**	**Constraints**	**Potential Situation**
1 Maximum use in areas of high risk to property	< 15°	15	5	Open forest in extreme fire risk areas adjacent to built assets or significant environmental assets.	• Suitable for large and small fire appliances. • Fire appliance to traverse along the entire length of break and to turn around easily. • Access available from both ends. • Duel directional access along break.	• Not suitable for erodible soils or steep slopes eg. >12 degrees. • Minimise erosion with water inverts and side drains. • Plan for reduced visual impact. • Removal of all fine and medium fuels.	A type 1 firebreak would be required in a large bushland park (> 40 ha) where the adjacent assets are in close proximity to the park boundary.
2 High Use in areas of high risk to property.	10^0><15^0	10	5	Open forest in extreme fire risk areas adjacent to built assets or significant environmental assets.	• Suitable for large and small fire appliances. • Fire appliance to access entire length. • Duel directional access along	• Suitable for most soils except those susceptible to erosion. • Minimise erosion with water inverts & side drains. • Plan for reduced	A type 2 firebreak would be required in a medium to large bushland park (<40 ha > 10 ha) where the protection of property is less than a type 1 situation.

					break.	visual impact.	
3 Moderate Use in areas of moderate risk to property.	5^0><10^0	5	<5	Open forest & woodland in fire prone areas	• Suitable for small fire appliances. • One-way access along break.	• Suitable for all soil types. • Minimise erosion with water inverts.	A type 3 firebreak would be required for medium bushland parks (10 ha) where the risk to property is relatively high.
4 Low moderate Use in areas of low risk to property.	< 5^0	5	0	Woodlands and grasslands in areas of low fire proneness. Can be used for internal firebreaks around fire management blocks	• Suitable for small fire appliances. • If used as fire management block boundary may only be suitable as a walking track. • One-way access along break.	• Suitable for all soil types. • Minimise erosion with water inverts.	A type 4 firebreak is for use in all bushland parks where the risk to property is low or the size of the bushland park is relatively small (<10 ha).
5 Minimum Use in areas of very low risk to property.	< 2^0	3	0	Woodlands and grasslands in small bushland parks. Walking tracks in larger bushland	• Restricted access for small appliances onto and along break. • Main access through private properties • Mostly used for pedestrian	Suitable for all soil types	A type 5 firebreak is for use around small bushland areas or corridors as well as internal firebreaks in larger bushland parks.

				parks areas can be classified as type 5 firebreaks	access.		
6 Minimum Use in areas of very low risk to property.	< 2^0	1-2	0	Woodlands and grasslands in small bushland parks. Walking tracks in larger bushland parks areas can be classified as type 6 firebreaks	• Main access behind private properties	Suitable for all soil types	• A type 6 firebreak is for use in areas of low fire risk where timber fences are present. • Can be utilised as an internal firebreak for prescribed burning.
7 Minimum Use in areas of very low risk to property.	< 2^0	Whole block mow/ Open areas	0	Woodlands and grasslands in all bushland parks.	• Open areas beside private properties and between zones	Suitable for all soil types	They are generally open areas that mown to improve the visual aspect of an area and an area that in the future will be revegetated. • Generally utilized on SMBI as whole block slash.

7.20.3 Fire regimes –community types

Principle 11: The specific objectives of these reserve areas depend upon the vegetation community. The following is an overall guideline and is dependant on the zoning will provide detail of the vegetation type, the objectives and fire regime. Vegetation communities found within the conservation area are:

- Riparian Communities should be managed to promote development of a complex riparian habitat be fire exclusion from streamline habitat. Minimise risk of weed invasion. Protection through fire exclusion of riparian habitat containing Gahnia clarkei. (QPWS, 2003).

  Fire Regime: Planned burns should be conducted when substrate is sufficiently moist. Overall low fire intensity. Minimum fire free intervals of between 15 and 30 years. (QPWS, 2003).

- Rainforest/vine forests are areas where fire exclusion is preferable in. These communities will burn in extreme drought conditions coupled with invasion of weed species like lantana etc. Management of weed species within ecotonal areas is required to minimise fire risk.

  Fire regime: Total protection is required. Burning of adjacent vegetation community types may assist in reducing threat of extreme wildfires.

- Dry Sclerophyll Communities should be managed to maintain a range of ages, time and intensity of fire. Ensure structural diversity within the mid and ground strata and to maintain overall diversity. Minimise loss of mature and hollow bearing trees. Maintain ground cover of leaf litter and fallen logs. Provide a balance to the short fire intervals that eucalyptus forest and woodlands are subjected to throughout the district. Suppress weed species and minimise the risk of invasion.

  Fire regime: Burns should be conducted when substrate is sufficiently moist. Fire free interval of 3 to 6 years is suggested for areas supporting grassy understorey and 7 - 25 years for areas supporting shrubby understorey. Care to be taken when burning off tracks or roadsides to minimise risk of weed invasion and spread from these high risk areas. This requires specific attention to lighting patterns or specific attention to weed control before and after burning.

7.20.4 Fire Regime- Regional Ecosystems & status

Principle 12: Fire Management practices must ensure the continued existence of all ecosystems classified as ‘endangered’ or ‘of concern’ and are given extra fire planning attention.

Principle 13: Table 12 must be considered in guiding fire regimes for specific REs. A number of the City’s REs are under threat and must be managed to ensure their continued existence.

Table 12. Regional Ecosystem Fire Regimes

RE	Description	Type	Bio Status	Fire requirements	Fire Frequency
12.1.1	Casuarina glauca open forest on margins of marine clay plains	Wetland	E	This community does not require fire for the maintenance of it's ecological functions	Non Burn
12.1.2	Saltpan vegetation including grassland and herbland on marine clay plains	Wetland	NC	This community does not require fire for the maintenance of it's ecological functions	Non Burn
12.1.3	Mangrove shrubland to low closed forest on marine clay plains and estuaries	Wetland	NC	This community does not require fire for the maintenance of it's ecological functions	Non Burn
12.2.1	Notophyll vine forest on parabolic high dunes	Closed Forest	OC	Fire should be excluded from these communities. Found in isolated parts of NSI. These communities contain mesic species mostly and will not carry fire unless subsequent to drought periods	Non Burn
12.2.2	Microphyll / notophyll vine forest on beach ridges	Closed Forest	E	Fire should be excluded from these communities. Commonly described as littoral rainforest	Non Burn
12.2.5	Corymbia spp., Banksia integrifolia, Callitris columellaris, Acacia spp. open forest to low closed forest on beach ridges usually in southern half of bioregion	Closed Forest	OC	Variable fire intervals. Shrubby understory	7-25 years
12.2.5a	Swales dominated by Melaleuca quinquenervia often with Livistona spp. Occurs on Quartenary coastal dune swales	Wetland	OC		Non Burn
12.2.6	Eucalyptus racemosa woodland on dunes and sand plains. Usually deeply leached soils	Wetland	NC	Variable fire intervals. Grassy understory	3-6 years
12.2.7	Melaleuca quinquenervia or M. viridflora open forest to woodland on sand plains	Wetland	OC	Planned burns should be conducted when substrate is wet to avoid the risk of peat fire	15-30 years

