



WILLOUGHBY CITY COUNCIL

# URBAN BUSHLAND PLAN OF MANAGEMENT

Volume 1  
Policy and Management Issues

2014 – 2019

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## URBAN BUSHLAND PLAN OF MANAGEMENT

### Volume 1

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## Abbreviations

AABR	Australian Association of Bush Regenerators – a not-for-profit organisation to promote the study and practice of bush regeneration.
AHIMS	Aboriginal Heritage Information Management System – information and records regarding Aboriginal objects (held by NPWS, NSW Government)
AHO	Aboriginal Heritage Office – jointly funded by eight northern Sydney councils to protect Aboriginal heritage.
ALGA	Australian Local Government Association
APZ	<a href="#">Asset Protection Zone</a> – a zone maintained between development and bush fire risk.
BDAC	Biological Diversity Advisory Committee - a ministerial advisory committee created under the Australian Government’s <i>Environment Protection and Biodiversity Conservation Act 1999</i>
BEAC	<a href="#">Bushfire Environmental Assessment Code 2006</a> – published by the Rural Fire Service
BFCC	Bush Fire Coordinating Committee – established as a requirement of the Rural Fires Act 1997
BFMC	Bushfire Management Committee – comprised of representatives of Hunters Hill, Ryde, Lane Cove and Willoughby areas – responsible to BFCC.
BRIMS	Bushfire Risk Information Management System – a web based application for bush fire risk management
BRMP	Bushfire Risk Management Plan – a regional plan prepared by the Bushfire Management Committee
Burra Charter	<a href="#">The Burra Charter</a> : The Australia ICOMOS Charter for Places of Cultural Significance, 2013 (first adopted 1979)
DCP	See WDCP
EP&A Act	<a href="#">Environmental Planning and Assessment Act 1979</a> (NSW legislation)
EPBC Act	<a href="#">Environment Protection and Biodiversity Conservation Act 1999</a> (Australian legislation)
ESD	Ecological Sustainable Development
FRNSW	Fire and Rescue NSW - urban fire and rescue service.
ICOMOS	International Council on Monuments and Sites – a not-for-profit organisation to conserve historical, artistic, scientific, social or ethnological sites
LEP	See WLEP
LG Act	<a href="#">Local Government Act 1993</a> (Australian legislation)
LGA	Local Government Area
NHBAC	Natural Heritage and Bushland Advisory Committee (Willoughby City Council committee of Councillors and community members)
NHR	<a href="#">Natural Heritage Register</a> – a listing of bushland and natural features outside of bushland reserves (Willoughby City Council document)
NLGBS	<a href="#">National Local Government Biodiversity Strategy</a>
NPW Act	<a href="#">National Parks and Wildlife Act 1974</a> (NSW legislation)
NPWS	National Parks and Wildlife Service (Section of OEH, NSW government)
NRMMC	Natural Resource Management Ministerial Council, Department of Environment and Heritage, 2001
OEH	Office of Environment and Heritage (NSW government)
POM	Plan of Management
RAP	Reserve Action Plan (Willoughby City Council plan)
RFS	Rural Fire Service of NSW
RHDV	Rabbit Haemorrhagic Disease Virus
SEPP	State Environment Planning Policy (NSW legislation)
SOE report	State of the Environment report – prepared by local government as a requirement of the Local Government Act 1993
SREP 2005	<a href="#">Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005</a> (NSW legislation)
TSC Act	Threatened Species Conservation Act 1995 (NSW legislation).
UBPOM	Urban Bushland Plan of Management (Willoughby City Council policy document – this document)
UFAAG	Urban Feral Animal Action Group – comprised of representatives from land management agencies

WCC	Willoughby City Council
WDCP	<a href="#">Willoughby Development Control Plan</a> - a plan adopted by Council to supplement WLEP 2012 and provide more detailed design guidelines
WLEP	<a href="#">Willoughby Local Environment Plan 2012</a> - provides the framework for planning in the City.
WoNS	<a href="#">Weeds of National Significance</a> – a list compiled by Australian government ministers in 1999 and amended in 2012
WPA	Wildlife Protection Area – declared under the <a href="#">Companion Animals Act 1998</a> (NSW legislation).

# OVERVIEW

## 1. Introduction

### 1.1 What is a Plan of Management?

A plan of management is a document that provides a framework for the management of a park or recreation area... the central product that governs the use and management of community land...

*Department of Conservation and Land Management  
Manidis Roberts 1993.*

Plans of Management are required by several Acts of Parliament in NSW (Local Government Act 1993, National Parks and Wildlife Act 1974, Crown Lands Act 1989, Environmental Planning and Assessment Act 1979).

### 1.2 Scope and Origins of this Plan of Management

#### 1.2.1 Existing Council Bushland Plans of Management

The first UBPOM (1997) was produced for Willoughby Council's Bushland Management Committee by Ian Perkins Consultancy Services and Seaside Landscape Management, and adopted by Council in 1997. The background to the 1997 UBPOM is set out below.

Prior to the UBPOM (1997) being adopted, Council had a Bushland Reserves Plan of Management prepared by Allan Fox and Associates in 1984. This plan provided significant background resource information along with a range of management objectives and general strategies. The plan however was written prior to State Environmental Planning Policy 19 Bushland in Urban Areas (SEPP19) being gazetted in October 1986, and as such did not address many of the main issues set out in that policy. It also did not satisfy the requirements of the NSW Local Government Act 1993.

In 1989 a Bushland Management Committee was established by Council to update the Bushland Plan of Management to satisfy the aims and objectives of SEPP 19. To that end, the Committee produced a series of objectives and actions based on the Bushland Reserves Plan of Management (Fox, 1984) consistent with the aims and objectives of SEPP19. The committee was also instrumental in initiating and reviewing the Strategies for Stormwater Management in the City of Willoughby (1994), prepared by Morse McVey, the development of the Bushfire Management Plan (1993) (for Willoughby LGA), prepared by Roger Good, the draft Development Control Plan (DCP) for Properties Adjoining Bushland, and was instrumental in initiating the preparation of Council's Volunteer Bushcare Policy and Guidelines for Planting. Relevant issues, objectives and policies identified and contained within these reports were incorporated into the UBPOM (1997)

## 1.2.2 *Review of Urban Bushland Plan of Management (1997)*

### **Why the UB POM (1997) was reviewed**

Much has happened since the Willoughby UB POM 1997 was adopted by council. There have been changes in legislation, council policy, knowledge base, management practices, community attitudes and uses. Many of the areas which were severely degraded in 1997 are now in a healthy, stable and resilient condition due to the implementation of the UB POM. However there are still many requiring rehabilitation and, in an urban situation, all will require ongoing maintenance.

Willoughby has managed to retain approximately 12% of its LGA as bushland. While the figure for bushland remains static, between 1992 to 2003 another 6200 households were added to its LGA, and it is expected that between 2006 to 2011 a further 2000 households will be built. This population growth, by approximately 25%, will put further demands on the bushland reserves as places for respite and recreation, within an increasingly urbanised suburb. With the increase in demand and impacts from urbanisation, there will be an increased need for resources to maintain the habitat and bio-diversity values in a healthy and resilient condition (source Willoughby City Community Profile).

The UB POM (1997) (Vol. 1, 1.2.2 STRUCTURE OF THIS PLAN OF MANAGEMENT) called for major reviews to be undertaken:

- Vol. 1 Policy- every 5 years,
- Vol. 2 Management Action Plan - every 3 years
- Vol. 3 resource inventory - regularly updated

An internal review was undertaken by Bushland Section 5 years ago

The UB POM needed to be reviewed to:

- Establish if the current UB POM (1997) had worked effectively since being adopted by council.
- Identify any anomalies within the plan.
- Identify sections within the plan which are now inappropriate, or require updating in light of new information, changing community attitudes and/or expectations in relation to managing urban bushland.
- Establish how changes in technology over the past 10 years may enhance the workability and ease of use for the UB POM, for example GIS mapping systems, web based browsers and interactive user data base.

Further the POM needed to incorporate

- Legislative changes that have occurred since the plan was written.
- Any new Council Policies which have been developed or modification made to previous policies, in relation to bushland.

### **Review Process**

The Willoughby Natural Heritage and Bushland Advisory Committee (NHBAC) reviewed the plan during 2008. The committee comprised councillors and community members and meetings were attended by council staff plus the original consultants involved in developing the 1997 UB POM.

8 meetings and site visits were held throughout 2008, focussed on reviewing the UB POM. Four meetings reviewed the major sections within Vol. 1 (Policy) and Vol. 2 (Management Action Plan), these were:

Education and Community Participation  
Urban Impacts and Biodiversity  
Fire Management and Recreation/Access  
Training/Operations and Heritage Management

The remaining four site visits looked at specific reserve action plans in detail.

### **1.2.3 Structure of this Plan of Management**

This Urban Bushland Plan of Management for the Willoughby LGA has been prepared under the requirements of the NSW Local Government Act 1993.

This plan of management has been prepared in 2 volumes:

#### **Volume 1 - Policy Document**

- Provides an overview of the Bushland Resource of the Willoughby Local Government Area;
- Identifies Key Impacts and Issues affecting the bushland resource;
- Establishes Management Aims, Objectives, Targets, Actions and Measures for the issues identified.

Review Period - 5 years.

#### **Volume 2 - Resource Inventory**

Contains detailed information about the Bushland Resource. This information includes:

- Maps of each reserve;
- Plant communities and fauna present;
- Other site specific management information.

Review Period - Reviewed and updated regularly.

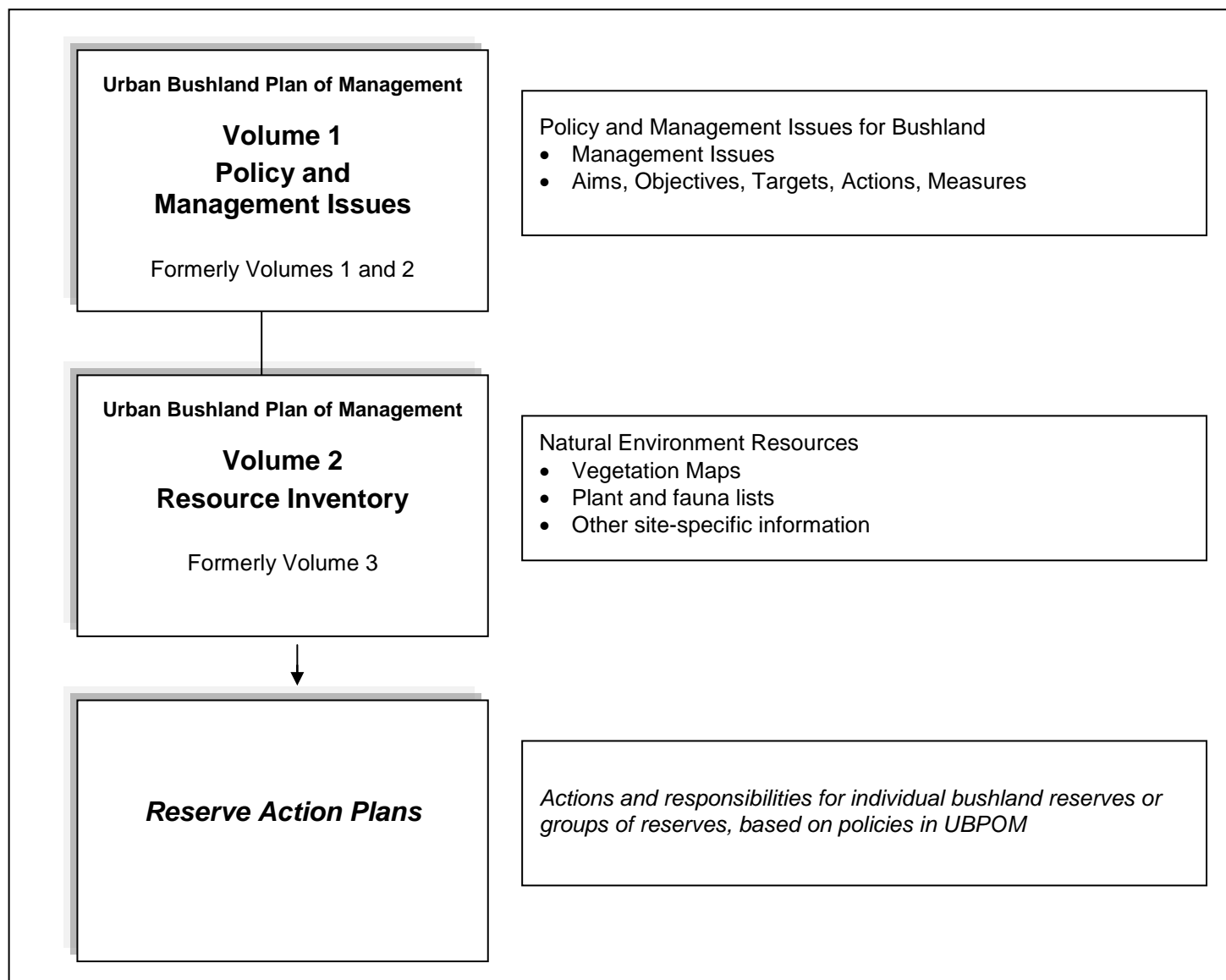
#### **Reserve Action Plans**

A Reserve Action Plan provides information on condition of the reserve, its history and significance. Issues are identified and proposed actions listed.

Review period - 5 years.



**Figure 1 - Structural Overview of the Urban Bushland Plan of Management and link to Reserve Action Plans**



### **1.2.4 How does This Plan relate to Other Plans and Policies?**

Management goals for Willoughby City Council are based on the following three documents:

#### **Willoughby City Strategy**

The [Willoughby City Strategy](#) is a long-term vision and plan for the future to help guide decision making and planning in the long term (fifteen years). Section 2 deals with Natural Ecosystems, Biodiversity and Environmental Health. The Willoughby City Strategy is updated regularly.

#### **Sustainability Action Plan**

The [Sustainability Action Plan](#) is a plan of action for what Council will do over the coming years to ensure the Council protects and enhances our environment, according to the Willoughby City Strategy and the vision, principles and directions of the WCC Sustainability Charter (2008). Target 6 of the Sustainability Action Plan deals with Biodiversity and Ecological Integrity.

#### **Willoughby Open Space and Recreation Plan 2013**

The [Willoughby Open Space and Recreation Plan 2013](#) outlines Action Plans for the six key recreation themes of:

1. Informal Recreation
2. Trails and Routes
3. Sport
4. Access to Water
5. Aquatic facilities
6. Interactions with Nature, with the following two goals regarding community engagement with open space from the Willoughby City Strategy 2013 – 2029 addressed:
  1. To be a healthy, educated, safe and interactive community, with schools, open space, recreation facilities and programs which promote healthy lifestyles and learning and contribute to the social, spiritual, emotional and physical wellbeing of the community.
  2. To treasure and conserve the natural ecosystem for its intrinsic ecological, spiritual, educational, scientific, recreational and community value.

The Urban Bushland Plan of Management aims to establish clear and consistent management policies across all bushland areas. It is the overarching plan for all bushland areas.

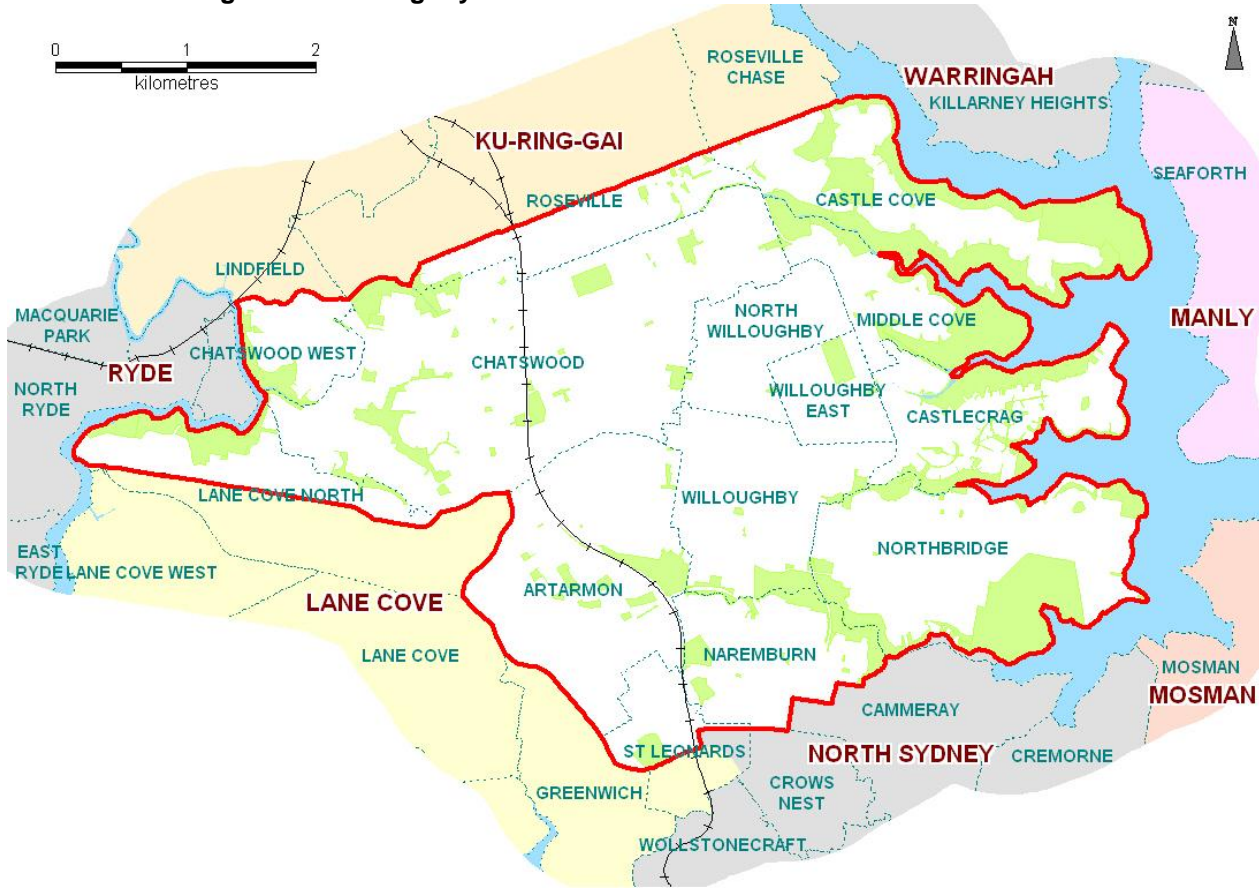
Reserve Action Plans govern the practical actions envisaged for individual reserves and all management goals and policies contained in the Urban Bushland Plan of Management automatically apply.

In the event of any inconsistency in policy between this Urban Bushland Plan of Management and other Council policy or guidelines documents, the policies contained in the Urban Bushland Plan of Management shall prevail to the extent of the inconsistency.

## 1.3 Geographical Context

### 1.3.1 Where this Plan of Management Applies

Figure 2 – Willoughby Local Government Area



Location Map



## 1.4 Extent of Bushland Included in this Plan of Management

### Definition of Bushland

Bushland is defined broadly under State Environmental Planning Policy 19 - Bushland in Urban Areas as:

*“...land on which there is vegetation which is either a remainder of the natural vegetation of the land or, if altered, is still representative of the structure and floristics of the natural vegetation.”* Clause 4 (1).