12.2.8	Eucalyptus pilularis open forest on parabolic high dunes	Open Forest	NC	Low intensity burns stimulate establishment of *Acacia* spp. and does not affect *Allocasuarina torulosa.* Data shows Low intensity burns tend to produce minimal change in community composition and structure	5-15 years
12.2.9	Banksia aemula woodland on dunes and sand plains Usually deeply leached soils	Wetland	NC	Variable intervals between 7-20 years with emphasis on intervals between 8-12 years. Planned burns in wet heaths should be conducted when substrate is wet to avoid the risk of peat fire	7-20 years
12.2.10	Mallee Eucalyptus spp. and Corymbia spp. low woodland on dunes and sand plains, especially southern sand mass islands. Usually deeply leached soils	Wetland	NC	Variable depending on understory	7-20 years
12.2.12	Closed heath on seasonally waterlogged sand plains	Wetland	NC	Planned burns in wet heaths should be conducted when substrate is wet to avoid the risk of peat fire	8-20 years
12.2.13	Open heath on dunes and beaches	Heath	OC	Variable fire intervals	7-20 years
12.2.14	Foredune complex of grassland and open forest	Marine	NC	Variable fire intervals. Grassy understory	3-6 years
12.2.15	Swamps with Baumea spp., Juncus spp. and Lepironia articulata	Wetland	NC	Seasonal to permanent water bodies with a range associated terrestrial and aquatic flora and fauna	Non Burn
12.2.16	Sand blows largely devoid of vegetation	Sand	OC	Large masses of sand that does not support fire	Non Burn
12.3.1	Gallery rainforest (notophyll vine forest) on alluvial plains	Closed Forest	E	This community does not require fire for the maintenance of it's ecological functions	Non Burn

12.3.5	Melaleuca quinquenervia open forest on coastal alluvium	Wetland	OC	This community is located along waterway and ephemeral wetlands throughout the City. Although fire is part of this community, it's occurrence would be limited to periods following extended dry periods. Fuel load reduction in these areas may be better achieved using physical fuel reduction rather than burning	5-25 years
12.3.6	Melaleuca quinquenervia, Eucalyptus tereticornis, Lophostemon suaveolens woodland on coastal alluvial plains	Wetland	NC	Fire is an essential part of the community. This community is located along waterway corridors and on higher flood plains associated with waterways. Depending on the current land use this community can contain significant fuel loads from a dominance of weeds and exotic grasses	8-20 years
12.3.8	Swamps with Cyperus spp., Schoenoplectus spp. and Eleocharis spp.	Wetland	OC	This is a wetland community. Fire can contribute to the biodiversity values of this community but can also have long term impacts through opening up niches for weed invasion	Non Burn
12.3.11	Eucalyptus siderophloia, E. tereticornis, Corymbia intermedia open forest on alluvial plains usually near coast	Open Forest	OC	This community is responsive to fire. It is also know as good Koala habitat. The understory of this community can have a propensity to be dominated by weeds such as lantana and exotic grasses which can increase fuel loads	8-12 years
12.3.13	Closed heathland on seasonally waterlogged alluvial plains usually near coast	Heath	OC		
12.5.2	Eucalyptus tereticornis, Corymbia intermedia on remnant Tertiary surfaces, usually near coast. Usually deep red soils	Open Forest	E	This community is responsive to fire and required fire as part of its natural ecological function	8-18 years
12.5.3	Eucalyptus tindaliae and/or E. racemosa open forest on remnant Tertiary surfaces	Open Forest	E	This community is responsive to fire and required fire as part of its natural ecological function	8-18 years
12.5.9	Sedgeland to heathland in low-lying areas on complex of remnant Tertiary surface and Tertiary sedimentary	Wetland	OC	Fire is a normal requirement of this community	8-20 years

	rocks				
12.9-10.4	Eucalyptus racemosa woodland on sedimentary rocks	Open Forest	NC	Fire is a normal requirement of this community. This community is responsive to fire and required fire as part of its natural ecological function. The understory in these communities can contain upland heath species (e.g. Attrotriche aggregata) as well as grasses, other herbs and grass trees.	5-12 years
12.9-10.17	Open forest complex often with Eucalyptus acmenoides, E. major, E. siderophloia ± Corymbia citriodora on sedimentary rocks	Open Forest	NC	The understory is a mix of shrubs and grasses and in most cases a range of weeds has invaded this understory. Spotted gum forest can be depauperate of understory vegetation and the groundcover can be restricted particularly following long periods of drought.	8-12 years
12.9-10.17a	Lophostemon confertus dominated open-forest. Occurs in gullies and southern slopes on Cainozoic and Mesozoic sediments	Open Forest	NC	This community is often restricted to gullies and as such is likely to contain fire sensitive species. Many of these communities have been disturbed by previous landuse with subsequent weed invasion from *Lantana camara*. Fire can occur in these communities although location of these communities in RCC area will likely result in protection of these areas from fire.	Non Burn
12.9-10.19a	Open-forest of Corymbia henryi ± Eucalyptus fibrosa subsp. fibrosa, Corymbia citriodora, E. siderophloia, E. crebra. Occurs in coastal areas on Cainozoic and Mesozoic sediments	Open Forest	NC	Fire is a natural part of this community. This community is usually located on dry ridges and spurs on sandstone landscapes. The understory in these communities is usually restricted to grasses and herbaceous species.	8-15 years
12.11.3a	Open forest generally with Eucalyptus siderophloia, E. propinqua on metamorphics ± interbedded volcanics	Open Forest	NC	Fire is a natural part of this community. This community is usually found on a southerly to easterly aspect with shrubby to grassy understory.	12-25 years
12.11.5	Open forest complex with Corymbia citriodora, Eucalyptus siderophloia, E. major on metamorphics ± interbedded volcanics	Open Forest	NC	Fire is a natural part of this community. This community occurs over a wide range of landscapes and depending on the landscape, the frequency may differ.	8-25 years

12.11.5a	12.11.5a: Open forest of Eucalyptus tindaliae, Eucalyptus carnea ± Corymbia citriodora, Eucalyptus crebra, Eucalyptus major, Corymbia henryi, Angophora woodsiana, C. trachyphloia (away from the coast) or E. siderophloia, E. microcorys, E. racemosa, E. propinqua (closer to the coast). Occurs on Palaeozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics	Open Forest	NC	Fire is a natural part of this community. This community is usually located on dry sloping landscapes on northerly to southerly aspects. Depending on aspect, stringy barks may be replaced by spotted gums and ironbarks. The understory can be shrubby but is likely to be more dominated by grasses.	8-15 years
12.11.5e	Open-forest complex in which spotted gum is a relatively common species. Canopy trees include Corymbia citriodora, Eucalyptus siderophloia or E. crebra (sub coastal ranges), E. major and/or E. longirostrata and E. acmenoides or E. portuensis and/or E. carnea and/or E. eugenioides. Other species that may be present and abundant locally include Corymbia intermedia, C. trachyphloia, Eucalyptus tereticornis, E. propinqua, E. biturbinata, E. moluccana and Angophora leiocarpa. Lophostemon confertus often present in gullies and as a sub canopy or understorey tree. Mixed understorey of grasses, shrubs and ferns. Occurs on hills and ranges of Paleozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics.	Open Forest	NC	Fire is a natural part of this community. Where community tends to mesic species in gullies, fire should be avoided as a management tool.	8-15 years
12.11.5h	Woodland to open forest of Eucalyptus planchoniana, E. carnea and Angophora woodsiana ± E. fibrosa subsp. fibrosa, E. racemosa, Corymbia intermedia, C trachyphloia, E. tindaliae, E. resinifera. Occurs on Palaeozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics	Open Forest	NC	Fire is a natural part of this community. This community contains a shrubby understory containing any heathy species.	8-15 years

12.11.5j	Open forest of Eucalyptus racemosa, E. seeana and Lophostemon suaveolens ± Corymbia intermedia, E siderophloia, C. citriodora, E. pilularis on low-altitude coastal metamorphics around Brisbane. Melaleuca quinquenervia is often present and at times becomes locally co-dominant. Occurs on Palaeozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics.	Open Forest	NC	Fire is a natural part of this community. This community can occur on lower elevations and in locations where moisture stays in the soil profile and substrate due to poor drainage. As such, a shrub lay often occurs with this community.	5-15 years
12.11.5k	12.11.5k: Open forest of Corymbia henryi, Eucalyptus fibrosa subsp. fibrosa ± C. citriodora, Angophora leiocarpa, E. carnea, E. tindaliae, E. propinqua, C. intermedia. Occurs on drier ridges and slopes on Palaeozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics.	Open Forest	NC	Fire is a natural part of this community. This community occurs on drier landscapes with the understory usually dominated by grasses, herbs and shrub species.	8-15 years
12.11.10	Notophyll vine forest ± Araucaria cunninghamii on metamorphics ± interbedded volcanics	Closed Forest	NC	Fire should be excluded from these communities. These communities contain a significant composition of fire sensitive species.	Non Burn
12.11.23	Tall open forest of Eucalyptus pilularis open forest on metamorphics and interbedded volcanics	Open Forest	E	Fire is a natural part of this community. Blackbutt communities can contribute substantially to fuel loading. Due to this propensity, fire as a management tool should be done so cautiously or avoided.	12-30 years
12.12.14	Shrubby woodland usually of rocky near coastal areas on Mesozoic to Proterozoic igneous rocks	Open Forest	OC	Naturally restricted forest type.	4-8 years
12.12.19	Vegetation complex of rocky headlands, predominantly but not exclusively on Mesozoic to Proterozoic igneous rocks	Marine	OC	Adapted to a range of fire intervals depending on their relationship to the surrounding matrix. Notwithstanding this, variable intervals between 5 and 15 years are suggested.	5-15 years

7.20.5 Fire trails Classification

Principle 14: Valid and reasoned argument for the type of fire trail systems must be achieved prior to the construction or upgrade of fire trail networks.

Principle 15: The following table of fire access track classification should be used for the planning and management of fire access tracks. This classification system outlines the different types of construction and the specifications and provides guidance to the construction of the firetrails themselves.

Table 13. Fire Access Track Classification

Class and Descriptor term used	Maximum Slope of Track	Minimum Width of Track	Suitability for Vehicles	Other Details
Class 1 Fire trail	0 - 15º (Preferably not more than 10º)	4m (plus 1m either side clear of bushes and long grass)	Urban Fire Appliances to 28tonnes And 2 Wheel drives	• Passing facilities either by: Reversing bays of 6m wide, such as the access points to properties. • Passing bays located where possible every 200m, 20 m long and with an additional 3m added to track width in the passing bay section • Minimum vertical clearance of 6m to any overhanging obstructions, including tree branches • Curves with a minimum inner radius of 6m and outer radius of 12m (and as few curves as possible to facilitate rapid access and egress) • Appropriate drainage and erosion controls (See drainage tables). • Trafficable in all weather. • Frequently connected to the property access road and/or through road system. • Entrance marked by RED arrow or recreational trail marker (minimum 100mm high, 150mm long).
Class 2 Fire trail	0 - 20º	4m	Medium 4 x 4 Rural Fire Appliances (Cantor equivalent) to approx 10t GVM	• Suit construction by grader/dozer with angle tilt blade or other machines capable of meeting drainage requirements. • Passing facilities where possible every 200 – 300m. • Appropriate drainage and erosion controls (See drainage tables). • Trafficable in dry weather. Tracks with treacherous or impassable sections in wet weather marked on map and track “Danger when Wet”. • One way tracks marked on map and track marker. • Entrance marked by RED AND YELLOW striped arrow or recreational trail marker (minimum 100mm high, 150mm long).
Class 3 Fire trail	0 - 30º	3m	Light 4 x 4 Striker vehicles (Landcruiser equivalent) to approx 5t GVM	• Suit construction by D6 grader/dozer with angle tilt blade or other machines capable of meeting drainage requirements. • Passing facilities where possible every 200 – 400m. • Appropriate drainage and erosion controls (See drainage tables.) • Trafficable in dry weather. Tracks with treacherous or impassable sections in wet weather marked on map and track “Danger when Wet”.

				• One way tracks marked on map and track marker. • Entrance marked by YELLOW arrow or recreational trail marker (minimum 100mm high, 150mm long.
Class 4 Trails Temporary Fire Line and pedestrain paths / mountian bike trails.	0 - 50º	1 – 2m	Firefighters on foot	• May take the form of chiplines, slashlines, bike tracks, footpaths, recreational trails or wet creek beds. • Temporary fire lines should be marked by temporary means, such as marking tape, spray paint or similar means.

Notes: QPWS Road Classification System classifies all Firelines as "Class F", and delineates between Formed / Unformed construction, and Sealed / Unsealed surface. The proposed classification above relates more to their practical accessibility and functional application.