Since adoption of SEPP 19 there has been a considerable shift in the assessment of what constitutes bushland under the Policy. Areas which are extremely modified in their native plant community structure (but which have native soil still dominant) were once considered “non-regenerable” and as such not bushland under the Policy. However, with the development of successful bushland regeneration and restoration techniques and the advancement of the science of restoration ecology, these areas are now usually considered to be bushland under the Policy due to the potential to be regenerated. This is also in keeping with the application of the precautionary principle.

### Bushland Areas Included in this Plan

The management issues, policies and performance targets outlined in this Urban Bushland Plan of Management are largely targeted towards bushland on community lands - as these are the principal areas of Council statutory responsibilities. Because of the mixed ownership of Willoughby's public open space, this plan is not restricted to land owned by Willoughby Council, but includes public open space under Council's care, control and management, such as Crown land and New South Wales Government owned land. It also includes bushland reserved for future acquisition as public open space. Some land zoned for public use has passed into the care and control of Council without formal transfer of ownership being recorded. Such land, for all intents and purposes, is considered and managed by Council as public reserve and transfer of title to Council will, in the course of time, be formalised. Provisions under Section 340A *Local Government Act 1919* ( and carried over to s.50 of the 1993 Act) enable parcels shown as 'public garden and recreation space' on deposited plans made prior to 16 June 1964 to be transferred to Council as public reserve.

Also of importance in relation to bushland management in the Willoughby Local Government Area is the management of bushland on lands managed by other authorities (e.g. NSW National Parks and Wildlife Service). Whilst Council has no statutory responsibilities or direct management role on these lands, policies and performance targets have been included in this plan where a co-ordinated approach to bushland management is required between Council and these other authorities.

For the purpose of this management plan bushland is defined as, but not solely as, the whole ecosystem which encompasses not only the indigenous vegetation and wildlife, but also the topography, creeks and waterways, surface and sub-surface soils and parent rock, leaflet litter, the seedbed and any rock formations, rocks, stones or pebbles.

This plan aims to protect bushland covered by this plan and also to protect adjoining natural areas under other management and marine environments. As the foreshore is a transition area between the aquatic and the terrestrial environment this plan aims to protect and enhance all functions associated with the foreshore's role as a transition area.

Detailed maps indicating the extent of all bushland located on community land and lands managed by other authorities is provided in Appendix 1 of this volume and in in Volume 2 (Resource Inventory) of the Urban Bushland Plan of Management.

### Bushland on Community Lands

Willoughby Local Government Area is approximately 23 km<sup>2</sup> in size and contains approximately 343 hectares of bushland within its boundaries (including Lane Cove National Park), 327 hectares of which is under the care, control and management of Council (excluding National Park and privately owned bushland). The bushland is distributed throughout the area in reserves which vary greatly in size, shape and plant communities. The Willoughby area as a whole contains a diverse range of remnant bushland, with

several large bushland reserves. Some named reserves join to form continuous stretches of bushland, while some others are in close enough proximity to each other to form habitat linkages.

### **Bushland on Private Land**

Bushland on private lands contributes significantly to many important issues in Willoughby including:

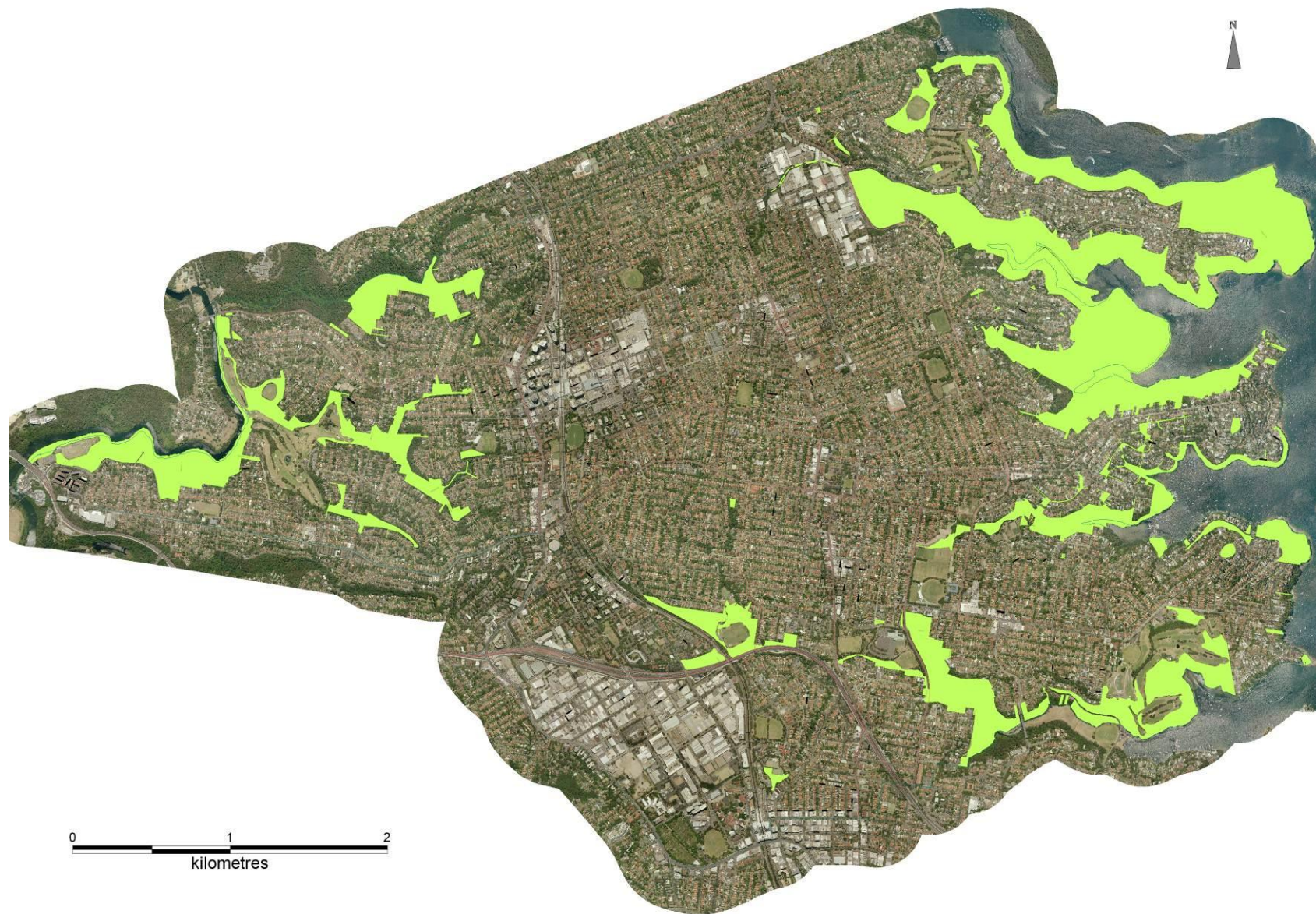
- maintaining biodiversity in the region;
- providing important fauna habitat and linkages;
- developing an attractive visual character for the area;

e.g. large sections of residential development in the Willoughby area are on steep, visually prominent lands and foreshores. Bushland remaining on these lands contribute significantly to the visual character of the area whilst assisting with preventing erosion and land-slipping. (Refer Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005.)

### **Bushland Managed by Other Authorities**

An area of bushland within the Local Government Area is under the management of NSW National Parks and Wildlife Service (portion of the Lane Cove National Park). Other small areas of what can be considered bushland come under the Rail Corporation of NSW and Roads and Maritime Services (e.g. portions of Artarmon Reserve) and Commonwealth Agencies. (Note: Areas zoned open space under the ownership of Commonwealth and State Governments are managed by Willoughby City Council.)

**Figure 3 – Approximate Extent of bushland in the Willoughby City Council Local Government Area under Council Management**



## 1.5 Aims and Objectives

The Urban Bushland Plan of Management aims to:

- Manage bushland for its aesthetic, recreational, education and scientific values to the community;
- Manage bushland to maximise its value as part of the natural heritage of Willoughby;
- Manage bushland in such a way as to maintain biodiversity of locally indigenous species and communities in the long term;
- Fulfil Council's responsibilities under other community and Government programs and policies;
- Fulfil Council's statutory responsibilities under NSW and Commonwealth Legislation;
- Fulfil Council's management objectives.

### 1.5.1 Council Management Responsibilities

#### Council Operations - Principal Objectives

##### **Willoughby City Strategy:**

The Willoughby City Strategy operates as the primary overarching vision for Willoughby City and drives the Council's management and operational planning. It is a plan based on community visions, values and aspirations. This is in compliance with the Local Government Act which requires that each local government area have a community strategic plan developed by the council for the future of the local community covering a period of at least 10 years. In 2006, after extensive community consultation, WCC produced the Willoughby City Strategy to guide decision-making over the following 15 years. This document is regularly updated. The Willoughby City Strategy 2013-2029 includes in the chapter on the Natural Environment:

**Goal: *Conserve the natural ecosystem for its intrinsic ecological, educational, scientific, and recreational value.***

##### **2.1.1 Conserve and maintain Willoughby's natural ecosystems.**

- a. Implement and review the Sustainability Action Plan.
- b. Protect environmentally sensitive areas from human impact and climate change.
- c. Manage natural areas using a water catchment approach.
- d. Enhance habitat corridors and linkages between bushland reserves.
- e. Regenerate and maintain natural areas.
- f. Manage potential impact of bushfires on the natural and built environment.
- g. Monitor and control feral animals, noxious plants and undesirable weeds.
- h. Ensure stability of riparian zones.
- i. Protect trees and vegetation.

##### **2.1.2 The community values the natural environment.**

- a. Provide safe pedestrian links into, through and between bushland areas without endangering natural ecosystems.
- b. Encourage community involvement in Bushcare, Parkcare and Streetcare.
- c. Facilitate natural environment education programs.

- d. Build partnerships with stakeholders and other councils to integrate management of environmentally sustainable issues.

### **2.1.3 Reduce pollution.**

- a. Continue air and water quality monitoring.
- b. Work with NSW Government, other councils and stakeholders to improve air and water quality on a regional basis.
- c. Ensure that new developments implement appropriate soil, erosion and water management.
- d. Work with NSW Government and developers to remediate contaminated sites and prevent future contamination.

### **Willoughby City Council Sustainability Charter:**

Adopted 2008, the Willoughby City Council Sustainability Charter has the following objectives for Biodiversity, Habitats and Ecological Integrity:

*We will protect native vegetation, and native fauna habitats, both to retain native biodiversity and also to retain a significant carbon sink. We will seek to maintain and restore the ecological integrity of the LGA. To this end we will monitor environmental condition and conservation of ecosystem processes. We will advocate that State and Federal Governments should commit resources to stopping unsustainable urban and non-urban land clearing, improve agricultural sustainability, and promote industries that restore native biodiversity and ecological integrity. We will support the protection of ecosystems outside our LGA boundaries which are being affected by our consumer society.*

### **Zone E2 Environmental Conservation:**

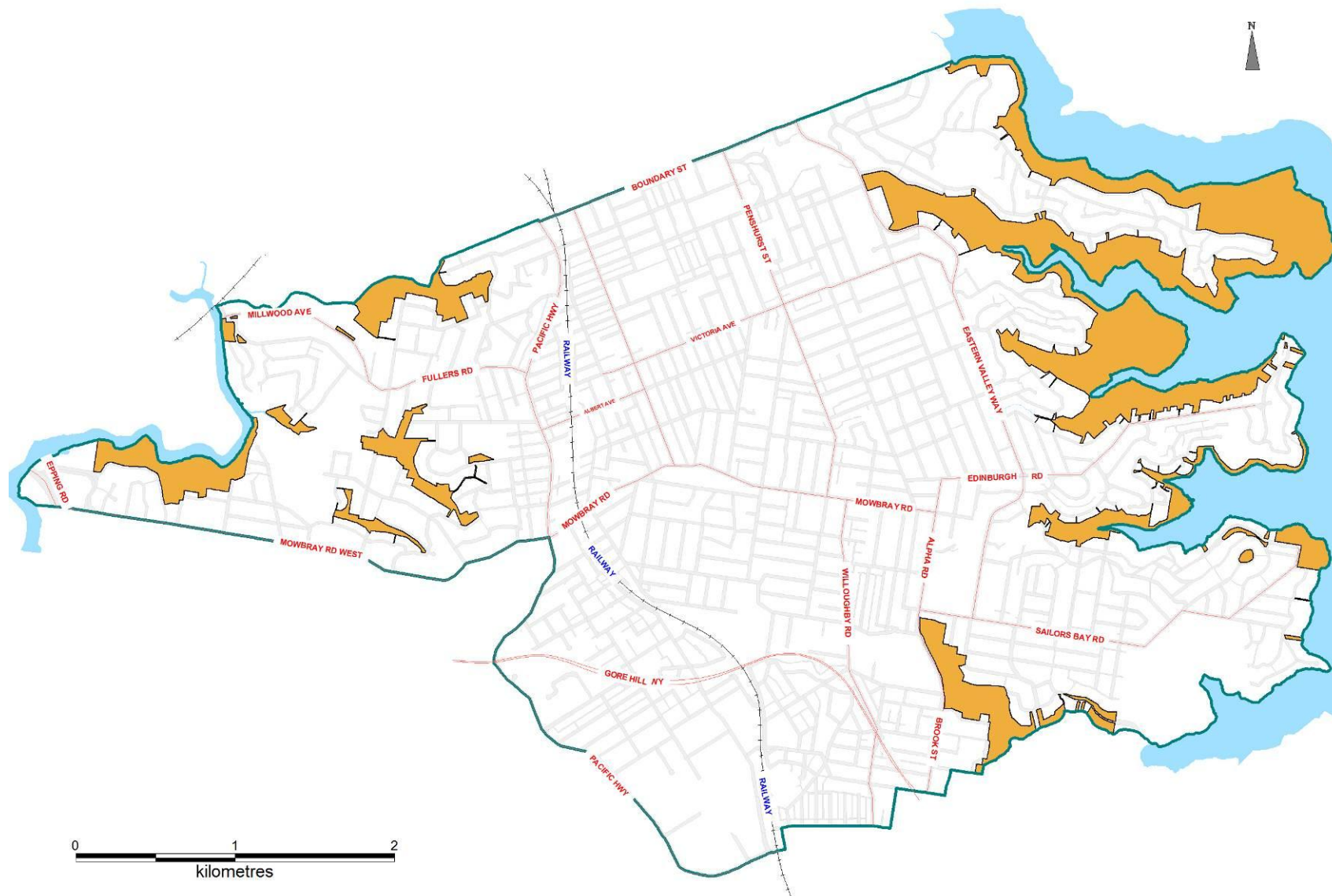
Under the Willoughby Local Environment Plan 2012, most areas of bushland in Willoughby have a zoning of E2 Environmental Conservation. Most are on publicly owned land but some Environmental Conservation land is privately owned. The following objectives are from the WLEP 2012.

#### **Objectives of zone**

- To protect, manage and restore areas of high ecological, scientific, cultural or aesthetic values.
- To prevent development that could destroy, damage or otherwise have an adverse effect on those values.
- To conserve native plant and animal species through the maintenance of suitable habitats.
- To contribute to the scenic quality of Willoughby City and the foreshore.



Figure 4 – Approximate Extent of bushland zoned [E2 Environmental Conservation](#) in the Willoughby City Council Local Government Area



## Delivering the National Biodiversity Conservation Agenda at a Local Level

The National Local Government Biodiversity Strategy 1998 explains why local government has a major role in biodiversity management:

- Because natural resource management is best done at a local level, to suit local conditions, in consultation with local people.
- Natural resource management is a logical extension of land-use planning and development control which, in most parts of Australia, is a core function of Local Government.

### Local government provisions for biodiversity (from Australia State of the Environment Report 2001)

In November 1998, the National General Assembly of Local Government unanimously voted to endorse a National Local Government Biodiversity Strategy (NLGBS). This important development establishes a common policy direction for all local government bodies across Australia, recognising the importance of biodiversity and the need for integrated local government approaches and actions. It complements the national biodiversity strategy. The Strategy defines the following objectives and suggested actions to address five key issues (Australian Local Government Association, Biological Diversity Advisory Committee 1999).

- *Awareness, training and education:* To develop a national awareness, training and education program. *Suggested actions include:* establishing a local biodiversity support network, promotion of success stories and establishment of an award system, and provision of specific support to rural councils to develop and implement local planning regulations to assist biodiversity conservation.
- *Local government resourcing:* Local government resourcing is needed to ensure adequate resource for all interested Councils or regional organisations in order to have a greater role in biodiversity conservation. This includes addressing the specific requirements of Indigenous communities. *Suggested actions include :* auditing of existing programs to ensure cost effective delivery, supporting environmental officers in Councils or regional groups to develop and implement local biodiversity conservation strategies, and introducing rate rebate schemes for biodiversity conservation (see [Binning & Young \(1999\)](#) for a discussion and examples).
- *Regional partnerships and planning:* To encourage regional partnerships and planning, preferably along existing regional boundaries. *Suggested actions include :* directing resources to regional planning and implementation and, where appropriate, providing statutory support for regional authorities to have a coordinating role, integrate biodiversity concerns with existing processes and programs (e.g. catchment planning, NHT); and support regionally administered incentive schemes (e.g. Greening Australia's fencing incentives program).
- *Legislative frameworks:* to encourage state governments to review, and possibly amend legislation relating to the role of local government in managing biodiversity (e.g. planning, local government and environment Acts). *Suggested actions include :* developing all catchment and regional plans in cooperation with local government and incorporating them into Council planning schemes; allowing local government to raise special purpose levies, if they wish to have a greater role in biodiversity conservation (as is done in Brisbane City and elsewhere); and encouraging consistency between States and State Acts that relate to biodiversity.
- *Information and monitoring:* to establish a nationally coordinated information and monitoring system which is integrated with existing databases, to provide Councils with basic information on biodiversity in their area. *Suggested actions include:* ensuring local government has access to existing state and national data systems, preferably on GIS; establishing data standards and protocols, and ensuring data are delivered at a relevant scale; and providing training, tools and technology transfers to local managers.

### 1.5.2 Council Statutory Responsibilities

Council has many functions conferred or imposed on it by, or under, several Acts of NSW Parliament, some of which directly or indirectly affect bushland management. These Acts and Government policies include (but are not restricted to):

### **The Environment Protection and Biodiversity Conservation Act 1999 (the EPBC Act)**

This is the Australian Government's central piece of environmental legislation. It provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places — defined in the EPBC Act as matters of national environmental significance.

### **Local Government Act 1993**

Establishes the requirements for Council identification, classification and management of land owned or controlled by Council. Requires the production of management plans.

### **Environmental Planning and Assessment Act 1979**

Ensures that the effects on the natural environment, along with social and economic factors, are taken into account by Council in either granting approval for or undertaking works, developments or activities.

The Environmental Planning and Assessment Act (EPAA) is also the enabling legislation for other instruments which have a direct influence on bushland management including:

- State Environmental Planning Policy (SEPP) 19 - Bushland in Urban Areas
- Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005
- Willoughby Local Environmental Plan 2012

### **Rural Fires Act 1997**

Councils and public authorities must take all practicable steps to prevent fires and to avoid fires spreading on any land owned by them or under their control or management.

### **Protection of the Environment Operations Act 1997**

To protect, restore and enhance the quality of the environment in New South Wales.

### **National Parks and Wildlife Act 1974**

Specific statutory responsibilities on Council arising from this Act specifically relate to the protection of sites of Aboriginal archaeological significance, the conservation of native flora and fauna and the protection of threatened species, populations or ecological communities.