7.20.6 Trail assets and infrastructure

Principle 15: Culverts and creek crossings should be engineered to the vehicle loading as indicated by the class of trail on which they are installed.

Principle 16: They should have the capacity to accommodate peak water flows based on 1 in 5 year rainfall events. This requires appropriate pipe diameter and/ or construction which resists damage from water passing over the crossing structure in extreme flows.

Principle 16: Gates are to be constructed to RCC design Manual Standards, and are required to use a lock and key system.

Principle 17: Existing single tracks should be rationalised to assist in prescribed burning within fire management zones.

Principle 18: Maintenance of existing fire access tracks should:

- Facilitate appropriate recreation;
- Be rationalised where appropriate in light of property boundary issues, ecological issues and erosion and sedimentation issues;
- Undergo regular inspection tracks to remove any trees or branches that block access as well as fixing any erosion problems identified;
- Maintained by grading every two to three years and particular attention made in realigning sections vulnerable to erosion. Note: This should be considerate of resources. That is, If tracks are in good repair, do not disturb unnecessarily; and

- Maintenance of tracks throughout the City's reserves should be based on the type and proposed fuel reduction area.

7.20.7 Trail Marking - prior to construction

Principle 19: In order to optimize the efficiency and sensitivity with which trails are constructed, marking out of certain sections of trail will be undertaken on foot by marking out basic intervals depending on visibility. Generally, vegetation with less than 10-15cm basel diameter can be removed, depending on species and overhanging limbs etc.

7.20.8 Trail Marking - after construction

Principle 20: The entrance to various firelines will be marked in accordance with SEQ wide standards, which are were being developed at the time of completing this document. Once completed, these will be integrated into this document.

7.20.9 Drainage and Erosion Controls

Principle 21: Minimise concentrated water volume and velocity, and hence its erosion potential (or cutting power), both on and off the fireline. This in turn minimises the potential environmental impacts of the fireline, and also reduces long term maintenance requirements and financial cost consequences.

Principle 22: Where contractors are engaged in the construction of firelines, the following guidelines should be utilised to maximise sustainability and minimise maintenance of fire trails:

Drainage Frequency- Cross drains or side drains should be used with regular frequency dictated by slope and erodibility, and guided by the following QPWS / FABCon table: CROSS / SIDE DRAIN SPACING (Meters).

Table 14. Drainage

GRADE	DRAINAGE OFFSET	SOIL ERODABILITY RATING (*)		
Degrees	**Degrees**	***Low***	***Moderate***	***High***
< 2	Up to 30	200m	175m	100m
3 – 5	Up to 30	160m	120m	60m
6 – 7	Up to 20	120m	75m	40m
8 – 10	Up to 20	75m	50m	25m
11 – 15	Up to 10 (?)	30m	20m	15m
15 +	Up to 5 (?)	20m	15m	15m

(*) Use the higher erodability rating unless actual erodability is known.

Principle 23: The following should be used as a guide to the use of specific drainage types

- ***Drainage Types*** –specific drainage types that are appropriate for site specific use and conditions should be used due to their affect on the sustainability and long term effectiveness of the drains themselves.

- ***Angled Cuts –*** are preferred as they ensure that the water cuts across undisturbed soil face which still has the strength provided by the original soil structure. This is likely to be more durable than Angled Mounds. The finer the offset angle of the cut the better, to minimize water friction. The table above provides guidance on drainage offset angles.

- ***Angled Mounds*** – (or "Water Bars") should be used in conjunction with Angled Cuts, as mounds based on unstructured soil alone will erode quickly.

- ***Inverts*** – in highly erodable soils and steep areas, care should be taken in using inverts because of the severe angle at which they redirect water. If water volume exceeds the redirecting- capacity of the invert water will easily flow straight over the invert and possibly exacerbate damage further down the slope.

- ***Cross banks*** – Mounds of earth built across a gravel track or road should be used where appropriate. Ensure sufficient height and length of mound area, and that freeboard of at least 600m exists to sufficiently divert water.

- ***Drainage exits and outfalls-*** The objectives with drainage exits and outfalls are:

    1. To spread water as broadly as possible (avoiding concentration of water volume and cutting power) with open and even - ended drain ends.
    2. Avoid restrictions or blockages at the end of drainage outfalls, which will cause the drainage exit point to narrow. Ensure a minimum fall of 1% within the drain area to ensure it does not become blocked.
    3. To direct water to both sides of the fireline (if ridge-like topography permits) rather than just to the one side (in side cuts).
    4. Where possible direct the exits to flatter areas rather than steeper, and to areas where there will be less relative impact on existing runoff volumes.
    5. Where possible divert drainage into undisturbed areas in adjacent forest.

7.21 Specific Management Zones

Relevant to Conservation area										
Principle	**CA&CP**	**NR**	**BR**	**NB**	**CC**	**UH**	**CF**	**W**	**DR**	**RR**
1	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
2	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
3	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	
4			**Y**	**Y**	**Y**	**Y**		**Y**	**Y**	
5	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**		**Y**	**Y**	**Y**
6	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**		**Y**	**Y**	**Y**
7	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**		**Y**	**Y**	**Y**
8	**Y**	**Y**		**Y**		**Y**		**Y**	**Y**	**Y**
9	**Y**	**Y**	**Y**		**Y**			**Y**	**Y**	
10	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
11							**Y**			
12								**Y**	**Y**	**Y**

13								Y	Y	Y
14								Y	Y	Y
15								Y		
16								Y	Y	Y
17								Y	Y	
18								Y	Y	
19								Y	Y	
20	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Larger area of reserve land may incorporate a number of elements (ecological zones) in the landscape such as riparian corridors, non-riparian areas, drainage areas, waterbodies and general habitat. The same area of land may also incorporate a range of uses that may or may not be compatible with specific ecological zones. Although a parcel of land may be delineated under this strategy as a particular type of reserve e.g. 'Conservation Area', consideration must be given to the management of the varying zones that it encompasses. Principles relating to specific management zones are outlined below.

7.21.1 Riparian Zones

Principle 1: Buffers should be 100m or greater on both sides of watercourse.

Principle 2: In instances where buffers are less than 100m than an ecological assessment and justification is required.

Principle 3: In larger reserves areas it is preferable that no new recreational infrastructure should be located within 30 metres of a watercourse as edge effects limit the usability of a corridor to vulnerable species such as small bird, ground mammals and rare plants and may facilitate erosion and loss of water quality. This primarily applies to 'Conservation Areas' and 'Nature Reserves'.

Principle 4: In smaller reserves, distances are often smaller than 30 metres to a water course. In this case fire breaks should be used for paths etc

Principle 5: Any replacement of recreational assets should aim to be placed outside the 30m buffer zone if possible.