### **Threatened Species Conservation Act 1995**

This Act repeals the Endangered Fauna (Interim Protection) Act 1991. The Act aims to conserve threatened species, populations and ecological communities of animals and plants through amendments to the Environmental Planning and Assessment Act and the National Parks and Wildlife Act 1974.

### **Crown Lands Act 1989**

Some bushland within the Willoughby LGA is Crown reserve. Under this Act the land shall be taken to have been acquired under the Local Government Act 1993 and to have been classified as community land (Crown Lands Act 1989 Section 77 1(a)).

### **Catchment Management Authorities Act (2003)**

Catchment Management Authorities (CMAs) were established across New South Wales to ensure that regional communities have a say in how natural resources are managed in their catchments. From October 2012 Willoughby City Council area comes under the Hawkesbury/Nepean Catchment Authority.

### **Heritage Act 1977 and Heritage Amendment Act 2009**

Provides protection for natural, cultural and built heritage in NSW.

### 1.5.3 Other Community and Government Responsibilities

The legal basis for Council's involvement in sustainability comes from the provisions of several NSW State Acts, especially the Local Government Act, which requires Councils, Councillors and Council employees to have regard for the principles of **Ecological Sustainable Development (ESD)**. This legislation states that Council has a responsibility to properly manage, protect, restore, enhance and conserve the environment of the area for which it is responsible.

#### **Ecologically Sustainable Development Principles**

Australia's *National Strategy for Ecologically Sustainable Development (1992)* defines ecologically sustainable development as: 'using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased'.

**Australian Natural Heritage Charter:** Standards and Principles for the Conservation of Places of Natural Heritage Significance, Australian Heritage Commission (2002) is a distillation of 'best practice' conservation principles for Australia. The Charter relates closely to the general structure and logic of *The Burra Charter - the Australia ICOMOS Charter for Places of Cultural Significance, 2013*.

#### **The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance, 2013.**

First adopted in 1979, the Burra Charter was drawn up by ICOMOS (International Council on Monuments and Sites - an international organisation linked to UNESCO). It provides guidance for the conservation and management of places of cultural significance (cultural heritage places), and is based on the knowledge and experience of Australia ICOMOS members.

The **Willoughby City Council Sustainability Charter** was adopted in 2008. It sets out Council's vision, principles and directions and has been followed by the Sustainability Action Plan that sets out detailed actions.

The **Sustainability Action Plan** (2011-2015 and regularly updated) replaces the earlier Environmental Management Plan in that it defines the actions Council will undertake in striving towards ecological sustainability and is based on the vision outlined in the Willoughby City Strategy. These actions will be resourced primarily by the Sustainability Levy as part of the e.restore program in addition to other funding sources.

# 2. Value and Management of Bushland Areas

## 2.1 Value Statement

Bushland is identified as having several general and specific values under State Environmental Planning Policy 19 - Bushland in Urban Areas. These include:

### General Values

- value to the community as part of the natural heritage;
- aesthetic value;
- a recreational, education and scientific resource.

### Specific Values

- remnants of plant communities which were once characteristic of land now within the urban area;
- areas containing rare and endangered flora and fauna;
- areas containing habitats for native flora and fauna;
- wildlife corridors and vegetation linkages;
- a stabiliser of the soil surface;
- scenic values - to retain the unique visual identity of the landscape;
- areas containing significant geological features, existing natural landforms, archaeological relics;
- an accessible community resource.

The Willoughby City Strategy (2013) has the goal for Ecosystems and Environmental Health: *Conserve the natural ecosystem for its intrinsic ecological, educational, scientific, and recreational value.*

### Bushland as a Community Asset

Bushland is now identified as a community asset (similar to roads, buildings and playing fields etc.) under the Local Government Act 1993 and council is required to value all of its assets.

The bushland asset, upon which this report focuses, is the culmination of millions of years of refining of biological responses and thousands of years of Indigenous land management practices to suit the prevailing environmental conditions. The repository of diversity which is contained within this bushland resource is incalculable. Although it is technically possible to recreate a superficial likeness to the existing plant communities we, as a controlling species, are unable to replicate the vast range of responses which have given rise to these unique communities. Furthermore, the bushland contains the evidence of the interactions, over the millennia, with the people of this continent and their environment.

This report aims to recognise the degrading influences upon this valuable asset and to address them where necessary. To achieve this, a series of policies and actions have been developed which aim to conserve and maintain long term viability of the bushland and its associated fauna.

## 2.2 Allocation of Resources for Management

Due to the pattern of development in Willoughby and many other local government areas in the Sydney region, bushland both in and outside of reserves represents fragmented remnants of a once much broader and more diverse ecosystem. If left unmanaged this fragmentation generally leads to a breakdown in natural ecological processes and a gradual degradation of the bushland resource. All remnant bushland within the urban area can be considered to be vulnerable and as such has a high conservation value, especially for maintaining local habitat, species and genetic diversity.

It is recognised that all reserves require appropriate levels of management intervention and resourcing to maintain bushland values. The allocation of resources will be dependent upon the inter-relationship between the ability to restore and maintain natural processes, the ability to mitigate degrading influences on a site and the availability of resources to undertake the work. This Plan of Management refines the existing processes used by Council to allocate resources and provides a structured and detailed approach to management.

There are essentially 2 components of bushland management work which require resourcing. These are:

- **Planning and Administration Matters:** e.g. development of management and action plans, assembling information on natural assets.
- **On-Site Works:** e.g. Bush regeneration and restoration works, bushfire mitigation, habitat restoration, track management.

In terms of Planning and Administrative works, the Urban Bushland Plan of Management provides a tool for determining the most appropriate planning and administrative actions to be resourced.

In terms of On-Site Works, Reserve Action Plans assist in providing more quantifiable information upon which to undertake a progressive review of resourcing requirements and priorities for each bushland reserve in the Local Government Area.

# 3. Resource Overview

## 3.1 Landform, Land Use and Plant Communities

Benson and Howell (1990) in the publication “***Taken for Granted - the Bushland of Sydney and Its Suburbs***” (Kangaroo Press) provide an excellent overview of the topography, past land use and plant communities of the Willoughby Local Government Area. The following section is an extract from this publication.

“The gently undulating plateau occupied by the houses of Artarmon, Willoughby and Chatswood, the wooded Middle Harbour hillsides between Castlecove and Northbridge, and the Lane Cove River as it winds between Fullers Bridge and Epping Road are three distinctive Willoughby landscapes dependent on the different geologies of shale, sandstone and tidal flats respectively. Each once had characteristic vegetation.

About half of Willoughby, its higher ridges and main plateau, is covered by a Wianamatta Shale mantle that weathers to clay-rich, relatively fertile soil. Chatswood, most of the suburb Willoughby, and the higher parts of Artarmon and Naremburn once had magnificent Blue Gum High Forest, with its tall trees of Sydney Blue Gum, *Eucalyptus saligna*, and Blackbutt, *Eucalyptus pilularis*. Cut and burnt by the early timber getters and settlers, none of this forest survives in the municipality today, though where sandstone gullies have been enriched by downwashed clay, some of the High Forest trees and understorey plants can still be seen. In Artarmon Reserve, for example, beside the creek, are a few Blue Gums, together with Blackbutts, and trees of *Syncarpia glomulifera*, *Angophora costata*, *Eucalyptus piperita*, and *Eucalyptus resinifera*. Despite disturbance from the sewer line along the creek, and nutrient enrichment from suburban areas upstream that have encouraged weed growth, mesic native understorey species here include small trees of *Notelaea longifolia* and *Polyscias sambucifolia*, the shrubs *Breynia oblongifolia*, *Leucopogon juniperinus* and *Pultenaea flexilis*, and vines *Clematis* and *Tylophora barbata*. The creek line is terminated abruptly by the oval, and vegetation elsewhere in the reserve is of typical sandstone flora.

Farming developed in central Willoughby in the mid-nineteenth century, after the Blue Gum High Forest had been logged. Suburban development on the relatively level shale country at Chatswood and Artarmon followed the opening of the North Shore railway in 1890 and continued after World War I. The Northbridge suspension bridge, also completed in 1890, opened further areas for suburbs, but the steeper sandstone country was difficult to build on and bushland areas associated with the major waterways were not developed until after World War II. An important exception, Castlecrag, was used by architect Walter Burley Griffin, designer of Canberra, for developing his ideas on integrating suburban housing with the natural bushland. As a result Castlecrag has quite a number of small bushland pockets set within the suburban matrix, many of which are deteriorating through exotic weed invasion.

The Hawkesbury Sandstone underlying the shale is exposed on hillsides and ridges along both Middle Harbour and the Lane Cove River, and parks and reserves with bushland conserve examples of its characteristic vegetation. In the Harold Reid Reserve at Middlecove, and A.C. Press Reserve at Castlecove (linked by the North Arm Walking Track), steep wooded slopes rise almost 100 m above the water of Middle Harbour. Woodland of the Scribbly Gums, *Eucalyptus haemastoma* and *Eucalyptus racemosa*, Red Bloodwood, *Eucalyptus gummiifera*, Black She-Oak, *Allocasuarina littoralis* and Old Man Banksia, *Banksia serrata*, and a variety of flowering shrubs, herbs and grasses may be found on the ridge-tops.

The Sugarloaf, the sculptured sandstone crest of the Harold Reid Reserve, emerges from amongst a host of shrubs. In autumn colourful flowers include *Acacia linifolia*, *Banksia ericifolia*, *Banksia marginata*, *Crocea saligna*, *Epacris longiflora* and *Phyllota phyllicoides*. Conspicuous amongst the monocotyledons are metre-tall loose clumps of *Caustis pentandra*, trunkless *Xanthorrhoea* Grass Trees and stiff-leaved *Lomandra longifolia*. Local changes in species composition are generally linked to differences in soil and drainage. For example, where the poor sandy soil has some clay enrichment, *Eucalyptus racemosa* may replace the more common *Eucalyptus haemastoma*. Grey Gums, *Eucalyptus punctata*, also indicate local clay influence, and certainly occurred closer to the shale boundary; a few can be seen today on the edge of the H.D. Robb Reserve. Trees of *Eucalyptus sieberi*, the Silvertop Ash, are restricted to just below the summit of the Harold Reid Reserve on the more exposed north-facing side.

On the heights of the HC Press Reserve, heath areas are interspersed with woodland. *Angophora hispida*, *Hakea teretifolia*, and *Banksia ericifolia* are shrubs characteristic of these, often wetter, sites. Vegetation on this former Commonwealth land is in good condition, and quite scarce around Middle Harbour, being on the type of flatter ridge-top land that has

## RESOURCE OVERVIEW

generally been used for housing. On the slopes are some quite large trees of *Angophora costata* and *Eucalyptus gummifera*, together with Sydney Peppermint, *Eucalyptus piperita*. Small Blueberry Ash trees, *Elaeocarpus reticulatus*, and Christmas Bush, *Ceratopetalum gummiferum*, are common, also in places *Banksia serrata*, *Allocasuarina littoralis* and *Allocasuarina torulosa*. On more protected or fertile slopes the shrubs include *Grevillea linearifolia*, *Dodonaea triquetra* and *Pomaderris*. The creeping *Leucopogon amplexicaulis* grows on moist rock ledges or creek margins on the south-facing lower slopes.

Along Willoughby's sandstone-lined creeks, the vigorous ferns *Culcita dubia* and *Gleichenia dicarpa* replace the shrubs. Deeper, more sheltered gullies may contain Coachwood trees, *Ceratopetalum apetalum*, and Tree Ferns, *Cyathea*; some survive in Flat Rock Gully, for example. Landfill operations upstream here have already destroyed large areas of bush over the last 20 years and should be constrained, and filled areas rehabilitated to reduce further degradation of the remaining bushland. Small pockets of creekside vegetation may also be found along Bay, Camp, and Sugarloaf Creeks, in Retreat and Castlehaven Reserves, and in Munro and Clive Parks. The falls on Sugarloaf Creek are worth seeing after rain; recent bush regeneration work here has removed weedy overgrowth, restoring easy access.

Where major creeks meet the harbour, the tidal mud and sandflats are colonised by mangroves and *Casuarina*. There are healthy stands of the Grey Mangrove, *Avicennia marina*, along the north and south arms of Sugarloaf Bay. Samphire plants, *Sarcocornia quinqueflora*, may occur with the mangroves, fringed by narrow bands of *Casuarina glauca*, forming Swamp Oak forest. *Phragmites*, *Juncus* and the paperbark, *Melaleuca styphelioides*, occur sporadically amongst the *Casuarina*.

On the western side of Willoughby, the vegetation patterns along the Lane Cove River are similar to those on Middle Harbour, but with some local differences due to the gentler topography and larger catchments. Mudbanks and riverflats are larger. Vegetation in Mowbray Park at Chatswood West is an interesting complex of plant communities. In addition to the dominant *Avicennia* mangroves, there are shrubs of *Aegiceras corniculatum*, the River Mangrove, along the water's edge. On river flats behind the mangroves are areas of reeds, *Phragmites australis*, patches of salt-tolerant herbs including *Sarcocornia quinqueflora* and *Samolus repens*, and sizeable stands of Swamp Oak fringe forest. On a deep sandy terrace there is woodland of Blackbutt and Grey Ironbark, *Eucalyptus paniculata*, with a number of small tree species including *Xylomelum pyriforme*, the Woody Pear. *Melaleuca linariifolia* is the paperbark that grows near the base of the rocky hillside. Higher up, the exposed sandstone slopes have open-forest with impressive Blackbutts amongst the *Eucalyptus piperita* and *Angophora costata*, and a diverse understorey. In more sheltered situations, large Port Jackson Figs, *Ficus rubiginosa*, grow with small trees of *Clerodendrum tomentosum*, *Notelaea longifolia*, *Rapanea variabilis*, *Glochidion ferdinandi*, *Pittosporum undulatum* and Bird's Nest Fern, *Asplenium australasicum*. Along the creek grow a variety of ground ferns, *Cyathea cooperi* Tree Fern, the climber *Smilax glycyphylla*, and small Black Wattle trees, *Callicoma serratifolia*. Although describing only part of the plant richness that can be found in Mowbray Park, this list emphasises the benefits, even within a small bushland park, of conserving as wide a range of habitats as possible."

Benson and Howell (1990)

## 3.2 Description of Reserve Plant Communities

The Willoughby Local Government Area contains a diverse variety of native plant communities on both community land, private land and land managed by other Authorities. A detailed description of plant communities present in each reserve is provided in the Resource Inventory - Volume 2 for this Urban Bushland Plan of Management.



# MANAGEMENT ISSUES, POLICIES, TARGETS AND MEASURES

Education and Community Participation  
Urban Impacts  
Biodiversity  
Recreation and Access  
Training and Operations  
Planning and Administration  
Lands Not Under the Care and Control of Council  
Heritage Management

The following section of the Plan of Management contains a breakdown of the major issues identified as affecting bushland and the recommended objectives, policies, performance targets and measures which should be adopted in order to ensure that bushland management works comply with statutory requirements and “best practice” management principles.

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# 4. Education and Community Participation

Interpretation and Education  
 Bushcare  
 Community Participation in Management  
 Scientific Research

## 4.1 Interpretation and Education Programs

### 4.1.1 *Legislation and Policy*

Willoughby's bushland reserves are a significant resource for school based environmental education. These uses need to be recognised and incorporated into the management aims of bushland reserves. It also needs to be recognised that overuse by these users can seriously impact on small bushland remnants. There are strong links between Council and schools. Council provides a range of environmental programs and guided bush walks for school groups.

Urban bushland is not only an educational resource for students but is also a valuable educational resource for all those in society who wish to learn more about the natural environment and the effects society has on it. Further to this, for bushland management to be effective, it requires a sympathetic public informed about the attributes of bushland and the impacts society can have on its viability.

In order to increase public awareness on bushland issues Council facilitates an extensive environmental workshop program, covering such topics as native plant and weed identification, native fauna and habitat creation, organic gardening, etc. In conjunction with the workshops Council represents bushland issues at community events and hosts environmentally themed fair days, including the annual Fauna Fair. Council operates an interpretive program. This program provides guided bushwalks catering for all ages, types of groups, and languages covering environmental topics and aboriginal heritage.

The level of awareness and sympathy toward the role of urban bushland and the effects of urban impacts on it is considerably variable in the community. Many bushland reserves adjoining urban areas are impacted upon through encroachments, increased weed infestations, run-off with increased nutrients plus direct destruction of the bush through clearing and dumping. Some of the more obvious symptoms of the lack of awareness or disregard for bushland values include:

- Dumping of domestic and garden refuse in the bush;
- Encroachment of private properties into bushland or open space;
- Destruction and damage to tracks and signs;
- Lack of control of domestic pets in bushland;
- Unauthorised clearing of bushland understorey;
- Unauthorised poisoning and lopping of trees;
- Planting of inappropriate species in, or on the boundaries of reserves;
- Discharging water from swimming pools into bushland;
- Discharging water from tennis courts, roofs, other hard surfaces and gardens into bushland;
- Removal of bush rock and fallen limbs.

**The Willoughby City Strategy**

The Willoughby City Strategy (2013) includes: 2.1.2 c. *Facilitate natural environment education programs.*

**4.1.2 Council’s Bushland Interpretive Program**

Council began Bushland interpretive activities in 1991. The number and range of interpretation and education activities have increased greatly since then. Activities include:

- Range of schools environmental programs in reserves and schools;
- Willoughby City Council’s Environment and Sustainability Education Network for teachers, which was initiated by Council, is being continued and expanded;
- Bushland interpretive program, including guided bushwalks with educational environmental themes, for all ages, types of groups and languages;
- Bushland interpretive programs promoted at all community events;
- Interactive displays at all community events;
- Aboriginal heritage activities conducted in association with Aboriginal Heritage Office, e.g. Guringai Festival, Aboriginal interpretive events, bush tucker workshops;
- Bushland walks brochures;
- Workshops on a variety of bushland related subjects;
- Bushland library collections at main and branch libraries and school libraries;
- Programs to directly educate bushland neighbours.

Objective	Target	Action	Measure
<b>4.1a Aim: Increase community understanding of bushland values and management.</b>			
Support education and interpretive programs and the dissemination of information on Willoughby’s unique bushland assets through the use of guided bushwalks, leaflets, booklets, newsletters, display boards, newspaper columns and press releases, field days, courses and workshops covering vegetation, fauna and bushland management.	To increase community awareness: -reduction in encroachments, waterway pollution, dumping in reserves and other impacting activities; -conservation of flora and fauna.  To continue to deliver a diverse range of activities in Council’s Interpretive Programs.  To continue and increase quality of interpretive and educational services.  To continue and increase provision of resources available to the community and educational institutions.	Continue and increase the number of schools participating in Willoughby Environment and Sustainability Education Network (WESEN).  Continue range of schools environmental programs in reserves and other venues.  Continue guided interpretive bushwalks for general public with educational environmental themes for all types of groups, including all age groups and language groups, in reserves and at other venues.  Continue to promote bushland interpretive programs at community events through interactive displays, workshops and other means.	Sustained and increased participation in WESEN.  Further development of bushland interpretive programs to provide for a variety of interest groups.  Presence of interpretive material at community events.  Continued and increased activities relating to local Aboriginal heritage.

Objective	Target	Action	Measure
		Continue to promote understanding of Aboriginal heritage and conduct activities in association with the Aboriginal Heritage Office in local reserves.	
<b>4.1b Aim: Manage community use of reserves to protect their ecological value.</b>			
While appropriate non-damaging use of reserves is to be encouraged, any damage is to be detected and corrected.	Detect and discourage the type of public use of reserves which can cause damage to bushland.	Monitor track usage and close off unauthorised tracks. Monitor reserves regularly to early detect any damaging use.	Impacts from inappropriate use or overuse of reserves is quickly detected and corrected.
<b>4.1c Aim: Maintain and improve a high level of service provision in interpretative signage and on-site materials.</b>			
Bushland regeneration and park management work undertaken in areas of high recreational use will be interpreted.  Promote community awareness through the installation of bushland interpretive signage in association with recreation facilities, e.g. walking tracks.	Increased awareness of bushland management issues.  Continue provision of appropriate and consistent interpretive signage and on-site materials associated with recreation facilities, e.g. tracks and trails.	Continue to inform the community of bushland issues by on-site educational activities and signage.  Install, review and maintain appropriate signage	Positive responses by community to Council's management of local bushland.  Signage is regularly reviewed and updated.

## 4.2 Community Participation in Bushcare

### 4.2.1 Legislation and Policy

Council has a responsibility to ensure volunteers engaged in bushland management work comply with the Work Health and Safety Act 2011.

Council has a moral obligation in respect of volunteer labour to fulfil the recommended practices outlined in the [The Model Code of Practice for Organisations Involving Volunteer Staff](#) 2005 (Volunteer Centre of NSW).

Operations are to be conducted to achieve the goals set out in the Willoughby City Strategy (2013) and actions in the Willoughby City Council Sustainability Action Plan (Draft 2011-2015). Principles and recommendations of the WCC Community Engagement Strategy 2011, aimed at supporting the interactive relationship between Council and the community, and the WCC Volunteer Code of Conduct are to be followed.

Objective	Target	Action	Measure
<b>4.2a Aim: To comply with relevant Legislation and Policies.</b>			
The legal requirements of the Work Health and Safety Act 2011 are acknowledged by Council and	Fulfil legal requirements of Work Health and Safety Act 2011.	Continue to update work health and safety segment of Bushcare training	Bushcare Training Course updated as required.

Objective	Target	Action	Measure
will be addressed when necessary and appropriate.		workshops to reflect current legislation.  Encourage all new Bushcarers to complete Bushcare Training. Ensure all aspects of Bushcare program promote safe and healthy operational practices.	New Bushcarers complete training. Minimal number of Workplace Incident Forms lodged for Bushcare.
The <a href="#">Model Code of Practice for Organisations Involving Volunteer Staff</a> 2005 (Volunteer Centre of NSW) and the WCC Volunteer Code of Conduct are acknowledged by Council and will be applied for the engagement of volunteers.	Fulfil the recommendations contained in the <a href="#">Model Code of Practice for Organisations Involving Volunteer Staff</a> 2005 (Volunteer Centre of NSW).  Volunteers to be aware of the WCC Volunteer Code of Conduct.	Continue to ensure that recommendations of the Volunteer Centre of NSW are incorporated into all aspects of Bushcare program.  Volunteers to be made aware of the WCC Volunteer Code of Conduct via Bushcare Training.	WCC Bushcare program complies with majority of recommendations contained in Model Code of Practice for Organisations Involving Volunteer Staff.  Volunteers behave in a manner consistent with the WCC Volunteer Code of Conduct.
All volunteer bushland management works are to be implemented in accordance with this Urban Bushland Plan of Management.	Volunteer activities comply with the aims and objectives of the Urban Bushland Plan of Management.	Bushcare Action Plans are prepared which conform with Reserve Action Plans and Urban Bushland Plan of Management.	Bushcare Action Plans comply with RAPs and UB POM.
<b>4.2b Aim: To comply with relevant Willoughby City Council policies, strategies and plans.</b>			
Willoughby City Strategy ECOSYSTEMS AND ENVIRONMENTAL HEALTH - Goal: and WCC Sustainability Action Plan (6.1): <i>Conserve the natural ecosystem for its intrinsic ecological, educational, scientific, and recreational value</i>  WCC Policy: <a href="#">Bushcare Program</a> .	Pressures on natural ecosystems are actively managed in partnership with the community.  Responsible management of volunteers as outlined in WCCs Bushcare Program policy.	Promote community involvement in Bushcare and volunteer activities at public events and other means.  Maintain supervision and support for volunteers.  Improve and extend Bushcare sites.  Offer regular training for volunteers.	Number of volunteers.  Number of volunteer hours.  Satisfaction levels of volunteers.

### 4.2.2 Council Bushcare Program

Willoughby Council supports community volunteers working in bushland regeneration and related works through the Bushcare Program. Council (in 2012) supports over 40 volunteer Bushcare groups working in various reserves throughout the area. In addition 6 Parkcare, 3 Streetcare, 1 Lanecare and 1 Plant Propagation groups are supported.

Achievements since Implementation of UBPOM:

- Appointment of Bushcare Co-ordinator and secondment of other managerial staff as required.
- Establishment of 18 additional Bushcare Groups (excluding Parkcare, Streetcare, Lanecare and Plant Propagation groups), with upwards of 300 participants, each supported by a Council appointed Trainer.
- Bushcare Action Plan prepared for each group
- Expansion of the volunteer program to include Parkcare, Streetcare, Lanecare, and Plant Propagation groups.
- Introduction of Council-run Bushcare training courses (initially three per year, reducing to a two-part course offered once per year as the program has become more established).
- Policies developed: Bushcare Policy (updated twice).
- Annual convenors meeting.
- An annual Bushcare “thank you” Christmas Party.
- Quarterly Bushcare newsletter
- Annual Bushcare Major Day Out event (this event, initiated by WCC, has now spread Australia wide).
- Annual Bushcare/Landcare exchange.
- Key player previously for the annual Bushcare stall at Easter Show.

Council supports and provides groups with:

- Council staff to co-ordinate and supervise volunteer groups.
- On site advice and assistance by trained Council or contract staff in bush regeneration.
- Formal and on-site training;
- Support work from Council's Bushland Support Team.
- Bushcare Action Plan for each site.
- Tools and regular tool maintenance.
- Provision of regular and poison gloves for all Bushcarers.
- Provides shirts with logos to long-term Bushcarers.
- Volunteer insurance.
- Management of weed debris, rubbish removal if necessary.
- Plants and mulch, as required.
- Inclusion of Bushcare volunteers in events.
- Publicity.

Volunteers and groups participating in bushland related activities assist in the conservation of urban bushland and also in education of the general public. Their dedication and efforts are greatly appreciated by Council and the greater community. Bushcare volunteers are expected to participate in Bushcare Training run by Council. These workshops are designed to make volunteers aware of their rights and responsibilities working on public land, impart the skills needed for weed identification and removal, and gain an understanding of all that is required in natural area conservation and restoration.

Volunteers are also offered an opportunity via the Aboriginal Heritage Office (AHO) to participate in the Aboriginal Site Monitoring program. Volunteers can be trained in Aboriginal heritage site awareness and periodically visit sites to assist and notify the AHO of any management issues. Currently rock art sites, engravings, burials, grinding grooves and extensive shell middens are examples of the types of sites being monitored by AHO trained community volunteers.

A quarterly Bushcare News is produced and distributed by Council to keep volunteers and residents informed of activities in Council's bushland, upcoming events and educate the public about environmental matters.

Whilst volunteer programs are invaluable, it is also essential that Council maintains a sufficient level of trained and qualified staff to ensure that strategic planning and continuity is maintained by community volunteers. Also, Council staff play an essential role in the support, training and supervision of volunteers and are in the most appropriate position to assess the achievement of performance indicators and undertake reporting procedures as required under the Local Government Act 1993.

Objective	Target	Action	Measure
<b>4.2c Aim: Provide a high level of planning, support, training and supervision of existing and future community volunteers</b>			
Council acknowledges the role of volunteers as supplementary to the work of Council staff and contractors in the management of Bushland. Council will adequately resource the planning, support, training and supervision of all existing volunteer projects. Further volunteer programs will be established only if adequate resources for planning, support, training and supervision of the projects are available.	Increase in the quality and effectiveness of volunteer work output from fully planned, supported, trained and supervised bushland management programs.  Preparation of Bushcare Action Plans, consistent with any Reserve Action Plan applying to that area.	Regularly review Council's Bushcare Program to ensure provision of sufficient planning, support, training and supervision to adequately undertake the programs tasks and activities.	Annual review of Bushcare Program
Council acknowledges the valuable role community volunteers play in the management of bushland areas and is committed to raising the public profile and support for volunteers.	Increase in expressed satisfaction from volunteers about the outcomes of bushland management programs.	Conduct surveys of Bushcare Volunteers to establish desired programs and activities.	Annual surveys of volunteers.
Council supports an annual meeting of volunteer convenors of Bushcare groups in the Local Government Area as a means of promoting communication and co-ordination between groups and Council.	Co-ordinated implementation of bushland related volunteer work.  Increased awareness between volunteer groups and Council as to works and issues.	Co-ordinate regular Convenors meetings representing the various volunteer groups within the LGA.	Annual meeting of representatives of Bushcare groups.
Council will encourage new initiatives and ideas relating to community volunteers and will support appropriate new projects.	Initiatives, especially coming from the community, regarding volunteer projects will be given serious and careful consideration.	New ideas and initiatives involving volunteer work will be given serious consideration. Each will be the subject of thorough examination, planning and, where applicable, trial and assessment.	Volunteer initiatives are incorporated into the Bushcare Program from time to time.
<b>4.2d Aim: Ensure that the use of community volunteer labour is consistent with Council's aim to ensure the best conservation practices are implemented in all bushland reserves under Council's care, control and management</b>			
Council supports the retention and upgrading (as required) of the Bushcare Policy as the basis of establishing and maintaining a quality volunteer program.	Retention and regular review of Council's Bushcare Policy and volunteer programs.	Bushcare Policy to be reviewed every 5 years.  Volunteer programs to be updated as needed.	Bushcare Policy reviewed every 5 years.  Volunteer programs updated as needed

## 4.3 Community Participation in Management

### 4.3.1 *Legislation and Policy*

In relation to bushland management, Council has statutory responsibilities under the Local Government Act 1993 to engage in community consultation during the preparation and review of Plans of Management for bushland areas.

Operations are to be conducted to achieve the goals set out in the Willoughby City Strategy and actions in the Willoughby City Council Sustainability Action Plan. Principles and recommendations of the WCC Community Engagement Strategy 2011, aimed at supporting the interactive relationship between Council and the community, are to be followed.

### 4.3.2 *Natural Heritage and Bushland Advisory Committee*

In October 1989 the Councillors of Willoughby resolved to establish a Bushland Management Review Committee. The committee originally comprised 4 Councillors and 12 residents from local environmental groups and progress associations to meet on a monthly basis.

The committee was originally established with the specific task of updating the Plan of Management for Willoughby's Bushland Reserves to meet the SEPP 19 requirements (and subsequently the requirements of The Local Government Act 1993). With the adoption of this Urban Bushland Plan of Management the primary function for the Bushland Management Review Committee was completed. However it was recognised that there was a significant and valuable role to play for a Bushland Committee to promote, oversee, review, advise and make recommendations on the implementation of the recommendations contained within the Urban Bushland Plan of Management. In addition to the original role the committee was intended to play, it has provided Council with significant additional support in the areas of reserve inspection and condition assessment, provision of detailed recommendations on signage and the provision of advice to Council on many specific bushland management issues.

New Terms of Reference were adopted by the NHBAC in 2008. In 2012 the Committee consists of 6 Councillors and 7 community members, who meet bi-monthly and visit a bushland site in the intervening month. The NHBAC has responsibility to review and endorse the Urban Bushland Plan of Management. A major activity is the review and endorsement of Reserve Action Plans.

## 4.4 Scientific Research

### 4.4.1 *Legislation and Policy*

Willoughby's bushland reserves can be a significant resource for scientific study. This use needs to be recognised and incorporated into the management aims of bushland reserves. It also needs to be recognised that overuse by such users can seriously impact on small bushland remnants. The outcome of research can add to local knowledge or have broader objectives.

Educational and scientific institutions can undertake ongoing research within reserves and can particularly assist in filling data gaps that have been identified. The use of reserves for this purpose however will benefit considerably through a co-ordination and consent process involving Council, to ensure that data collected from research undertaken is consistent with or complements existing data or strategically fills Council needs. It is also important that through this consent process the most appropriate site



for undertaking a particular project is approved. In this way, healthy bushland areas can be protected from activities (including research) which may cause permanent damage to the area. Research relating to fauna must have concern for the welfare of animals.

Council has a statutory responsibility under the NSW National Parks and Wildlife Act 1974 and the Threatened Species Conservation Act 1995 to ensure that licences are obtained for undertaking research on protected and threatened species occurring within Council bushland areas.

Operations are to be conducted to achieve the goals set out in the Willoughby City Strategy (2013) and actions in the Willoughby City Council Sustainability Action Plan (Draft 2011-2015). Principles and recommendations of the WCC Community Engagement Strategy 2011, aimed at supporting the interactive relationship between Council and the community, are to be followed.

Objective	Target	Action	Measure
<b>4.4a Aim: To comply with relevant Legislation and Policies.</b>			
<p>Council will fulfil its statutory responsibilities under the NSW National Parks and Wildlife Act (1979) and the Threatened Species Conservation Act 1995 to ensure that research work undertaken on threatened species occurring within Council bushland is licensed.</p> <p>Operations are to be conducted to achieve the goals set out in the Willoughby City Strategy (2013) and actions in the Willoughby City Council Sustainability Action Plan (Draft 2011-2015). Principles and recommendations of the WCC Community Engagement Strategy 2011, aimed at supporting the interactive relationship between Council and the community, are to be followed.</p> <p>Wildlife surveys and research must comply with the Animal Research Act 1985 and Animal Research Regulation 2005 and be consistent with the provisions of the Australian code of practice for the care and use of animals for scientific purposes.</p>	<p>All Council approved research meets relevant legislation and Council policies and practices.</p> <p>Research meets ethical guidelines.</p>	<p>Council staff to confirm researchers have applicable licences and permissions.</p> <p>Council staff will assist researchers to achieve their goals while adhering to Council policies and practices.</p> <p>Research which results in disturbance to fauna must be shown to be both necessary and justified in the light of previous studies.</p>	<p>Researchers have relevant licences and permissions.</p> <p>Evidence presented that research methodology minimises the impact on fauna and shows how the welfare of animals can be increased.</p>
<b>4.4b Aim: Promote sustainable use of bushland areas for scientific research, while protecting bushland values.</b>			
<p>Council encourages the use of bushland reserves for environmental education and</p>	<p>Compilation of educational / scientific user information over time.</p>	<p>Copies of research projects are to be maintained in Council records.</p>	<p>Increase in numbers of research reports held by Council.</p>

MANAGEMENT ISSUES, POLICIES, TARGETS, ACTIONS AND MEASURES – EDUCATION AND COMMUNITY PARTICIPATION

Objective	Target	Action	Measure
scientific study provided these uses do not significantly impact on other bushland values. Research projects that are destructive or may have significant deleterious impacts will not be permitted.	Impacts associated with existing or future research use remain within acceptable limits for specific reserves	Monitor areas used by researchers to ensure impacts remain within acceptable limits.	Increase in useful data relating to Council's bushland assets.

# 5. Urban Impacts

Urban Impacts  
 Urban Run-off and Stormwater Quality  
 Soil Erosion and Sedimentation  
 Boundary Management  
 Development Adjoining Bushland  
 Other Urban Disturbances

Many of the management issues facing urban bushland areas are a result of the direct and indirect impacts arising from urban development. The historic pattern of suburban development, with a particular focus on the development of ridgelines and retention of bushland on hard to develop landforms (generally steep slopes and valleys downslope of suburban areas) has resulted, in many cases, in the retention of bushland remnants which are more prone to the degrading influence of urbanisation, e.g. many reserves are fragmented, have a large edge to urban development, and are the discharge point for urban stormwater

## 5.1 Urban Impacts

### 5.1.1 *Direct Urban Impacts*

Urban influences result in both direct and indirect impacts and incremental loss of bushland. This section of the Plan identifies urban impacts which are considered to be direct impacts. These include:

- **Stormwater**, soil erosion and sedimentation.

Urban run-off and stormwater contain high nutrient and gross pollutant loads and are often discharged directly into bushland areas. This results in modification of the native plant communities. Activities in urban areas upslope of bushland, combined with some management practices within bushland areas, can result in soil erosion and sedimentation. Creekline erosion resulting from increased stormwater volume is also a significant impact and increased weed invasion.

- **Boundary management.**

The boundary between urban and bushland areas is the source of many direct impacts on bushland including filling, boundary encroachments and garden/domestic rubbish dumping.

- **Development adjoining bushland.**

The development or redevelopment of land adjoining bushland can impact upon bushland in numerous ways. Council has a statutory responsibility to ensure that impacts arising from this activity are minimised.

- **Other urban disturbances**

Activities which result in temporary or permanent disturbance/change are often associated with close proximity to urban development e.g. firewood and bush rock collection, collection of plant material, commercial use of reserves, destruction of bushland for views.

### **5.1.2 Indirect Urban Impacts**

Urbanisation can also result in indirect impact on bushland areas. For example, heavy recreational use of bushland because of close proximity to residential areas and introduction of new weed species due to close proximity to sources in residential areas.

### **5.1.3 Incremental Development**

Edwards (Edwards, GP 1989, 'How to Destroy The Bush Without Really Trying', *Landscape Australia*, vol. 2/89, pp.126-132,) outlines how bushland can be destroyed by incremental development. A series of individual disturbances to the land, each of which may be small in itself, can, over time, result in a major change from the original condition or from the most desirable condition.

This concept needs to be carefully considered when assessing the probable impact of small developments or activities, each of which may only cause minor changes initially but which may, over time and in combination with other activities or developments, result in major cumulative impact or loss of the bushland resource.

## **5.2 Urban Run-off and Stormwater Quality**

### **5.2.1 Legislation and Policy**

Operations are to be conducted to achieve the goals set out in the Willoughby City Strategy 2013 and actions in the Willoughby City Council Sustainability Action Plan Draft 2011-2015.

Urban run-off and stormwater discharges can cause a departure from the natural condition of bushland and is classified as a “disturbance” under State Environmental Planning Policy 19 - Bushland in Urban Areas. As such, Council cannot consent to a development which directly or indirectly discharges run-off or stormwater into bushland areas without taking into account the aims, objectives and procedures of the policy (particularly Clauses 6 and 9).

Under the Protection of the Environment Operations Act 1997 Council is responsible for regulating pollution from all premises which do not hold a pollution licence. The legal definition of 'water pollution' is very broad and includes the introduction of any matter - solid, liquid or gas - into waters which changes the physical, chemical or biological condition of the water. It also includes placing any matter where it might later contaminate a waterway (e.g. soil which may wash into a creek).

### **5.2.2 Water Quality**

Urban runoff is the most significant causal factor of weed invasion in bushland areas. Stormwater outlets carry high levels of nutrients and other pollutants which shift the ecological balance towards weed species and cause eutrophication of waterways. Many of the watercourses in Willoughby bushland reserves also have site-specific erosion

at the junction of the drain inlets with the creeks. This is a result of increased amounts and rates of urban run-off and inadequate dissipation of stormwater velocity at this point (see Soil Erosion and Sedimentation).

Increased soil moisture and nutrient levels favour weedy exotic and native species at the expense of the often more diverse indigenous plant communities. In such conditions, mesic species such as the native *Pittosporum undulatum* and *Glochidion ferdinandi* (Cheese Tree) and weeds such as *Ligustrum* (Privet) species outcompete plants adapted to drier, lower nutrient soils, which were once native to the area. The decline in health and diversity of the plant communities in turn impacts upon the dependent native fauna species.