Principle 6: If a track is considered essential to cross a watercourse, it must be sited to cross by the shortest and most environmentally considerate route.

Principle 7: Any riparian vegetation is preferable to none.

Principle 8: Where present vegetation width is less than 100 metres in width from the watercourse, then enhancement planting should be carried out as per Council's Vegetation Enhancement Strategy.

Principle 9: No motor or engine powered watercraft are to be used in the freshwater reaches of the City's waterways.

7.21.2 Non-riparian Corridors and Waterbodies

Principle 10: More than 200 metres total width is required in order to provide viability of habitat and to better facilitate fauna movement.

Principle 11: In the case where widths selected are less than 200m, then an ecological assessment and justification is required, including reasons for widths below 60m.

Principle 12: Artificial waterbodies, where not required for downstream flood management purposes, should be investigated for ecological values and potential for rehabilitation to a natural state.

This applies to impoundments that may return an environmental flow to downstream creeks. Issues which have relevance to artificial waterbodies include aquatic ecosystem processes and watercourses**.**

Principle 13: Sedimentation infrastructure such as sedimentation basins may be used to protect natural waterbodies as per section 7.2.7.

7.21.3 Foreshore and Littoral Zones

Principle 14: Foreshore vegetation must be managed to increase condition and extent of Regional Ecosystems associated with foreshore and littoral zones.

7.21.4 Man-made waterways

These are systems that have been entirely man-made or heavily disturbed and 'engineered' drainage systems that support or can be designed to support habitat composing of native plant species and associated fauna species.

Principle 15: Design of drainage must aim to 'make as natural as possible'.

Principle 16: Drainage systems must aim to address environmental and social concerns, such as;

- Preservation of an ecosystem's integrity by conserving or promoting diverse communities and species and the processes that support them,
- Development of self-sustaining system to minimise long term maintenance costs and any adverse downstream impacts, and
- Design and or incorporation of attractive natural features to improve and integrate the landscape of the watercourse.

Principle 17: Design of channels with the dual purpose of providing drainage and habitat must consider 'Manning's flow equation' in assessing flow levels and velocity.

Principle 18: Where drainage lines exist, habitat should be protected and enhanced to the point that it does not significantly interfere with the flow rates that the system was designed for and does not directly contributes to flooding of surrounding areas.

Principle 19: Where more specific design principles are required consultation must occur in conjunction with RCC Infrastructure Planning and range of resources such as Natural Channel Design Guidelines 2000 (Brisbane City Council).

7.21.5 Fodder Forest

Principle 20: These areas are to be cadastrally separated from reserves in which they are located and managed and maintained for use as fodder for sick koalas and other wildlife. Flowers and leaf tips are pinched and pruned to promote vigorous leaf growth.

7.22 Monitoring

Relevant to Conservation area										
Principle	CA&CP	NR	BR	NB	CC	UH	CF	W	DR	RR
1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
8	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
9	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Principle 1: All revegetation/regeneration works for reserves in the city that are undertaken will be recorded in a central database that is an agreed format.

Principle 2: Areas to be revegetated/ regenerated will be recorded spatially (Polygon) through the use of Arcpad or redemap for inclusion in GIS system mapping.

Principle 3: Spatial mapping will be linked to a list of species for each polygon that will be consistent with the Regional Ecosystem for that site.

Principle 4: An account of the densities of the quantity of species that will be used in each strata will be recorded (eg Table15).

Table 15. Example of recording planting densities (VES)

RE:12.___.___	Total plants (based on areas * planting)	Tube stock	Seed
Canopy 20% (ie trees)	1866	1866	
Mid storey 40% (ie shrubs)	3732	1866	1866
Lower/ground 40% (ie ferns)	3732	1866	1866
Total	**9330**	**5598**	**3732**

Principle 5: Any proposed revegetation/ regeneration plans for areas that are intended to come to Council reserve as part of a development process must be inspected and approved by Parks and Conservation.

Principle 6: Any revegetation/ regeneration areas that are intended to come to Council reserve as part of a development process must be approved by Parks and Conservation as being satisfactory before coming to off maintenance

Principle 7: Bushcare will undertake an annual assessment of the quality and progress revegetation works for each of its bushcare and community planting sites. Information as a minimum is to include: weed presence, density and species, natural recruitment, canopy closure, need for infill planting to help site meet plant community associated with RE, expansion or decrease in extent of planting, use of planting by fauna.

Principle 8: Parks and conservation will undertake an annual assessment of the quality and progress revegetation works for each of its planting sites.

7.23 Volunteer Management

Relevant to Conservation area										
Principle	**CA&CP**	**NR**	**BR**	**NB**	**CC**	**UH**	**CF**	**W**	**DR**	**RR**
1	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
2	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
3	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
4	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
5	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
6	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
7	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
8	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
9	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
10	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
11	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
12	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**

Principle 1: All Bushcare volunteers should be recorded in register operated by Councils Risk and Liability Services as per Council's Volunteer Management Policy.

Principle 2: If non-Bushcare volunteer (e.g. TAFE students), they must seek permission for works with conservation officers to work on site and be supervised by qualified person. Works are under directions of supervising council officer. Their governing insurance is used first, and all those that are not engaged through HR fill-in and sign Bushcare C-forms.

Principle 3: Any organised event outside of normal Bushcare (e.g. spotlight, community planting, social day etc) requires liaison with RCC conservation officers to ensure strategic outcomes. If area needs 'reserving', then it should be directed to Administration Officer - Reserve and Bookings. This includes 'after hours' of the reserves.

Principle 4: All volunteers must have undertaken Council site induction and OH&S training (undertaken though the Bushcare Program).

Principle 5: Volunteers must sign C-form (risk assessment/sign on forms) prior to Bushcare work. These should be returned to Bushcare officer.

Principle 6: All volunteers must be registered volunteers. This includes signing and returning registrations forms acknowledging they are aware of their responsibilities etc prior to their 2nd visit (i.e. they may sign C-form on 1st visit, but be registered by next visit).

Principle 7: Volunteers must abide by all requirements/directives under the Bushcare program.

Principle 8: All activities of Bushcare Groups must be outlined in an annual workplan and must be forwarded to Council Bushcare and P&C officers for approval.

Principle 9: Volunteers must not work alone.

Principle 10 All Bushcare volunteers must work under direction of their Bushcare officer and follow an approved workplan. Works must be minimal in potential damage with no mechanical machines and only round-up bi-active used. Revegetation standards align with Bushcare standards (i.e. essentially, plant what occurs in area and work from best to worst areas).

Principle 11 All flora and fauna are protected and cannot be removed without direct permission of their Bushcare officer. Seed can be collected under blanket seed collection permit.