### 5.2.3 Sources of Urban Runoff and Stormwater

Urban runoff and stormwater can be divided into two sources:

- Point Sources
- Diffuse Sources

#### Point Source Impacts

Point source pollution is pollution that originates from a single location. In urban areas it is often associated with production activities, on-site sewage management systems, industrial activities and discharges from urban stormwater drains. Point source pollution is largely regulated through the Protection of the Environment Operations Act, 1997. The Act permits Council and the NSW Department of Environment and Conservation to regulate various polluting issues, including issuing clean up or prevention notices. The Office of Environment and Heritage licenses the discharge of sewage and other point source pollution. Nonetheless, point sources can discharge a variety of pollutants to aquatic environments and have the potential to cause severe long-term impacts.

#### Diffuse Source Impacts

Diffuse source water pollution is one of the key impacts on water quality in our waterways and is caused when pollutants from a range of land use activities contaminate our waterways. It mainly results from rainfall runoff, particularly during storms: as water flows over land it picks up pollutants and moves them into waterways. Common sources of pollution include runoff from road surfaces, urban developments, construction sites, parks and gardens. Pollutants in runoff commonly include:

- Nutrients, e.g. from overuse of fertilisers
- Sediments, e.g. from soil erosion
- Pathogens, e.g. bacteria from leaking septic tanks and sewer overflows, dog faeces
- Toxicants, e.g. pesticides
- Gross pollutants, e.g. litter.

The management of diffuse source impacts is generally by modification of urban activities and community education.

Objective	Target	Action	Measure
<b>5.2a Aim: To comply with relevant Legislation and Policies.</b>			
The statutory responsibilities and obligations for State Environmental Planning Policy 19 - Bushland in Urban Areas and Protection of the Environment	All statutory responsibilities under identified legislation are enacted.	Maintain responsibilities under identified legislation.	All statutory responsibilities under identified legislation are enacted.

Objective	Target	Action	Measure
Act 1997 are acknowledged by Council and will be addressed where necessary and appropriate.			
<b>5.2b Aim: To comply with relevant Willoughby City Council policies, strategies and plans.</b>			
Operations are to be conducted to achieve the goals set out in the Willoughby City Strategy and actions in the Willoughby City Council Sustainability Action Plan, especially: Willoughby City Strategy (Goal) and WCC Sustainability Action Plan (6.1): <i>Conserve the natural ecosystem for its intrinsic ecological, educational, scientific, and recreational value</i>	Pressures on natural ecosystems are actively managed in partnership with the community.	Manage urban run-off and stormwater to minimise impacts on the natural ecosystem.	Improvements in health of bushland reserves.
Provisions of the Willoughby Development Control Plan, Section C5 Water Management, will be complied with.	All development undertaken in the Willoughby City Council area applies Water Sensitive Urban Design (WSUD) principles and fosters ecological sustainability.	Provisions of the Willoughby Development Control Plan, Section C5 Water Management, are complied with.	Aquatic, riparian and estuarine ecosystems, vegetation and habitats are protected and restored Scenic, landscape and recreational values of natural watercourses and receiving waters are protected. Land degradation is prevented, mitigated and controlled.
<b>5.2c Aim: Implement water quality improvement programs in a co-ordinated and efficient manner.</b>			
Council supports the development of Catchment Action Plans prepared by the relevant Catchment Management Authority (from October 2012 Hawkesbury Catchment Management Authority)	Comply with the policy and principles of applicable Catchment Action Plans	Incorporate actions to support targets in the Catchment Action Plan into programmes.	Targets in Catchment Action Plan are being addressed.
Where practicable and in principle, water quality improvement works and strategies both on and off reserves will commence in the upper catchment moving progressively to the lower catchment.	Progressive catchment wide treatment of stormwater, focusing on sources of the impact.	Planning of water quality improvement works will be evaluated as part of a catchment wide program.	Catchment-wide issues are considered when planning water quality improvement works.
<b>5.2d Aim: Maintain water quality entering reserves at a level which is acceptable for sustainable bushland management.</b>			
<b>Reducing Pollution in Waterways</b> Council will where practicable minimise the impact of point and diffuse source	Reduction in levels of gross pollutants, sediments, nutrient-enriched stormwater	Where practicable, install and maintain gross pollutant and sediment traps on	A reduction in levels of gross pollutants, sediment and nutrient enriched

Objective	Target	Action	Measure
<p>stormwater and urban run-off on bushland reserves.</p> <p>Council will where practicable aim to reduce gross pollutant and sediment loads in stormwater through the design, installation and maintenance of in-line gross pollutant and sediment traps.</p> <p>Council will where practicable continue to improve water quality through the design, installation and maintenance of wetland filters and artificial wetlands.</p> <p>Council to liaise with Sydney Water to reduce where possible the frequency and occurrence of sewage discharges arising from sewer mains.</p>	<p>and effluent entering bushland reserves.</p> <p>Improvement in water quality entering reserves.</p> <p>Reduction in weed infestations due to urban run-off from both point and diffuse sources and conservation or improvement of native plant community health.</p> <p>Maintenance of and increases in native fauna: vertebrate and invertebrate aquatic and terrestrial.</p> <p>Reduction in measurable nutrient levels in stormwater discharges, particularly Nitrogen and Phosphorus.</p> <p>Reduction in gross pollutants and sediment loads entering reserves.</p>	<p>stormwater lines discharging into bushland reserves, and incorporate wetland filters where suitable.</p> <p>Report promptly any sewage odours and discharges.</p> <p>Identify in Reserve Action Plans practicable measures which can be applied to each reserve to reduce impacts of pollutants, such as:</p> <ul style="list-style-type: none"> <li>• construction of drains and detention ponds designed to minimise impacts on bushland,</li> <li>• run-off piped directly to suitable water courses.</li> </ul> <p>Undertake regular street sweeping program for streets, gutters, commercial areas and carparks in both residential and industrial areas.</p> <p>Ensure regular litter control and clearance of rubbish bins, particularly in commercial areas.</p> <p>Ensure prompt removal of dumped rubbish, particularly on reserve boundaries.</p>	<p>stormwater entering bushland reserves.</p> <p>Construction and appropriate maintenance of artificial wetlands.</p> <p>Reduction in the frequency and occurrence of sewage discharges arising from sewer mains.</p> <p>Reduction in seepage and weed infestations down slope from catch drains.</p> <p>Reduction in the level of gross pollutants and sediment entering bushland reserves from streets.</p> <p>Reduction in rubbish on the ground within catchments.</p> <p>Reduction in rubbish within or adjacent to reserves.</p>
<p><b>Monitoring Program</b></p> <p>Council supports the continuation of the program of water sampling and monitoring for nutrients in creeks and estuaries within the local government area.</p>	<p>Continue the water quality monitoring program and strategies to deal with site specific pollution</p>	<p>Continue water quality monitoring in identified key strategic locations, but review and expand program if necessary.</p> <p>Develop strategies based on monitoring program which can be implemented by Council departments, other authorities, Catchment Management Committees and through Reserve Action Plans.</p> <p>The monitoring programs to include:</p> <ul style="list-style-type: none"> <li>• Gross pollutant levels;</li> <li>• Sediment levels;</li> <li>• Water borne nutrient levels in creeks and estuaries;</li> </ul>	<p>Evaluation of key locations being monitored.</p> <p>Increase in data available on water quality in creeks and estuaries within Willoughby LGA.</p> <p>Reduction in the measurable nutrient levels in stormwater discharges.</p> <p>A reduction in weed populations and improved health of native communities.</p>

Objective	Target	Action	Measure
		<ul style="list-style-type: none"> <li>The populations and of native vertebrate and invertebrate aquatic fauna species;</li> <li>Weed populations attributable to stormwater influences.</li> <li>The health of native plant communities impacted by stormwater discharges.</li> </ul>	
<p><b>5.2e Aim: Maintain water quality entering reserves at a level which is acceptable for sustainable bushland management.</b></p>			
<p><b>Sports Fields</b> Council supports the development of a comprehensive policy on drainage and fertilisation of ovals, golf courses and sports fields. Such policies shall be consistent with the aims and objectives as set out in this document and shall be tied to leases and licences where present.</p>	<p>Development of management policies and practices for ovals, golf courses and sports field which minimise impact on water quality and bushland in the catchment.</p> <p>Leases / Licences to incorporate improved practices.</p>	<p>Develop a comprehensive policy for irrigation, drainage and fertilisation practices on land owned or managed by Council, particularly where such practices may impact on bushland.</p> <p>Incorporate fertiliser, drainage and irrigation policy into all lease and licence conditions.</p>	<p>Development of an irrigation and fertiliser use policy.</p> <p>Inclusion of "Irrigation and Fertiliser Policy/Practices" into all leases and licences.</p> <p>Identification of existing wetland filters.</p>
<p><b>Residential Seepage Management</b> Council will prohibit the draining of swimming pools into bushland reserves and to seek, where possible, the retrospective connection of existing pools to the sewer system through Sydney Water.</p> <p>Council will prohibit the draining of tennis courts or similar recreation facilities into bushland reserves and to seek, where possible, the retrospective connection of these facilities to the stormwater system.</p>	<p>All new developments comply with Council's Development Control Plan, Section C5 Water Management (DCP C5).</p> <p>A reduction in the number of swimming discharge points which enter bushland areas.</p> <p>An increase in the number of existing swimming pool discharges which are connected to sewer lines.</p> <p>A reduction in the number of tennis court and similar facility discharge points which enter bushland areas.</p> <p>An increase in the number of existing tennis court and similar facility discharges which are connected to authorised stormwater lines.</p>	<p>Bushland staff to continue to advise on developments likely to impact on bushland and actions to mitigate impacts.</p> <p>If any swimming pool is discharged into bushland, identify the source and notify owners that uncontrolled runoff is not permitted to be discharged into or through public open space (DCP C5). Pools are to be discharged into Sydney Water Sewer lines.</p> <p>Develop interpretive material for pool owners.</p> <p>Continue/extend education programs targeted at residents adjoining bushland reserves, aimed at minimising diffuse source pollutants, targeting</p> <ul style="list-style-type: none"> <li>increased seepage exacerbated by over-watering of lawns and gardens, run-off from pools, tennis courts and hard, impermeable surface and the</li> </ul>	<p>A reduction in the number of swimming pools which discharge into bushland.</p> <p>Reduction in seepage and weed infestations in reserves adjacent to developments.</p> <p>Production and distribution of interpretive material.</p>



Objective	Target	Action	Measure
		hosing of paved areas. • water-borne nutrients from the use of fertilisers on lawns and gardens, dog faeces and the dumping of lawn clippings and garden waste upslope from bushland.  Co-ordinate such community programs with general environmental awareness programs and incorporate community awareness and reporting of sewage discharges.	

## 5.3 Soil Erosion and Sedimentation

### 5.3.1 Legislation and Policy

Council has a statutory responsibility under the NSW Soil Conservation Act (1938) to prevent and rectify sites of significant soil loss. Under the Protection of the Environment Operations Act 1997 council is responsible for pollution in stormwater drains and channels.

Also, activities which result in significant soil erosion and sedimentation can be deemed as *disturbance* under State Environmental Planning Policy 19 - Bushland in Urban Areas and as such Council cannot consent to the activity without taking into account the aims, objectives and procedures of the policy (particularly Clauses 6 and 9).

### 5.3.2 Creekline Soil Erosion

Soil erosion in creeklines is closely linked with the problem of increased stormwater flow due to the increase in impervious surfaces associated with urban development. High velocity water flows have the capacity to dislodge plant material and transport solid matter. This erosive capacity is also variable depending on the soil landscape type present at each site.

Inline engineering solutions can be applied to creeklines significantly affected by erosion, however the adverse environmental impacts may negate major benefits e.g. piping of creeklines, channelisation.

Best practice approach to treating creekline soil erosion requires a threefold response:

- Where possible, the reduction of the quantity of stormwater leaving developed areas of the catchment to a level approximating pre-development hydraulic conditions;
- Sympathetic treatment of creeklines and discharge points to reduce velocity and stabilise areas of erosion;
- Retention, establishment and maintenance of riparian vegetation.

### 5.3.3 Sedimentation Arising from Other Activities

A major source of sedimentation in bushland areas results from activities within the catchment (e.g. construction and other activities in residential, commercial, industrial and open space areas) which cause soil disturbance. Stockpiling of building materials and vehicular movement to and from a site of disturbance can also contribute.

Construction activity massively increases the soil erodibility, which is particularly at risk during rainstorms. Other sources are the clearing of vegetation, topsoil removal, quarrying, landscaping, road construction and other infrastructure development such as the installation of power lines, pipelines and telephone lines. Sediment deposition into watercourses can destroy aquatic habitats.

Run-off depositing sediment on walking and vehicular tracks and trails can change hydrological patterns so that water is retained rather than dissipated, with consequent inundation and further erosion problems. Recreation opportunities, aesthetic amenity and track/trail function are subsequently degraded. Walking tracks often ‘evolve’ due to use patterns rather than being specifically designed to suit the particular location. Tracks can become drainage ways and vice versa. This results in new tracks being created through the bush as people make a passage around the problem areas.

Best practice for sediment control on sites where soil disturbance occurs is the requirement for the development and application of site specific sediment and erosion control plans and measures for each site. Similarly planned construction, maintenance and upgrading of tracks is essential to reduce and ameliorate unacceptable levels of soil loss.

Further situations where soil loss can be significant are those areas affected by bushfire, both naturally occurring and planned. Apart from restricting public access, reducing soil erosion potential in situations following extensive natural bushfires is difficult. In planned bushfire events care needs to be taken to ensure hand tool lines avoid creating soil erosion impacts and that buffer or filter strips are maintained to capture soil loss. Also, maximum surface roughness should be maintained in natural areas. The extent of any planned burn should be the minimum size possible to achieve the management objective and the site monitored until the soil surface has stabilised.

Objective	Target	Action	Measure
<b>5.3a Aim: To comply with relevant Legislation and Policies.</b>			
The statutory responsibilities and obligations for State Environmental Planning Policy 19- Bushland in Urban Areas, Soil Conservation Act (1938) and the Protection of the Environment Operations Act 1997. are acknowledged by Council and will be addressed where necessary and appropriate	All statutory responsibilities under identified legislation are enacted.	Council will address legislation when necessary and appropriate.	Statutory responsibilities are complied with.
<b>5.3b Aim: To create and or maintain conditions in which creek and drainage lines are protected from increased erosion and / or sedimentation due to urban impacts.</b>			
Council will undertake a systematic program for stabilising and monitoring all stormwater outlets and creekline erosion which are identified as requiring attention in Reserve Action Plans. High priority should be given to reserves where bush regeneration works are taking place.	The development of a systematic stabilisation and monitoring program for stormwater outlets and creeklines affected by bank instability.  Reduction in levels of sedimentation and bank instability on creek lines	Identify all significant erosion areas which require treatment on Reserve Action Plans.	Identification of sites where creekline erosion and sedimentation occurs.

Objective	Target	Action	Measure
<p>Engineering solutions to creekline instability are to be implemented only where a demonstrated net positive gain in bushland quality can be clearly demonstrated.</p> <p>Possible methods for engineering solutions to erosion control are:</p> <ul style="list-style-type: none"> <li>• Construction of energy dissipaters at outlets of stormwater pipes to reduce the velocity of waters entering bushland reserves;</li> <li>• Use of catch drains to reduce length of slopes and to divert water away from bushland areas or into permanent watercourses;</li> <li>• Use of low-flow pipes in suitable vegetated waterways to reduce erosive forces;</li> <li>• Piping of stormwater through bushland.</li> </ul>	<p>No long term deterioration of bushland condition or environmental quality (relative to existing condition) due to the application of engineering works for soil erosion control.</p>	<p>Implement stabilisation program in conjunction with Reserve Action.</p> <p>Use appropriate, locally indigenous native groundcover species such as <i>Microlaena stipoides</i>, <i>Dichondra repens</i>, etc., in revegetation.</p>	<p>Reduction in levels of sedimentation and bank erosion on creek lines.</p>
<p>Council will aim to reduce or manipulate urban run-off in all catchments.</p>	<p>Reduction in quantity of stormwater leaving developed areas of catchments.</p> <p>Retention or increase in the area of permeable surfaces in bushland catchments.</p>	<p>Assess development proposals which may impact on bushland and implement appropriate controls to reduce impacts.</p>	<p>All developments comply with relevant guidelines and principles of soil and water management and the principle of ecologically sustainable development (ESD).</p>
<p>Where drainage run-off into bushland is unavoidable, the specific ecological requirements for maintaining the health of the affected vegetation community (as identified by Council's Bushland Section) will be the overriding consideration in determining the nature of the stormwater treatment. A policy of adopting as few drainage lines as possible may apply in situations where the native plant community is not adapted to urban influenced hydrological changes. The effect that increased water flow has on the stability and erosion potential of the</p>	<p>All new or upgraded stormwater discharges which unavoidably enter bushland reserves to be assessed in collaboration with Council's Bushland Section to determine appropriate treatment.</p>	<p>Bushland Section to advise on all new or upgraded stormwater discharges into bushland.</p>	<p>Bushland Section involved in all proposals relating to new or upgraded stormwater discharges into bushland.</p>

Objective	Target	Action	Measure
bushland area will be considered and may result in a recommendation for refusal of a development application			
Storm water drains are not to be terminated in natural wetlands or in areas other than creeklines or water bodies.	No new stormwater outlets discharging into natural wetlands or dry ridgeline vegetation.	New stormwater outlets will avoid discharging into natural wetlands or dry ridgeline vegetation.	No new stormwater outlets discharge into natural wetlands or dry ridgeline vegetation.
<b>5.3c Aim: To reduce sediment loads in stormwater and creeklines throughout catchments.</b>			
Council will continue with sediment and erosion control measures which are catchment based.	<p>Continue or improve a comprehensive range of strategies for sediment and erosion control which are consistent with the aims and objectives of this plan.</p> <p>Maintenance or improvement of creek line stability and plant community health.</p>	<p>Continue catchment-wide strategies for sediment control, including:</p> <ul style="list-style-type: none"> <li>• Maintaining a regular and effective street sweeping program throughout the catchment;</li> <li>• Marking stormwater drains to identify the catchment into which it drains;</li> <li>• Installation and regular maintenance of gross pollutant and sediment traps at stormwater drains in gutters and stormwater entry points outside the bushland reserves;</li> <li>• Where high sediment loads are identified and off site installation of sediment traps is impractical, investigate opportunities for the design and construction of site-specific sediment traps with access for maintenance. This needs to be evaluated against any permanent degradation of bushland due to construction activities.</li> <li>• Monitor sediment removed from sediment traps.</li> </ul>	<p>No increase in, or a reduction of, sediment in creeks due to run-off from roads.</p> <p>No permanent degradation of bushland caused by installation of sediment trap.</p> <p>A reduction in the amount of gross pollutants entering reserves.</p> <p>Continuation or increase in the number of stormwater drains displaying catchment information.</p>
Catchments containing existing indigenous habitats or ecosystems significantly threatened by sedimentation (e.g. seagrass beds) should receive highest priority for the implementation of catchment specific sediment and erosion control treatments.	<p>Identification of existing indigenous ecosystems threatened specifically by stormwater runoff.</p> <p>Development of a prioritised action plan for all catchments based on identified stormwater threatened ecosystems.</p>	<p>Identify ecosystems significantly threatened by sedimentation</p> <p>Develop strategies to remove or ameliorate threats and integrate into Reserve Action Plans where possible.</p> <p>Proposals for planned fires are to identify</p>	<p>A list of indigenous ecosystems significantly threatened by sedimentation.</p> <p>A reduction in indigenous ecosystems threatened by sedimentation.</p> <p>Prior to planned broad area fire events production of a Fire Plan which</p>

Objective	Target	Action	Measure
		potential for creation of erosion/sedimentation which may be due to activities in preparation for burning (i.e. construction of access tracks and fire breaks) or from post fire exposure of the soil.	addresses erosion and sedimentation and control measures  No increase in erosion or sedimentation due to fire management practices
<b>5.3d Aim: To minimise soil loss from building and construction sites.</b>			
Council requires that site-specific sediment and erosion control plans be produced to a satisfactory standard for sites prior to construction development or re-development.	The application and policing of individual soil erosion and sediment plans and measures for all sites of construction, development and re-development.  Minimal soil loss from sites of construction, quarrying, development and re-development for the entire life of the works.	Enforce sediment and erosion controls at development sites.	Sediment and erosion controls at development sites are enforced and penalties for non-compliance are applied for breaches.
<b>5.3e Aim: To create and maintain internal roads, parking areas and tracks so that they can withstand periods of normal and extraordinary run-off without subjecting bushland to unacceptable levels of erosion and or sedimentation.</b>			
All track and vehicular trails and car parks within and adjacent to bushland are to be designed, constructed and maintained to minimise soil loss and remedial action taken to address erosion problems should they arise. Rehabilitation of closed tracks within and adjoining bushland is to use assisted natural regeneration and reconstruction procedures.	Minimal erosion and soil loss from walking tracks, fire trails and access tracks.  Reduction in the maintenance required for tracks, trails and waterways.	Identify on Reserve Action Plans any erosion or sedimentation occurring due to park infrastructure and develop site specific strategies to address them.  All tracks are to be clearly signed at entries and track junctions.	Tracks, trails and erosion due to infrastructure identified on Reserve Action Plans.  A reduction in sedimentation and erosion due to reserve infrastructure.