Principle 12 Council's reserve sign restrictions apply to volunteers, unless permission is granted (e.g. no dumping, bike riding etc where applicable).

8 ACTION PLAN

Table 16. Action Plan

Objective	Action	Outcome	Responsible	Partners	Timing (yrs)	~Cost
1. To provide reserve information and data provision/ capture in a user friendly format.	Develop an electronic database based on redemap/proclaim/ Maximo to record reserve attributes	Database will supply information for land managers and also act as a data collection tool for pest management, revegetation, asset capture and reserve development etc	EM	All I.T.	1	Officer time
2. Ensure all reserves meet intents for which they are classified.	Undertake audit of all reserves ensuring they are classified appropriately and are managed to meet requirements of this strategy.	Reserves that meet intended management intents for reserves type.	EM	P&C	3	Officer time
3. Create full species list for each Regional Ecosystem in the City.	Develop a species list that is representative of each RE identified in the City through collation of existing information and	Full species list descriptions for each RE. Species lists will replace VES 2009 species lists.	EM EM		2 2	Officer Time

	new surveys where species information does not exist.	Species lists will be included into RPS.	LUP		2	
4. Provide full list of Regional Ecosystems for each reserve area (to be incorporated into Reserves database)	Correlate existing RE data with specific reserves as identified under maximo program.	Each property linked to RE	EM		2	Officer time
5. Perform risk audit of all existing reserves and sign as necessary	A risk signage plan should be developed or amended for each reserve to incorporate safety signage as required.	All reserves risk assessed and signed as required.	EM	R&LS, O&M, P&C	3	$75,000
	Perform risk management audit and manage for trees on known path systems	All known path systems have been risk assessed and risks managed	Risk and Liability Services	P&C T&L	3	Budget
6. Develop city wide interpretive signage plan for all Councils reserves.	Undertake engage contractor to develop signage plan.	Citywide reserve signage plan.	EM	P&C R&LS C&SP EE	2	Budget
7. Undertake annual progress reporting of condition of revegetation sites	Digitally record (arcpad) information regarding the size location (polygons) and species of plants used. Photos of site are also to be included	Comprehensive annual update of the increase in habitat condition and extent of revegetation sites	O&M, P&C, EE		Annual ongoing	Officer time
8. Undertake general condition assessment of Council reserves	Digitally record (Arcpad) condition status of restoration sites	Report card on reserve condition, which includes identification of new weed/pest outbreaks, erosion/ instability areas or other degraded features	P&C, EE		Ongoing	Officer time $4,000- (Cost of 2 Arcpads plus licence) for bushcare
9. Undertake 4 yearly condition audit of council reserves	Contract consultant to undertake audit of 10% of Council reserves.	Information that indicates the progress regarding SOE, biodiversity and koala strategy targets.	EM	Consultant P&C EE	Every 4 years	$25,000
10. Undertake site recording	Use desktop and groundtruthing to	Comprehensive and up to date data for each	O&M, EM		2	Officer time

of assets and characteristics for each individual reserve area Note: some reserves incorporate open space areas also	capture asset and biological characteristics	reserve				
11. Ensure new and existing Mountain bike trail networks meet required standards	Develop mountain bike trails assessment sheet based on IMBA and MTBA standards	All mountain bike trails in city meet required standards or are being managed to minimise adverse impacts	EM	P&C, mountain bike groups	2	Officer time
12. Establish assets and total area associated with each area type (eg Conservation Areas') and audit annually	Use desktop analysis and groundtruthing to determine assets associated with particular reserves types eg Kms trail, number chairs, No pergolas, No signs	Annually verified audit of assets associated with reserve types	O&M	ISSU	1 July annually	Officer time
13. Ensure all the actions from existing management plans are validated and undertaken	Undertake collation, validation and integration of all actions in existing management plans and strategies into CI database.	Valid updated actions for specific reserves are recognised and implemented	EM	P&C, EE, AM, LM	4	Officer time and budget
14. Ensure short and long term protection of REs at high risk from climate change (s7.14.5)	Undertake protection and management, mapping, research and provide buffers for threats eg acquisition of land and revegetation using local progeny	Threats to high risk REs are managed	EM	P&C	1-5	Budget
		Threats to medium risk REs are managed		P&C	5-10	Officer time
		Threats to low risk REs are managed		P&C	>10	Officer time
15. Consolidate reserve land	Unused road reserves should be identified, closed and consolidated into existing reserves	All unused roads are revegetated wherever possible	EM	LUP P&C	5-10	Officer time Cost per amalgamation and Surveying
	Individual allotments within parcels of reserve land should be	Reserves are consolidated				

	consolidated via a 'Realignment of Lots'					
	Delineate fodder forest areas from general reserve land	Fodder forests are managed separately from reserves				
16. Identify management costs for trustee land that is managed by Council.	Identify and incorporate trustee land for budgeting purposes	Identify area (m2) of trustee land for conservation purposes through mapping	EM	ISSU	1yr	Officer time
17. Monitoring and review program	Continual monitoring of actions in this plan	Ensure actions are carried out in accordance with the plan	EM	All	Annual	Officer time
	Review should be a continuous process so that changes can be made to strategies when, and if, required	Ensure content of Conservation Intents Strategy is revised and updated	EM	All	2013	Officer time

9 ABBREVIATIONS

Redland City Council Departments
AC = Animal Control
C&CS = Customer and Community Services
C&SP = Community and Social Planning
DA = Development Assessment Team
EE = Environmental Education
EM = Environmental Management Group
HR= Human Resources
IDS = Integrated Development Services
IP = Infrastructure Planning
IT = Information Technology
ISSU= Information Systems Services Unit
LL = Local Laws Team
LUP = Land Use Planning Group
M&C = Marketing and Communications
O&M = Operations and Maintenance
P&C = Parks and Conservation
PDG = Project Delivery Group
R&LS= Risk and Liability Services
T&I= Transport and Infrastructure Unit
T&L = Trees and Landscaping Services

State Government departments
EPA = Environmental Protection Agency
NRW= Natural Resources and Water
QPWS = Queensland parks and Wildlife Service

Other Councils
BCC = Brisbane City Council
CRL = Consolidated Rutile Limited
LCC = Logan City Council
Other Non Government Organisations
RSPCA = Royal Society for the Prevention of Cruelty to Animals

Universities
QUT = Queensland University of Technology
UQ = University of Queensland

Others
CA= Conservation Area
CCA= Coordinated Conservation Area
CP = Conservation Park
EDAW = EDAW
EVR = Endangered/ Vulnerable/ Rare
IMBA = International Mountain Bicycling Association
MTBA= Mountain Bikes Australia
NCA= Nature Conservation Act 1994
NSI = North Stradbroke Island
RAMSAR= The Convention on Wetlands of International Importance.