## 5.4 Boundary Management

### 5.4.1 Statutory Responsibilities

Council has a statutory responsibility under State Environmental Planning Policy 19 - Bushland in Urban Areas to ensure that alienation or disturbance of bushland is not undertaken without Council's consent or an assessment of impacts (Clause 6 (1) and 6 (4)).

Furthermore, Council has responsibilities under the Local Government Act (1993) to manage community lands for community benefit. A lease may be granted only if the purpose for which it is granted is consistent with the core objectives set out in the Act.

### 5.4.2 Encroachments and Boundary Management

Most bushland reserves in the Willoughby Local Government Area (LGA) are bounded by urban settlements on at least one if not all sides. Some of these bushland reserves are in discrete parcels which are not contiguous with any other bushland, whilst large areas of bushland comprise a relatively contiguous, often narrow, corridor along Middle Harbour.

In some parts of Willoughby, small sections of bushland reserves and some rights of way have been incorporated into private gardens and living space. Some private access ways have been created through bushland. Occupiers of residential sometimes alienate public open space classified as bushland for their own use as outdoor living area, storage, or structures. Although alienated land is only a small fraction of Willoughby’s bushland, these practices reduce the overall area of bushland and public open space to unfairly benefit a few. There may be issues of liability arising from unauthorised works on public land. Deterioration of nearby bushland can result from encroachments and Council may ultimately incur costs associated with rehabilitation.

Council’s Compliance Section has responsibility for policing these intrusions and negotiating solutions. Council maintains a register of known encroachments. A condition requiring correction of the encroachment can be applied to a development consent if there is a nexus between the encroachment and the development being applied for (Environmental Planning and Assessment Act 1979, 80A Conditions). The continuing program to eliminate private encroachment from public land needs to be gradual to effectively manage bushland regeneration and resources, so priorities need to be established.

### 5.4.3 Other Boundary Impacts

There are often significant weed problems and unauthorised filling and clearing in reserves occurring along the residential boundaries. (See also [Fire Management](#) and [Development Adjoining Bushland](#).) Where bushland reserves adjoin residential developments it is common to find that understorey shrubs and litter have been removed and in many places the area planted out with exotic species. This not only directly destroys bushland but often provides ideal conditions for weed invasion.

Throughout the Willoughby area there are examples where weed invasion has been caused by people 'dumping' their garden waste into bushland. This garden waste is often high in nutrients and usually contains the seeds and other propagules of many weed species.

Abuses of bushland include the clearing of vegetation to promote views or to extend private garden space into the public reserve. Both of these activities have the potential to cause further weed invasion and directly reduce the area of bushland habitat for flora and fauna.

Objective	Target	Action	Measure
<b>5.4a Aim: To comply with relevant Government Legislation and Policies.</b>			
The statutory responsibilities and obligations of State Environmental Planning Policy 19 - Bushland in Urban Areas and Local Government Act (1993) are acknowledged by Council and will be addressed where necessary and	All statutory responsibilities under identified legislation are enacted.	Council will address legislation when necessary and appropriate.	Statutory responsibilities are complied with.

Objective	Target	Action	Measure
appropriate.			
<b>5.4b Aim: To maintain the integrity of bushland reserves through the reduction of encroachments and other boundary impacts.</b>			
Council does not support private annexation of or encroachment on bushland reserves or public open space and considers such alienation of public land as illegal.	Encroachments for private use on bushland reserves or public open space will be progressively removed.	Council will continue to police encroachments and modifications of bushland at reserve boundaries and progressively remove them.	A reduction in the area and number of encroachments.
All private annexations and encroachments on bushland reserves or public open space are to be treated in accordance with management practices identified in the Encroachment Register and in consultation with the community.	<p>The Encroachment Register will be maintained as an up-to-date record of all encroachments and their recommended treatments.</p> <p>Relevant sections of Council to refer to this register and apply recommended management.</p> <p>When there is a nexus between a development application and an existing encroachment, a condition of consent to the development will be removal of the encroachment.</p>	<p>Maintain an Encroachment Register which identifies the extent and type of each encroachment and recommends appropriate treatment.</p> <p>Notify each owner of a property where an encroachment on a bushland reserves exists that Council is aware of the alienation of public land and will be seeking to address it at some time. Notification to occur every 3 years.</p> <p>Council's Compliance Section is responsible for policing encroachments and negotiating resolutions. Encroachments on bushland reserves to be progressively dealt with according to priorities determined by the Bushland Manager.</p> <p>If there is a nexus between the encroachment and a development being applied for, a condition requiring correction of the encroachment will be applied to the development consent (Environmental Planning and Assessment Act 1979, 80A Conditions).</p> <p>In areas where removal of an encroachment is not feasible or where removal would create significant degradation to surrounding bushland:</p> <ul style="list-style-type: none"> <li>clearly mark reserve boundary;</li> </ul>	Encroachments recorded on Encroachment Register are progressively dealt with in a manner that enhances bushland values.

Objective	Target	Action	Measure
		<ul style="list-style-type: none"> <li>manage in sympathy with bushland values;</li> <li>monitor area for further encroachments and satisfactory rehabilitation.</li> </ul> <p>Identify encroachments in Reserve Action Plans.</p>	
<p>All residential and leasehold boundaries adjoining bushland are to be progressively located and clearly marked. Encroachments, where they occur, are also to be clearly marked.</p>	<p>Property and leasehold boundaries adjoining bushland areas will be consistently marked with permanent, on ground markers.</p>	<p>Survey and clearly mark boundaries of reserves. Particularly in areas where regeneration activities are to be undertaken.</p> <p>Mark limits of leasehold areas such as Scouts, Guide Halls, sporting and community facilities</p>	<p>An increase in the number of reserves which have surveys and clearly marked boundaries.</p> <p>Bushland quality enhanced on or adjacent to encroachments.</p>
<p>Council supports, where appropriate, the installation of physical barriers on bushland boundaries which reduce the loss or modification of bushland.</p>	<p>Weed, water and sediment spread from properties adjacent to bushland is prevented.</p>	<p>Reserve Action Plans to identify boundaries where installation of cost effective, environmentally sympathetic, physical barriers, including silt fencing, would assist management, particularly where water runoff or weeds have been identified to be impacting bushland.</p>	<p>Barriers installed at property boundaries where beneficial.</p> <p>A reduction in degrading activities at property boundaries.</p>
<p>Council does not support the dumping of rubbish or storage of extraneous materials in bushland areas.</p>	<p>Bushland free of rubbish dumping and extraneous materials.</p>	<p>Consider erecting deterrent signs and / or fencing areas where rubbish is repeatedly dumped.</p> <p>Consider contacting residents through a letter box drop to notify them of the dumping in the area.</p> <p>Promptly remove rubbish and other extraneous material to discourage further dumping / storage in reserves.</p> <p>Pursue legal prosecution of offenders.</p>	<p>A reduction in the amount of rubbish dumped in reserves.</p> <p>When illegal actions occur to native trees and vegetation, Council-approved procedures are followed</p>
<p>Native trees and native vegetation have a value for biodiversity and habitat. Council does not support the cutting down or lopping of trees and vegetation in bushland areas to improve views. Views</p>	<p>Native trees and native vegetation in bushland shall remain in their natural form and proceed through their natural growth patterns, unless impacted by valid bushland management practices, such</p>	<p>Requests to cut or lop native trees or vegetation in bushland will not be approved, unless safety is at issue, or it is in keeping with valid management practice.</p>	<p>A reduction in vandalism in bushland for views or other motives.</p>



Objective	Target	Action	Measure
<p>from private properties and public places are not assured at all times, but may fluctuate over time due to growth patterns and valid management practices.</p>	<p>as regeneration or prescribed burning.</p>	<p>When illegal actions occur to native trees and vegetation, Council shall follow procedures according to Council's tree vandalism procedure and relevant policies.</p> <p>Council-approved procedures in respect of tree vandalism:</p> <ul style="list-style-type: none"> <li>a) Subject to legal advice, appropriate Council Officers conduct personal interviews of residents in the houses within vision of the tree/s.</li> <li>b) Offering a reward of up to \$10,000 for information which leads to the successful prosecution of the tree vandal.</li> <li>c) Erection for a period of 60 days, of a large freestanding sign indicating that the tree has been subjected to tree vandalism and offering rewards for information leading to successful prosecution.</li> </ul>	
<p>Management of <b>asset protection zones</b> in public open space adjacent to private property will be carried out by the Council in accordance with the Bushfire Risk Management Plan. Unauthorised clearing or modification of vegetation on public land is strictly prohibited.</p>	<p>All asset protection on public land is carried out by Council. (See also <a href="#">Fire Management</a>.)</p>	<p>Any unauthorised clearing or modification of vegetation on public land, even if allegedly made for purposes of bushfire hazard reduction, will be treated as an illegal encroachment.</p>	<p>No unauthorised clearing on public land for the alleged purpose of bushfire hazard reduction.</p>
<p><b>5.4c Aim: To expand and restore, where possible and practicable, bushland on areas other than land zoned as Open Space.</b></p>			
<p>Council supports the expansion and restoration of bushland to improve wildlife linkages by reclaiming, where possible and practicable, road reserves and other suitable unused areas by regeneration, reconstruction or fabrication of indigenous plant communities appropriate to the site.</p>	<p>An increase in areas of bushland and wildlife habitat, especially provision of wildlife linkages.</p>	<p>Identify and prioritise opportunities for expansion of bushland and consolidation of wildlife linkages on a city-wide basis.</p> <p>Reserve Action Plans to identify opportunities for expansion of bushland into areas near to main reserve.</p> <p>Establish appropriate restoration techniques for each site.</p>	<p>An increase in the area of bushland or bushland buffers.</p> <p>Expansion and improvement of wildlife linkages.</p>

Objective	Target	Action	Measure
<b>5.4d Aim: To consolidate fragmented bushland by applying co-ordinated management to improve wildlife linkages</b>			
Council supports the restoration to bushland and wildlife habitat of public open space on unused public road reservations and other suitable areas.	An increase in the number of suitable areas, such as unused road reservations, being managed as bushland.	Regeneration, maintenance and expansion of bushland on suitable road reservations and sundry land.  Where evaluation indicates lands are not needed for roads or other previously designated purposes, consider rezoning as Open Space.	Continuation and expansion of bushland and wildlife habitat on unused road reserves and sundry land.

## 5.5 Development Adjoining Bushland

### 5.5.1 Impact Mitigation of Development Adjoining Bushland

Development can have a significant adverse impact, both direct and indirect, on adjoining bushland, e.g. soil erosion and sedimentation, nutrient enrichment, weed invasion and degradation of plant communities, as discussed elsewhere in this UBPOM. Direct destruction by residents can also occur.

Some of these impacts can be mitigated through the adoption and application of sensitive building layout, construction techniques, site management (both during and after development) and the application of best practice techniques. However, in all circumstances the impact of each proposal needs to be assessed based on the individual characteristics of the site and the proposed development. This will determine if mitigation techniques can be used or if the proposed development would, by its proposed nature, cause an unacceptable level of environmental degradation which could not be mitigated by practical means. In these circumstances, the consent to undertake the proposed development may be rejected by Council.

Of critical importance to Council, residents and developers is the consistent and equitable application of assessment procedures and mitigation techniques and performance targets for development in these situations. Assessment procedures and mitigation techniques may vary across the local government area depending on the nature and use of the land. Establishing (and periodically reviewing) these procedures, combined with a program of developing early awareness and understanding of Council's requirements with developers and the community, is essential.

All methods of discharge from adjoining development into or through public open space require the approval of Council's Director of Infrastructure Services. No uncontrolled runoff is permitted to discharge into or through public open space. (Public open space includes road reserves, drainage reserves, public car parks, public parks, public reserves and bushland.) (WDPCP)

### 5.5.2 Legislation and Policy

Control of impacts arising from proposed development adjoining bushland is required under the Environmental Planning and Assessment Act (1979). The objects of this Act include: to encourage the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations

and ecological communities, and their habitats. The Environmental Planning and Assessment Act 1979 (79C 1(b)) requires a consent authority to take into consideration the likely impacts of a development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality.

Council has a statutory responsibility under State Environmental Planning Policy 19 - Bushland in Urban Areas (Clause 9) to ensure that development adjacent to bushland zoned or reserved for public open space purposes does not impact adversely on that bushland, when undertaking, or granting approval for, the development. It must also consider the need to retain any bushland on land adjacent to public bushland. Where bushland in Willoughby LGA is adjacent to, or within sight of, Middle Harbour, Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005 can apply.

The exercise of responsibilities under the above legislation by Council is mostly achieved through the Willoughby Local Environment Plan 2012 and the Willoughby Development Control Plan. The WDCP is a plan adopted by Council that supports the WLEP with more detailed planning and design guidelines. Compliance with the provisions of WDCP does not mean that a proposal is acceptable and will be approved. Every application will go through detailed individual assessment (WDCP Introduction).

When development is carried out adjacent to bushland, care must be taken to reduce the impact on any known or potential Aboriginal heritage sites. Appropriate strategies to protect sites from direct and indirect impacts (changed hydrology and increased visitation) should be adopted.

Much of Willoughby's bushland which is adjacent to development is zoned as E2 Environmental Conservation in WLEP 2012. This zone is for areas with high ecological, scientific, cultural or aesthetic values outside national parks and nature reserves. The zone objectives focus on protecting land with high conservation value and preventing development that could destroy, damage or otherwise have an adverse effect on that value. Most land adjacent to bushland in WCC LGA is zoned E4 Environmental Living in WLEP 2012. The objectives of this zone focus on ensuring residential development does not have an adverse effect on areas of ecological, scientific or aesthetic value.

#### **Objectives of E4 Environmental Living Zone**

- To provide for low-impact residential development in areas with special ecological, scientific or aesthetic values.
- To ensure that residential development does not have an adverse effect on those values.
- To ensure that development preserves and enhances the natural features and bushland within the immediate locality (including natural vegetation, geological features, drainage patterns, the water table and the relationship of development to the natural topography) and does not increase bush fire hazard potential.
- To maintain the scale, character and streetscape of individual localities.
- To retain and enhance residential amenity, including views, solar access, aural and visual privacy, foreshore setting, landscape quality and heritage value.

An aim of the WDCP is to protect environmentally sensitive foreshore and bushland areas from overdevelopment or visually intrusive development so that the scenic qualities, biodiversity and ecological values of those areas are maintained. Part D.1.16 sets out controls for land zoned E4. D1.16.3-11 says that in accordance with SEPP 19 – Bushland in Urban Areas, Council is required to take into account the effect of any proposed development on urban bushland, habitat corridors and escarpment areas. This is considered to be particularly relevant in significant stretches of urban bushland in the Castle Cove, Middle Cove, Castlecrag, Northbridge, Artarmon, Roseville, Chatswood, Chatswood West and Lane Cove North suburbs. Objectives of C.5 include ensuring that, in all developments undertaken in the Willoughby City Council area, impacts on the natural water cycle are minimised and the aquatic, riparian and estuarine ecosystems, vegetation and habitats are protected and restored.

Section C.10 of Willoughby Development Control Plan - Foreshore Building Line - allows for controls to protect bushland below the Foreshore Building Line with the intent:

- To preserve and enhance the natural features and vegetation of the foreshore area for its scenic and ecological value and to ensure development does not detract from the natural character of these areas.
- To encourage the protection and regeneration of land which forms an integral part of the foreshore setting and to maintain the amenity of foreshore properties.

Objective	Target	Action	Measure
<b>5.5a Aim: To comply with relevant Legislation and Policies.</b>			
The statutory responsibilities and obligations of the Environmental Planning and Assessment Act (1979), State Environmental Planning Policy 19 - Bushland in Urban Areas, and WLEP 2012 are acknowledged by Council and will be addressed.	All statutory responsibilities under identified legislation are enacted.	Council will address legislation as appropriate.	Statutory responsibilities are complied with.
<b>5.5b Aim: To ensure that there is no or minimal impact from development on land adjoining bushland.</b>			
Each development application for land adjoining, or having the potential to impact, bushland, and/or Aboriginal heritage sites will be given detailed scrutiny, including from staff with responsibility for and skills in bushland management.	Each proposal for development adjoining bushland is based on the individual characteristics of the site, the proposed development and the aims, objectives and requirements of SEPP 19, WLEP 2012 and WDCP, to minimise any impacts on the bushland.	Staff responsible for bushland management will be involved in assessing development applications adjacent to bushland.  No exempt and complying development is carried out in areas of high Aboriginal cultural significance or high biodiversity significance (WLEP 2012 Clause 3.3).	All development applications for land adjacent to bushland are referred to Bushland Section.  Post-development, no or minimal impacts are observable in adjoining bushland
A proposed development which is deemed to cause an unacceptable level of environmental degradation and which cannot be mitigated by practicable means will not be approved.	Decrease in direct and indirect impacts on bushland arising from development on adjoining land.  Development adjoining bushland is environmentally sensitive and minimal in impact on bushland and natural waterways.	WDCP guidelines to be followed as a minimum requirement. Each development application to be assessed in detail re its impact on bushland and waterways.	There is no or minimal impact from developments adjacent to bushland.  Developments that will impact on bushland and natural waterways are refused.
<b>5.5c Aim: To reduce the impact of existing and future stormwater discharges arising from development or redevelopment adjoining bushland.</b>			
Management of stormwater from land adjoining or near bushland will be strictly controlled so there are no or minimal adverse impacts on bushland or natural waterways.	No ongoing adverse impacts on bushland or natural waterways from stormwater, arising from development on land adjoining or near bushland.	For a development adjoining bushland, the guidelines in WDCP Part C.5 Water Management to be followed as a minimum requirement.	Post-development, no or minimal impacts are observable on adjoining bushland
<b>5.5d Aim: To ensure that Council's procedures are adequate and up-to-date for mitigating impacts from development adjoining bushland.</b>			
Council will ensure that development adjacent to or near bushland does not adversely impact on bushland or natural waterways.	Council plans, policies and procedures involved in managing developments adjacent or near bushland are effective in reducing adverse impacts on bushland and natural waterways.	Continue to review WLEP 2012, WDCP and Council's Engineering Policies to ensure that they are consistent with this plan and contain adequate safeguards to protect bushland on both public and private land.	A reduction in the number of conflicts and inconsistencies between the WLEP and WDCP and this Urban Bushland Plan of Management.  Guidelines for assessing and guiding

Objective	Target	Action	Measure
			proposed developments which may impact upon bushland values are up-to-date and achieving desirable outcomes.