SMBI = Southern Moreton Bay Islands
SOE = State of the Environment

10 GLOSSARY

Ongoing	These actions will continually be dealt with throughout the policies life
Reserve area	A generic term take to encompass Conservation Areas, Nature Refuge, Nature Belt, Creek Corridors, Urban habitat, Conservation Foreshore, Wetland, Drainage Reserves, Road Reserves
EDAW	An internationally known corporation that has devised a set of principles regarding the facilitation of equestrian sports.
Mountain Bike and Mountain Trail Bike (MTB)	A bicycle built for rough terrain with wide fat tires, straight handlebars, a robust frame, often with suspension and more gears than a standard bicycle.
RAMSAR	The official title is *The Convention on Wetlands of International Importance, especially as waterfowl habitat*. The convention was developed and adopted by participating nations at a meeting in Ramsar, Iran on February, 2, 1971 and came into force on December 21 1975. *Source: knowledgerush.com*
Regional Ecosystem	A Queensland wide vegetation classification system based on the bioregion, landzone and dominant canopy species.
Ecological Sustainability	Defined by the IPA as a balance that integrates the protection of ecological process and natural ecosystems at local, regional, state and wider levels, economic development and maintenance of the cultural, economic physical and social well being of people and communities.
NRS	The establishment of the National Reserve System (NRS) Program under the Natural Heritage Trust meets the requirement under the National Strategy for the Conservation of Australia's Biological Diversity to establish a comprehensive, adequate and representative system of terrestrial protected areas. *Source: National Reserve System website*

11 REFERENCES, LINKS AND INFORMATION

International
Ramsar Convention
www.ramsar.org

Commonwealth
EPBC Act (1999) and Regulation (2000)
www.environment.gov.au/epbc/about/index

National Reserve System
www.environment.gov.au/parks/nrs/index

Walking Track Classification and Signage (AS 2156.1-2001)
www.standards.org.au/cat.asp?catid=44&contentid=311&News=1

Australian ICOMOS charter for the conservation of places of cultural significance
www.icomos.org/australia/burra.html

Land & Water Australia – River Landscapes Website, http://rivers.gov.au/

State
Nature Conservation Act (1992)
www.epa.qld.gov.au/about_the_epa/legislation/nature_conservation/

Vegetation Management Act (1999)
www.legislation.qld.gov.au/LEGISLTN/CURRENT/V/VegetManA99

Land Protection (Pest and Stock Route Management) Act 2002
www.legislation.qld.gov.au/LEGISLTN/CURRENT/L/LandPrPSRMA02.PDF

Land Act 1994
www.legislation.qld.gov.au/LEGISLTN/CURRENT/L/LandA94.pdf

Local Government Act 1993
www.legislation.qld.gov.au/legisltn/current/l/locgova93.pdf

State Costal Management Plan
www.epa.qld.gov.au/environmental_management/coast_and_oceans/coastal_management/state_coastal_management_plan/

Draft SEQ Natural Resource Management Plan
www.seqcatchments.com.au/_webapp_145854/Draft_SEQ_NRM_plan

Aboriginal Cultural Heritage Act 2003
www.legislation.qld.gov.au/LEGISLTN/ACTS/2003/03AC079.pdf

Queensland Heritage Act 1992
www.legislation.qld.gov.au/LEGISLTN/CURRENT/Q/QldHeritageA92.pdf

Conservation Land Management Strategy 2010

Queensland Heritage Exemption Certificate for minor works in state listed state owned land
www.derm.qld.gov.au/services_resources/item_list.php?category_id=218&topic_id=70

Regional Ecosystems
www.epa.qld.gov.au/nature_conservation/biodiversity/regional_ecosystems/

QLD Heritage Register
www.epa.qld.gov.au/cultural_heritage/registers_and_inventories/queensland_heritage_register/

Coastal Protection and Management Act 1995
www.legislation.qld.gov.au/LEGISLTN/SUPERSED/C/CoastalProtA95_004_080613.pdf

SEQ regional plan
www.dip.qld.gov.au/regional-planning/draft-regional-plan-2009-2031.html

Queensland Biosecurity strategy 2009-14
www.dpi.qld.gov.au/cps/rde/dpi/hs.xsl/4790_12541_ENA_HTML.htm

Queensland Department of Natural Resources, 1998, 'A Guide to Land Tenure in Queensland'

Qld Fire and Rescue Authority Act 1990
www.legislation.qld.gov.au/LEGISLTN/SUPERSED/F/Fire_RescueAuA90_04F_.pdf

Waterway Environmental Values for Redlands Waterways
http://www.epa.qld.gov.au/publications/?id=1852

Redland City Council
Indigenous Community Policy (POL-3081)
http://www.redland.qld.gov.au/Council/Policies/Pages/default.aspx

Local Law 15 (Parks and Reserves), Local Law 2 (Animal Management) 2007
www.redland.qld.gov.au/Council/localLaws/Pages/default.aspx

RCC Biodiversity Strategy 2008-2012 and Policy
www.redland.qld.gov.au/Environment/ManagementPlans/Pages/BiodiversityStrategy.aspx

Pest Management Plan 2006-2010
www.redland.qld.gov.au/Environment/ManagementPlans/pest/Pages/default.aspx

Vegetation Enhancement Strategy 2007
www.redland.qld.gov.au/Environment/ManagementPlans/VES/Pages/default.aspx

Koala Policy and Strategy 2008
www.redland.qld.gov.au/Environment/Wildlife/Koalas/Pages/RedlandsKoalaPolicyStrategy.aspx

Conservation Land Management Strategy 2010

Redlands Planning Scheme
www.redland.qld.gov.au/PLANNING/PLANNING/PLANNINGSCHEME/Pages/default.aspx
RCC Heritage Register
\\hoprog\prog_Minutes & Agendas_Council Minutes_minutes 2003\General Meeting\pdf documents\Attachments130803\Interim Heritage Register Attachments A to E.pdf (Please contact Council to view a copy of this document)
http://www.redland.qld.gov.au/Planning/Planning/StudiesReports/HeritageStudy/InterimHeritageRegister/Pages/default.aspx

Open Space Plan
www.redland.qld.gov.au/Environment/ManagementPlans/OpenSpacePlan/Pages/default.aspx

RCC Corporate Plan
www.redland.qld.gov.au/COUNCIL/CORPORATEPLAN/Pages/default.aspx

RCC Policies

- Environment Policy (POL-2644)
- Environmental Charge Acquisition and Management (POL-3077)
- Park Naming, Memorials and Tributes (POL-3068)
- Recruitment and Selection - Volunteers (PR-2127-016-07)
- Dealing with Unlawful Damage to Trees in Public Places (POL-3025)
- Corporate policy POL-3068