## 5.6 Other Urban Disturbances

### 5.6.1 Legislation and Policy

Council has a statutory responsibility under State Environmental Planning Policy 19 - Bushland in Urban Areas (Clause 6(1)) to control activities which result in disturbance in bushland areas. "Disturbing" bushland is not only a reference to direct removal or destruction of bushland but also to any activity which causes a departure from its natural condition. A wide variety of activities can indirectly degrade bushland.

Council can issue a licence under the Local Government Act (1993) for activities which result in the intermittent or short-term occupation or control of all or part of a bushland area, e.g. commercial filming or recreation operations such as tours.

In respect of collection of plant material, a scientific licence under Section 132C of the National Parks and Wildlife Act (1974) is required to undertake an activity or project for research, education or conservation purposes that is likely to result in one or more of the following:

- Harm to any protected fauna, or to an animal that is a threatened species or is part of an endangered population or an endangered ecological community.
- Picking of any protected native plant, or any plant that is a threatened species or is part of an endangered population or an endangered ecological community.
- Damage to critical habitat.
- Damage to a habitat of a threatened species, an endangered population or an endangered ecological community.

### 5.6.2 Natural Change in Bushland

Change is part of the natural cycle of life. Within Willoughby's native bushland, this change can be due to natural regeneration and processes, or various management strategies designed to support re-establishment of natural vegetation and fauna habitat. Management strategies in other public spaces, such as parks and streetscapes, can also support an increase in vegetation and habitat. Preserving and improving natural areas for the benefit of the whole community is in keeping with Willoughby City Council policy and government legislation (e.g. WCC Access and Equity Policy, Sydney Harbour Catchment Sydney Regional Environmental Plan 2005.)

In over 220 years the landscape of Willoughby has changed from natural bushland to be mostly a built environment. In that process a particular piece of land could have undergone many changes: e.g. clearing, reshaping, replanting, and re-growing. This is as true of Willoughby's bushland reserves as it is of built-up areas. These changes are still in progress today. In a living city, a building, a street, a garden, or a reserve will not be frozen in time.

Bushland is also constantly changing. Plants grow, die and are replaced. Other natural phenomena, such as fire, clear away vegetation, but provide the conditions for it to return in a more healthy state. At various times in the cycle of growth, trees and undergrowth will be sparse or thick, tall or low.

Because of this natural process of change, it is not feasible to freeze vegetation or landscapes to a particular form or time.

Therefore, decisions to destroy or modify bushland vegetation on public land should not be made except for the most serious of reasons.

1. Risk to the health and safety of people.
2. Genuine risk of damage to property – private or public.
3. To enhance the goals of vegetation management.

### 5.6.3 What are Disturbance Activities?

A “disturbance” activity is any activity occurring within bushland which directly or indirectly causes a change in the natural ecology of the bushland and causes a departure from its natural condition. These activities include removal or deliberate disturbance of not only the vegetation but also the surface and subsurface soils, leaf litter and dead wood, the seed bed, rocks, stones or pebble and any disturbance to the habitat of native fauna.

Key threatening processes listed under the *Threatened Species Conservation Act 1995* that have had some impact on Willoughby’s flora and fauna include:

- Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands
- Bush rock removal
- Clearing of native vegetation
- Competition and grazing by the feral European rabbit (*Oryctolagus cuniculus*)
- Competition from feral honey bees (*Apis mellifera*)
- Entanglement in or ingestion of anthropogenic debris in marine and estuarine environments
- High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition
- Infection of native plants by *Phytophthora cinnamomi*
- Introduction and Establishment of Exotic Rust Fungi of the order Pucciniales pathogenic on plants of the family Myrtaceae
- Invasion and establishment of exotic vines and scramblers
- Invasion, establishment and spread of *Lantana camara*
- Invasion of native plant communities by exotic perennial grasses
- Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants
- Loss of hollow-bearing trees
- Predation by the European red fox (*Vulpes vulpes*)
- Predation by the feral cat (*Felis catus*)
- Removal of dead wood and dead trees

Other key threatening processes with potential to impact on biodiversity in Willoughby are:

- Anthropogenic climate change
- Forest Eucalypt dieback associated with over-abundant psyllids and bell miners
- Infection by psittacine circoviral (beak and feather) disease affecting endangered psittacine species and populations
- Infection of frogs by amphibian chytrid causing the disease chytridiomycosis
- Invasion and establishment of Scotch broom (*Cytisus scoparius*)
- Invasion and establishment of the cane toad (*Bufo marinus*)
- Invasion of native plant communities by African Olive *Olea europaea* L. subsp. *cuspidata*
- Invasion of native plant communities by *Chrysanthemoides monilifera* (bitou bush and boneseed)

- Predation by *Gambusia holbrooki* (plague minnow or mosquito fish)

Other activities which could damage biodiversity in Willoughby may be added to the list of key threatening processes from time to time.

Human recreational activities in bushland can sometimes lead to unacceptable impacts by:

- Trampling of vegetation
- Damage to rocks from rock-climbing apparatus
- Lighting and noise causing disturbance to fauna

Human activities adjacent to bushland can cause disturbance by:

- Lighting and noise impacting on habitat of native fauna

A recurrent cause of significant damage to bushland in Willoughby is destruction of canopy trees to improve views from private residences.

Temporary disturbance of bushland with Council approval can occur from time to time to facilitate work in open space areas, or provide access to nearby development.

Objective	Target	Action	Measure
<b>5.6a Aim: To comply with relevant Legislation and Policies.</b>			
The statutory responsibilities and obligations of State Environmental Planning Policy 19 - Bushland in Urban Areas and the National Parks and Wildlife Act (1979) are acknowledged by Council and will be addressed where necessary and appropriate.	All statutory responsibilities under identified legislation are enacted.	Council will address legislation when necessary and appropriate.	Statutory responsibilities are complied with.
<b>5.6b Aim: To control and manage approved activities which result in temporary disturbance of bushland.</b>			
Activities in bushland which are deemed by Council's Bushland Section to have the potential to cause temporary disturbance to the bushland may only be permitted subject to: <ul style="list-style-type: none"> <li>• an assessment of the capacity of the bushland to be restored;</li> <li>• the establishment of appropriate bonds and fees to cover potential bushland management and restoration costs.</li> </ul>	Minimisation of impacts associated with activities deemed to have a minimal potential for permanent change. <p>Restoration, to the highest practicable extent, of areas disturbed through these activities.</p>	Establish a procedure for collection and administration of bonds and fees to cover potential restoration and/or ongoing management costs. <p>The bond is to be returned upon assessment and satisfaction of Council's Bushland Section for all restoration work.</p> <p>Develop a list of activities which may be permissible upon the issuing of a licence.</p> <p>Develop a range of standard conditions, performance measures and monitoring</p>	Establishment of procedures for handling and administering fees and bonds. <p>Establishment of a list of activities which may require licensing.</p> <p>Development of Licence agreements which protect bushland values.</p>

Objective	Target	Action	Measure
<p><b>5.6c Aim: To protect bushland viability through the control of activities which may cause permanent disturbance or change to bushland.</b></p>			
<p>Activities in bushland which are deemed by Council's Bushland Section to have a potential to cause permanent disturbance or change will not be permitted</p>	<p>Cessation of activities which cause permanent change.</p>	<p>procedures for inclusion in Licence agreements.</p> <p>No Council approval or licensing of these activities.</p>	<p>Compliance with State Environmental Planning Policy 19- Bushland in Urban Areas.</p>
<p>Native trees and native vegetation have a value for biodiversity and habitat. Council does not support the cutting down or lopping of trees and vegetation in bushland areas to improve views. Views from private properties and public places are not assured at all times, but may fluctuate over time due to growth patterns and valid management practices.</p>	<p>Native trees and native vegetation in bushland shall remain in their natural form and continue through their natural growth patterns, unless impacted by valid bushland management practices, such as regeneration or prescribed burning.</p>	<p>Requests to cut or lop native trees or vegetation in bushland will not be approved, unless safety is at issue, or it is in keeping with valid management practice.</p> <p>When illegal actions occur to native trees and vegetation, Council shall follow procedures according to Council's tree vandalism procedure and relevant policies.</p> <p>Council-approved procedures in respect of tree vandalism:</p> <p>a) Subject to legal advice, appropriate Council Officers conduct personal interviews of residents in the houses within vision of the tree/s.</p> <p>b) Offering a reward of up to \$10,000 for information which leads to the successful prosecution of the tree vandal.</p> <p>c) Erection for a period of 60 days, of a large free-standing sign indicating that the tree has been subjected to tree vandalism and offering rewards for information leading to successful prosecution.</p>	<p>A reduction in vandalism in bushland for views or other motives.</p>
<p><b>5.6d Aim: To limit damage to bushland from any key threatening process</b></p>			
<p>Key threatening processes will be addressed to minimise their impact.</p>	<p>Minimisation of impacts associated with key threatening processes.</p>	<p>Develop management procedures for key threatening processes within this plan of management and in Reserve Action Plans.</p>	<p>Impacts from key threatening processes are minimised.</p>
<p><b>5.6e Aim: To provide recreational facilities in bushland without significant adverse effects on flora and fauna.</b></p>			



Objective	Target	Action	Measure
<p>Council supports the recreational use of bushland, but only when the values of the bushland can be retained.</p>	<p>Recreational facilities in or adjacent to bushland will have minimal or no adverse effects on bushland values.</p>	<p>Approval, design and construction of recreational facilities in or adjacent to bushland will have regard to retaining the values of the bushland.</p> <p>Recreational facilities in bushland will only be approved if there is reason to assume that they will be used by the local community.</p>	<p>Recreational facilities in or adjacent to bushland are not adversely affecting the values of that bushland.</p> <p>Recreational facilities in bushland are being used by the community.</p>

# 6. Biodiversity

Plant Communities  
Wildlife Management  
Bushland Regeneration  
Weed Management

**Biodiversity**—the variety of all life forms. Biological diversity is usually considered at three different levels:

- [Genetic diversity](#) the variety of genetic information contained in individual plants, animals and other organisms
- [Species diversity](#) the variety of species refers to the variety of living species.
- [Ecosystem diversity](#) the variety of habitats, ecological communities and ecological processes.

Geodiversity has a direct relationship to biodiversity, and the Sydney basin bioregion is one of the most species diverse in Australia. The range of rock types, topography and climates in the bioregion has resulted in large variety of soils and vegetation communities. The Sydney region is internationally recognised as an area of high biodiversity.

The Australian Government has responsibilities for biodiversity conservation through the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The Australian Government has also prepared *Australia's Biodiversity Conservation Strategy 2010-2030*, which is a guiding framework for conserving our nation's biodiversity over the coming decades. The Strategy functions as a policy 'umbrella' over other more specific national frameworks. These include: *National Framework for the Management and Monitoring of Australia's Native Vegetation 2001* (Natural Resource Management Ministerial Council, Department of Environment and Heritage) (Draft Review 2013).

- *The Australian Weeds Strategy* (NRMMC 2007a)
- *Australian Pest Animal Strategy* (NRMMC 2007b)
- *Australia's Strategy for the National Reserve System 2009–2030* (National Reserve System Task Group 2009).

It is also a guiding policy framework for the diverse mix of Australian, state, territory and local government and private sector approaches to biodiversity conservation.

The State also has legislation with elements designed to protect biodiversity. The most important of these are the Local Government Act (1993), the Environmental Planning and Assessment Act 1979, the Threatened Species Conservation Act 1995 and the Heritage Act 1977. One of the requirements of the Local Government Act 1993 is the preparation of a State of the Environment (SOE) report. This must report on environmental issues that are relevant to council's environmental objectives established by the community strategic plan – for WCC this is the Sustainability Action Plan.

## 6.1 Plant Communities

### 6.1.1 Legislation and Policy

Council has a statutory responsibility under the following Government policies and Legislation in relation to the management of native plant communities:

The Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), the Australian Government's primary legislation to protect and conserve biodiversity.

State Environmental Planning Policy 19 - Bushland in Urban Areas

- To protect remnants of plant communities which were once characteristic of land now within an urban area (Clause 2 (2) (a))

Local Government Act 1993

36E Core objectives for management of community land categorised as a natural area

The core objectives for management of community land categorised as a natural area are:

- (a) to conserve biodiversity and maintain ecosystem function in respect of the land, or the feature or habitat in respect of which the land is categorised as a natural area, and
- (b) to maintain the land, or that feature or habitat, in its natural state and setting, and
- (c) to provide for the restoration and regeneration of the land, and
- (d) to provide for community use of and access to the land in such a manner as will minimise and mitigate any disturbance caused by human intrusion, and
- (e) to assist in and facilitate the implementation of any provisions restricting the use and management of the land that are set out in a recovery plan or threat abatement plan prepared under the [Threatened Species Conservation Act 1995](#) or the [Fisheries Management Act 1994](#).

36J Core objectives for management of community land categorised as bushland

The core objectives for management of community land categorised as bushland are:

- (a) to ensure the ongoing ecological viability of the land by protecting the ecological biodiversity and habitat values of the land, the flora and fauna (including invertebrates, fungi and micro-organisms) of the land and other ecological values of the land, and
- (b) to protect the aesthetic, heritage, recreational, educational and scientific values of the land, and
- (c) to promote the management of the land in a manner that protects and enhances the values and quality of the land and facilitates public enjoyment of the land and to implement measures directed to minimising or mitigating any disturbance caused by human intrusion, and
- (d) to restore degraded bushland, and
- (e) to protect existing landforms such as natural drainage lines, watercourses and foreshores, and
- (f) to retain bushland in parcels of a size and configuration that will enable the existing plant and animal communities to survive in the long term, and
- (g) to protect bushland as a natural stabiliser of the soil surface.

- To identify and develop strategies for the maintenance of biodiversity as part of the State of the Environment Reporting.

NSW National Parks and Wildlife Act (1974) and the Threatened Species Conservation Act (1995)

- To ensure appropriate management of protected and threatened species and communities / habitat.

### 6.1.2 Climate Change

According to the joint Sydney Coastal Councils Group and CSIRO Mapping Climate Change Vulnerability Report released in 2008, the Willoughby Local Government Area is likely to have a high vulnerability to future climate change in the areas of extreme heat and human health effects, extreme rainfall and urban stormwater management and threats to natural ecosystems and assets. In response to this, adaptation planning for Council has commenced and is a key action in the Sustainability Action Plan. The Scientific Committee established by the Threatened Species Conservation Act is of the opinion that Anthropogenic Climate Change could cause species, populations or ecological communities that are not threatened to become threatened.

### Climate change and adaptation

The present distribution of species and ecosystems in Australia is related to both current climatic conditions and past climates. One of the possible responses to climate change is for species to relocate as climatic envelopes shrink, expand or change location. This can happen at various scales of space and time and could create novel ecosystems with new combinations of species. For example, it is thought that some species will colonise new areas at higher elevations or in the cooler edges of their ranges, although this is likely to occur at the expense of other species. Some species might adapt to new conditions in situ, developing new characteristics and behaviour suited to their changed surroundings. This may be more successful where populations are connected and so have greater genetic resources to call on. The capacity of most species to tolerate or adapt to changed conditions or change their location is not yet known and is difficult to predict because of the many interactions involved. Nevertheless, substantial shifts in species and ecosystem distribution, as well as adaptation and development of new species, have occurred with past climate change.

A change of location is most likely to be a successful strategy for highly mobile species, such as marine species and some birds. In general, species that have specialised requirements, narrow physiological tolerances and geographic ranges, limited mobility, low genetic variability and long generation times are considered to be at greatest risk. For this reason the Biodiversity and Climate Change Expert Advisory Group suggests an approach of spreading risk and maintaining fundamental ecosystem processes, rather than trying to maintain historical species distributions. Increased ecological connectivity can facilitate the movement of species and help maximise opportunities for ecosystems to adapt and reorganise (Steffen et al. [2009a](#), [2009b](#)).

Protecting natural stores of carbon in native ecosystems will help to minimise greenhouse gas emissions. Natural ecosystems that are not subject to excessive disturbance are better able to store greenhouse gases such as carbon dioxide. The protection and restoration of the integrity and function of natural ecosystems can reduce future impacts of climate change and are increasingly important aspects of environmental and natural resource management.

Adapted from [National Wildlife Corridors Plan](#): A framework for landscape-scale conservation, 2012. Australian Government, Department of Sustainability, Environment, Water, Population and Communities

### 6.1.3 Ecological Community and Species Diversity

In discussing conservation of ecological communities and species, all forms of life present and their habitats are important components, but in practical terms, plant conservation is commonly the foundation for conservation of other species. See also Wildlife.

The varying topography, geology and soils as well as relatively high rainfall in the Willoughby Local Government Area have resulted in a high degree of floristic and plant community diversity. Conservation of a diversity of species can help insure against the uncertainties of climate change.

A general overview of native plant communities present in the Willoughby Local Government Area is provided in **Resource Overview**. For more detailed information, consult Volume 2 (Resource Inventory) of the Urban Bushland Plan of Management.

Maintaining diversity in plant species and communities requires the development of appropriate management and restoration practices for individual sites and plant communities. A key component of these practices is the reduction of degrading influences and the maintenance of natural ecological processes associated with the plant community.

Natural ecological processes of a plant community can be disturbed when a single species proliferates to the detriment of the diverse range of species normally present in that community. Such a species can be an introduced plant, but can also be a locally indigenous plant. Human induced change, particularly changed fire regimes and changes to soil moisture and nutrients, are influential in initiating this process. Once in train it is difficult to reverse. *Pittosporum undulatum* and *Allocasuarina littoralis* have increased their density and range in some natural areas within Willoughby to the point where they threaten natural ecological processes and diversity, although they are indigenous to Willoughby and are naturally present in healthy plant communities. Restoration practices will need to include management of these species and any other species which develops a tendency to become a monoculture, while still retaining the species in appropriate numbers.

As an overriding principal in maintaining ecological community and species diversity, the application of the three “R’s” is recommended:

- **Retain** bushland where possible;
- **Regenerate** where possible;
- **Revegetate**, as a last resort, only using locally indigenous species.

#### 6.1.4 Maintaining Genetic Integrity

An individual plant species may have considerable genetic variation across its natural range of occurrence. This genetic diversity is advantageous to the plant in that it assists it to grow and adapt to a range of environmental conditions. The practical advantage of this natural diversity is that local populations of native plants are likely to be more genetically adapted to growing conditions of the Willoughby area. Also, genetic diversity in a population is likely to assist its adaptation to a changing climate.