All at: www.redland.qld.gov.au/COUNCIL/POLICIES/Pages/default.aspx

Individual Land Management Plans

- Amity Point Sport and Recreation Reserve
  www.redland.qld.gov.au/Environment/ManagementPlans/LandMgmtPlans/CurrentLandMgmtPlan/Pages/AmityPoint.aspx

- Coochiemudlo
  www.redland.qld.gov.au/Environment/ManagementPlans/LandMgmtPlans/CurrentLandMgmtPlan/Pages/CoochieIsLandMgmtPlan.aspx

- Cylinder Beach
  www.redland.qld.gov.au/Environment/ManagementPlans/LandMgmtPlans/CurrentLandMgmtPlan/Pages/CylinderBeachMasterPlan.aspx

- Dunwich
  www.redland.qld.gov.au/Environment/ManagementPlans/LandMgmtPlans/CurrentLandMgmtPlan/Pages/Dunwich.aspx

- Flinders Beach
  www.redland.qld.gov.au/Environment/ManagementPlans/LandMgmtPlans/CurrentLandMgmtPlan/Pages/FlindersBeachLandManagementPlan.aspx

- Greater Glider

www.redland.qld.gov.au/Environment/ManagementPlans/LandMgmtPlans/CurrentLandMgmtPlan/Pages/GreaterGliderLMP.aspx

- Isle of Coochie Golf Course
  www.redland.qld.gov.au/Environment/ManagementPlans/LandMgmtPlans/CurrentLandMgmtPlan/Pages/TheIsleOfCoochieGolfCourse.aspx

- McMillan Road Conservation Area
  www.redland.qld.gov.au/Environment/ManagementPlans/LandMgmtPlans/CurrentLandMgmtPlan/Pages/McMillanRoadConservationAreaLMP.aspx

- Orchard Beach
  www.redland.qld.gov.au/Environment/ManagementPlans/LandMgmtPlans/CurrentLandMgmtPlan/Pages/OrchardBeachWetland.aspx
- Scribbly Gums Conservation Area
  www.redland.qld.gov.au/Environment/ManagementPlans/LandMgmtPlans/CurrentLandMgmtPlan/Pages/ScribblyGumsConservationAreaLMP.aspx

- Serpentine Creek
  www.redland.qld.gov.au/Environment/ManagementPlans/LandMgmtPlans/CurrentLandMgmtPlan/Pages/SerpentineCreek.aspx

- Sleath Street Foreshore
  www.redland.qld.gov.au/Environment/ManagementPlans/LandMgmtPlans/CurrentLandMgmtPlan/Pages/SleathStForeshoreRehabPlan.aspx

- Terra Bulla Leumeah
  www.redland.qld.gov.au/Environment/ManagementPlans/LandMgmtPlans/CurrentLandMgmtPlan/Pages/TerraBullaLeumeahMgmtPlan.aspx

Organisational Development Plan
http://hointranet/RSCcms/generic.asp?id=1111
*Please contact Council to view a copy of this document

MoU between Energex and RCC for Vegetation Management near Powerlines
..\..\Projects\Undergrounding Koalas 24 January 2007 Ormiston\powerline undergrounding\2259087_Memorandum_of_Understanding_-_Vegetation_M.tif
*Please contact Council to view a copy of this document

Redland City Council Conservation Fire Management Framework and Operational Guidelines 2009
*Please contact Environmental Management to view a copy of this document

Weippin Street Cultural Heritage Agreement
*Please contact Environmental Management for information

Pt Lookout Cultural Heritage Agreement
*Please contact Environmental Management for information

Conservation Land Management Strategy 2010

Conservation Management Plan – Pt Lookout Gorge Walk (draft)
*Please contact Environmental Management for information

Others

Brisbane City Council, December 2000 '*Natural Channel Design Guidelines'* Brisbane City Council.

IMBA, 2004, *Trail Solutions- IMBA's Guide to Building Sweet Singletrack*, Johnson Printing

IMBA, 2007, *Managing mountain Biking: IMBA's Guide to Providing Great Riding*, International Mountain Bicycling Association, Boulder, C.O.

IMBA Web Site
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Mountain Bike Australia
http://www.mtba.asn.au/

12 APPENDICES

12.1 Guiding Principles for Provision of Equestrian Opportunities

There are a number of broad principles that should influence the planning, development, management and use of equestrian opportunities in any location:

Access and Accessibility
 To ensure equestrian facilities are located in areas that are unlikely to be affected by residential encroachment.

 To provide safe and convenient access to and from equestrian facilities for people on horseback and for people towing horse floats.

Balance with Diversity
 To achieve a balanced and diverse provision of equestrian opportunities appropriate to the needs of the community.

Community Involvement
 To involve the horse riding community in the planning, design and management of equestrian facilities.

Environmental and Heritage Values
 To ensure equestrian facilities are located in areas of relatively low environmental value.

 To ensure that the type and level of equestrian activity proposed for a site is compatible with the long term environmental and heritage management of the values of the site.

 To ensure the placement of equestrian facilities and trails, do not lead to longterm environmental problems or further degrade the environmental quality of an area.

Equity
 To ensure that the horse riding community are treated fairly and equitably.

Information:
 To ensure existing and potential users are well informed about existing equestrian opportunities and how they can be accessed and utilised.

Management and Administration:
 To ensure management and maintenance of all equestrian facilities is well coordinated to achieve the best possible outcomes within the given resources.

Multiple Use:
 To achieve the most efficient use of existing and future equestrian facilities by encouraging joint use where appropriate.

Quality:

 To ensure that all equestrian facilities are attractively designed and comply with Australian standards appropriate to the level and type of use.

Safety and Liability:

 To ensure that all equestrian facilities are located, designed and maintained to meet public safety standards.

 To ensure the safety of the general public is considered when providing equestrian facilities in public use areas.

12.2 Existing Land and Waterway Management Plans

- Amity Point
- Coochiemudlo Island Land Management Plan
- Cylinder Beach Master Plan
- Dunwich Reserve
- Flinders Beach Land Management Plan
- Greater Glider Land Management Plan
- Isle of Coochie Golf Course
- MacMillan Road Conservation Area Land Management Plan
- Orchard Beach Wetland
- Scribbly Gums Conservation area Land Management Plan
- Serpentine Creek Road Cemetery Site and Rehabilitation Plan
- Sleath Sreet Foreshore Rehabilitation Plan
- Terra Bullah Leumeah Management Plan
- Eprapah Creek Waterway Management Plan
- Hilliards Creek Waterway Management Plan
- Tingalpa Creek Waterway Management Plan