Maintaining the genetic integrity of urban bushland reserves is considered to be an important component of management. The principles applied to achieving this include:

- the prevention of native species which are non-indigenous to the Willoughby area being introduced or spreading into bushland areas;
- when replanting is required, the use of plant material propagated from local sources for revegetation and restoration work in and adjoining bushland areas (see **Bushland Regeneration** for policies on the use of this material and appropriateness of techniques).

#### 6.1.5 Threats to Plant Communities

Threats to native plants and animals occur from time to time from naturally occurring organisms, as well as from physical changes to the environment. In 2012 two organisms causing damage to plants in Willoughby are *Phytophthora cinnamomi* and Myrtle Rust (*Uredo rangellii* and other rusts in the order Pucciniales).

#### Dieback

Dieback describes a condition where trees die or decline in condition prematurely and often rapidly, often in large numbers. In Willoughby dieback of Eucalyptus and other native plants has been identified in Council reserves and on private lands. This can occur from a variety of factors.

Some dieback is considered to be caused by increased soil nutrient levels. Excess nutrient can enter reserves from:

- Washing detergents for clothes, dishes and cars containing nutrients such as phosphorous and boron.
- Dumped garden rubbish and lawn clippings.
- Over application of fertilisers.
- Nutrients leached from building materials.
- Introduced land fill.
- Septic seepage and sewer overflows.

Excess moisture and other factors contributing to dieback can come from:

- Damage and disturbance to tree roots from construction, loss of water and soil compaction, or the build-up of soil.
- Increased water runoff from roads, driveways, pavements and gutters directed into stormwater drains.
- Pool discharges (both chlorine and salt water discharge) into bushland.
- Increased water tables due to excessive use of irrigation systems.
- Tree loss opens the canopy, allowing wind turbulence to damage leaves and branches.

- Removal of understorey plants during urban development can cause wind pruning and tree or limb loss.

The root pathogen *Phytophthora cinnamomi* has been detected in some soils in Willoughby and is presumed to be a factor in some dieback.

Dieback often occurs over a protracted period, and sometimes it is difficult to diagnose its cause. Several factors may contribute to dieback at the same time. The symptoms of natural aging can sometimes be difficult to separate from those of dieback.

### Myrtle Rust

Myrtle Rust is pathogenic on plants of the family Myrtaceae and spreads by wind-borne spores. Myrtaceous plants are important in many Australian ecological communities, including many in Willoughby. The rust was detected in NSW in 2010 and quickly spread along the coast. By December 2010 it was determined that it was no longer technically feasible to eradicate it. *Introduction and establishment of Exotic Rust Fungi of the order Pucciniales pathogenic on plants of the family Myrtaceae* was declared a Key Threatening Process under the Threatened Species Conservation Act in April 2011.

Myrtle Rust was detected on plants in the Willoughby area in 2011.

Options for physical, chemical and biological control are limited and only likely to be effective for cultivated situations (nurseries, garden areas, and perhaps plantation forests).

Objective	Target	Action	Measure
<b>6.1a Aim: To comply with relevant Legislation and Policies</b>			
The statutory responsibilities and obligations of State Environmental Planning Policy 19 - Bushland in Urban Areas, Local Government Act 1993, Environment Protection and Biodiversity Conservation Act 1999, National Parks and Wildlife Act 1974 (NSW) and Threatened Species Conservation Act 1995 are acknowledged by Council and will be addressed where necessary and appropriate.	All statutory responsibilities under identified legislation are enacted.	Council will address legislation when necessary and appropriate.	Statutory responsibilities are complied with.
<b>6.1b Aim: Maintain and, where appropriate, enhance diverse native plant communities and species across lands within the Willoughby Local Government Area (LGA).</b>			
Council will manage bushland areas to maximise long-term the diversity of indigenous species and indigenous plant communities.	Maintenance of a diverse range of plant communities and species which are representative of the original bushland communities of Willoughby.	Identify threats to plant communities and/or locally significant species in Reserve Action Plans and management protocols and develop strategies to address these threats.	Increase in the health and resilience of bushland.
Council will aim to maintain natural ecological processes of bushland areas and mitigate identified degrading influences.	Long term viability of bushland areas. Council develops and utilises policies and practices in bushland maintenance	Identify areas of bushland showing alteration to natural processes. Devise remedial actions.	Identification of specific threats to plant communities and species. Reduction in areas with over-

Objective	Target	Action	Measure
	to limit loss of diversity by overabundance of certain species.	<i>Pittosporum undulatum</i> and <i>Allocasuarina littoralis</i> overabundance have caused loss of diversity in some natural areas in Willoughby. Develop and implement strategies to manage locally indigenous species which have a tendency to become monocultures, while maintaining numbers appropriate to healthy, diverse plant communities. Acknowledge and action in Reserve Action Plans.	abundance of locally indigenous species, while retaining species numbers appropriate to healthy, diverse plant communities.
<p>Council supports the implementation of vegetation surveys and regular updating of species and plant community information relating to bushland reserves.</p> <p>Council will maintain and update mapping showing soil and vegetation types across the Local Government Area.</p>	Regular updating of information on bushland reserves to identify species and plant community diversity.	<p>Pursue further vegetation surveys with ground-truthing to reflect current standards of reporting. Make results available to the public.</p> <p>Liaise with surrounding local government areas with the aim of consistency of vegetation information.</p> <p>Update reserve plant lists and make available to the public.</p>	Accurate vegetation surveys and plant lists available to the public.
Council will conform to requirements of the EPBC Act and Threatened Species Conservation Act in conserving and managing threatened species and ecological communities and minimising the effect of key threatening processes.	Numbers and health of any rare or threatened species found in Willoughby are maintained or increased.	Where rare or threatened species are identified, develop guidelines for maintenance of their preferred habitat or, where required, develop species recovery plans in consultation with NSW National Parks and Wildlife Service.	<p>Development of strategies to protect threatened species.</p> <p>Stability of, or an increase in, the viability of rare and threatened species occurring in Willoughby.</p>
<b>6.1c Aim: Maintain genetic integrity of native plant communities.</b>			
<p>Council will aim to maintain, through its management policies and practices, the genetic integrity of bushland remnants.</p> <p>Council acknowledges that a primary principle of maintaining species and community diversity in bushland areas is to retain and regenerate bushland where possible and, as a last resort, to revegetate using locally indigenous species.</p>	<p>Control of non-indigenous native plants in bushland areas.</p> <p>Where required, use of local genetic material in Council bushland management programs</p> <p>Application of the <b>3 "R"</b> principles to maintaining genetic integrity, species and community diversity</p>	<p>Control non-indigenous native species within bushland reserves.</p> <p>Use plants propagated from local genetic material in all revegetation programs undertaken within or adjacent to reserves on public land, bearing in mind revegetation in bushland areas should be used only as a last resort.</p> <p>Liaise with Council's landscape staff for the use of locally indigenous native species</p>	<p>An increase in the number of areas regenerating naturally.</p> <p>Less competition from exotic plant species.</p> <p>An increase in the use of plants propagated from local genetic material for plantings in the LGA.</p>

Objective	Target	Action	Measure
		<p>wherever practical in amenity plantings.</p> <p>Council to establish and maintain a list of propagators of locally indigenous species and make this list readily available to the public.</p> <p>Council to assess feasibility of a regional nursery facility (possibly in conjunction with adjoining Councils) to assist in propagation of locally indigenous species for projects.</p>	
<b>6.1d Aim: Ameliorate threats to plant communities.</b>			
Council will aim to reduce the known factors influencing dieback through the adoption and implementation of policies relating to Urban Impacts and Fire Management.	Implementation of policies relating to Major Urban Impacts and Fire Management.	Implement policies relating to Major Urban Impacts and Fire Management.	Expansion of dieback is stabilised or reduced.
Council will support a dieback monitoring program and any additional research which directly contributes to the greater understanding of this problem.	<p>Increase in knowledge of factors contributing to dieback.</p> <p>Stabilisation and reduction of canopy dieback rates.</p> <p>Improvement of canopy health in affected areas.</p>	<p>In dieback areas, assess any deterioration of the plant community or the success of any recovery program.</p> <p>Reserve Action Plans to identify areas where dieback is evident.</p> <p>Identify the likely cause of dieback.</p> <p>Wherever possible develop strategies within Reserve Action Plans to address the causal factors and effect recovery.</p> <p>Where the causal factors are irreversible establish alternative indigenous plant species or community to replace those which have died out.</p>	<p>Identification of areas of dieback on Reserve Action Plans</p> <p>A reduction in the area affected by dieback within the LGA.</p> <p>Where necessary, replacement of dieback areas by a suitable indigenous native plant community.</p>
Council will continue soil sample testing of <i>Phytophthora cinnamomi</i> in reserves showing signs of dieback.	Identifying and mapping areas with <i>Phytophthora cinnamomi</i> present.	<p>Continue monitoring for the presence of <i>Phytophthora cinnamomi</i> in areas exhibiting dieback symptoms.</p> <p>Encourage research institutions to undertake research programs and provide results on dieback within the municipality.</p>	An increase in available research data on the presence of <i>Phytophthora cinnamomi</i> in Willoughby.



Objective	Target	Action	Measure
Council will continue to monitor outbreaks of Myrtle Rust and be aware of current best practices for dealing with it.	Minimise spread of Myrtle Rust in Willoughby LGA.	Educate staff and community to be aware of Myrtle Rust.  Deal with plants showing Myrtle Rust according to current best practice guidelines.	Outbreaks of Myrtle Rust in Willoughby are minimised.
Council will keep abreast of best practice to mitigate effects of climate change on biodiversity within Willoughby LGA.	Minimise effects of climate change on biodiversity.	Maintain and enhance ecological connectivity within and beyond the LGA to facilitate the movement of species and help maximise opportunities for ecosystems to adapt and reorganise.  Incorporate best practice management strategies to mitigate effects of climate change.	Effects of climate change on biodiversity within Willoughby LGA are minimised.

## 6.2 Wildlife Management

### 6.2.1 Introduction

The Willoughby local government area is currently home to more than 250 species of native animals, and a variety of distinct habitat types and communities. There have been recordings of five species of freshwater fish, seven species of frog, 15 species of mammals, 28 species of reptiles, 144 species of bird and a large but as yet unknown number of invertebrates (which includes in excess of four slugs, six snails, nine ants, 13 spiders and 18 bees to name a few). The future of all these animals is not assured and is greatly dependent on how we manage the environment in the Willoughby LGA.

Willoughby City Council is committed to conserving and enhancing the local natural environment and the habitat values it possesses. Council, with the ongoing support of local residents, has used a wide variety of methods to manage Willoughby's natural heritage. Strategies are constantly reviewed to keep up with best practices in natural resource management, including management of vegetation and ecological linkages and enhancing habitat with nest boxes and terrestrial shelters. In 2004 Council declared most remnant bushland in Willoughby to be Wildlife Protection Areas. Ongoing maintenance and rehabilitation of bushland is undertaken through bush regeneration and a fire regime that is planned not only for hazard reduction, but also to enhance fauna and flora. The community is actively involved in wildlife management through the volunteer Bushcare and Wildlife Watch programs.

The bushland of Willoughby is fragmented into many reserves and much of it exhibits significant degradation through urban influences. Key issues for wildlife are habitat fragmentation, feral animals and disturbance/competition from domestic animals, loss of structural habitat features, degradation of vegetation communities and ecological changes. It is imperative that the reserve system is managed to maintain a high degree of habitat diversity. Marine habitat, while not controlled by Council, is influenced by what occurs on the land and Council acknowledges this and will manage its operations to protect marine habitat.

## 6.2.2 Legislation and Policy

The protection and care of native fauna and flora throughout NSW is legislated through the National Parks and Wildlife Act 1974 and there are particular responsibilities for species listed under the Threatened Species Conservation Act 1995.

Environmental Planning and Assessment Act 1979 requires that the effects on the natural environment, including impacts on fauna, are taken into account by Council in either granting approval for or undertaking works, developments or activities.

Companion animals can impact on fauna in urban bushland and Council has obligations under the Companion Animals Act 1998. Under this Act Willoughby City Council has declared some areas of bushland to be Wildlife Protection Areas, excluding dogs and cats from that bushland. (See Control of Feral and Domestic Animals, and Map in Volume 2.)

### Council Policy

The Willoughby City Strategy 2013-2029 contains strategies and outcomes which directly relate to wildlife management, including:

#### 2.1.1 Conserve and maintain Willoughby's natural ecosystems.

- b. Protect environmentally sensitive areas from human impact and climate change.
- d. Enhance habitat corridors and linkages between bushland reserves.
- e. Regenerate and maintain natural areas.
- g. Monitor and control feral animals, noxious plants and undesirable weeds.
- i. Protect trees and vegetation.

#### 2.1.2 The community values the natural environment.

- a. Provide safe pedestrian links into, through and between bushland areas without endangering natural ecosystems.
- c. Facilitate natural environment education programs.
- d. Build partnerships with stakeholders and other councils to integrate management of environmentally sustainable issues.

Objective	Target	Action	Measure
<b>6.2a Aim: To comply with relevant Legislation and Policies.</b>			
The statutory responsibilities and obligations under the Environment Protection and Biodiversity Conservation Act 1999 (the EPBC Act), Local Government Act 1993, NSW National Parks and Wildlife Act 1974, Environmental Planning and Assessment Act 1979, Threatened Species Conservation Act 1995 (under review), Commonwealth Endangered Species Protection Act 1992, Companion Animals Act 1989, Heritage Act 1977 and	All statutory responsibilities under identified legislation are enacted.	Maintain responsibilities under identified legislation.	All statutory responsibilities under identified legislation are enacted.

Objective	Target	Action	Measure
Heritage Amendment Act are acknowledged by Council and will be addressed where necessary and appropriate.			

### 6.2.3 Community Engagement

A range of Council sponsored activities for all ages encourages the Willoughby community to be engaged with native wildlife:

- The Wildlife Watch program involves the community in meaningful surveys that help protect and preserve the indigenous animal population.
- Through council's internet web page, the community can report wildlife sightings and share images on a photo gallery.
- Council's annual Fauna Fair attracts large numbers and fauna information is promulgated at events, fairs and the Easter Show.
- Council's range of publications and web page includes several topics relating to fauna and to control of pest and domestic animals.
- Wildlife information is included in the general bushwalks program, specific bird watching walks are held and nocturnal walks feature spotlighting activities and frog watching.
- Wildlife activities are a strong feature of council's school activities, often linking to curriculum. The wildlife book competition for Year 5 has been a great success and schools are assisted in creating habitat gardens and habitat structures.
- Willoughby City Council's website contains information on

Objective	Target	Action	Measure
<b>6.2b Aim: To increase the awareness and involvement of the community in conservation of wildlife and habitat.</b>			
Council will engage residents and community in the management/conservation of wildlife and wildlife habitat.	Residents and community are aware of local biodiversity and wildlife habitat.  Residents and community are engaged in proactive improvement of local biodiversity and wildlife habitat.  Increased participation in Council's environmental programs.  Residents and community contribute to fauna records.	Council will organise or participate in: Interpretive activities (including schools, resident, community groups and other walks and talks) Events (including Fairs, Festivals and regional events.) Website and social media information distribution. Environmental Workshops. Bushcare groups and activities. Backyard Habitat support. Community Fauna Survey activity	Increased and consistent community involvement in council's activities.  Increase in habitat and species on Bushcare sites and in residential areas.

### 6.2.4 Wildlife and Habitat Management

Objective	Target	Action	Measure
<b>6.2c Aim: To protect the native fauna populations and habitats within Willoughby and provide for their maintenance and enhancement.</b>			

Objective	Target	Action	Measure
Council will aim to maintain, and enhance where appropriate, species diversity and native fauna habitat across the Local Government Area.	Maintenance of viable fauna populations, species and habitat.	Council will not carry out or allow to be carried out actions that impact adversely on the viability of wildlife populations.	Wildlife numbers and diversity are stable or increased.
Council will aim to protect marine habitats adjacent to Willoughby LGA land.	Activities on lands within the council LGA will not adversely affect marine habitats	Council will not carry out or allow to be carried out actions that impact adversely on marine habitats.  Council will regulate stormwater pollution and maintain traps and channels for the prevention of movement or pollutants into waterways	Marine habitats adjacent to Willoughby LGA are not affected by land-based activities.
Willoughby LEP 2012 3.2(e) and State Environmental Planning Policy (Exempt and Complying Development Codes) 2008, 1.17A(e) prohibits development on land within an environmentally sensitive area from being a complying development.  Willoughby LEP 2012 5.9(2) and Willoughby DCP C9 Preservation of Trees or Vegetation provide for the preservation of bushland on private property.	Bushland and its wildlife habitat potential on private property shall be retained.	Council will fulfil all requirements to retain bushland on private property when assessing proposed developments.  Appropriate Bushland Officers will be consulted when bushland is on or near a development site.  Owners of private property containing bushland will be encouraged to retain and care for their natural areas.	Bushland and its wildlife habitat potential on private property is being retained and is not deteriorating.

### 6.2.5 Wildlife monitoring

The key to effective management of wildlife is accurate understanding of current wildlife populations and wildlife habitat and its potential. Consistent and regular local monitoring of wildlife and habitat and review of regional activity is essential to achieving this understanding.

Objective	Target	Action	Measure
<b>6.2d Aim: To develop and maintain data on wildlife and habitat in WCC and associated data to the benefit of wildlife in WCC.</b>			
The ongoing compilation, identification and monitoring of species and habitat diversity across the Local Government Area will be supported by Council.	An understanding of the condition of native wildlife populations and their habitat in the Willoughby LGA.	Continue consistent municipality-wide fauna surveys based on the various habitats both within and outside the reserve system.	An increase in available wildlife and habitat records suitable for management decisions.
Council will co-operate with other		Use a variety of means to collect data	

Objective	Target	Action	Measure
councils and organisations in sharing data on wildlife and habitat.		including the existing wildlife register, remote technology, consultants, volunteers, staff, etc.  Liaise with other councils and organisations and share information on wildlife and habitat.	

### 6.2.6 Vegetation Management

Any intervention in vegetation structure, e.g. weed removal, fire management, planting, disturbance, must be done with an awareness of known or potential habitat value, and any significant impact needs to be formally assessed and documented as part of the planning process. Vegetation can provide food and shelter for native wildlife. Where native vegetation is sparse or not available, introduced plants may be providing the resources needed by wildlife. Care needs to be taken to ensure that weed control measures are sensitive to the possible habitat value that weed infestations may be providing. Investigation of possible habitat value of weed infestations should be undertaken prior to implementation of works.

Objective	Target	Action	Measure
<b>6.2e Aim: All management of vegetation will have regard to habitat values.</b>			
Impacts on wildlife and habitat are to be taken into consideration whenever any bushland management activity is proposed (such as bushland regeneration, weed control, fire hazard reduction or ecological burns, recreation provision and maintenance).	All bushland management activities undertaken by council and or volunteers will demonstrate that they have addressed possible adverse impacts on fauna and habitat.	Bushland management activities will be carried out at a time and in a manner to minimise risk to wildlife and habitat.	Bushland management activities will ultimately lead to an increase in habitat and wildlife.
Regeneration and weed control activities will have regard to the habitat requirements of wildlife.	Wildlife will benefit from regeneration activities.	All vegetation, including weeds, can have habitat value. Before removing weeds, consideration will be given to the value of those weeds as wildlife habitat and work will be scheduled to minimise impact on wildlife.	No long-term loss of habitat due to weed management.
All Reserve Action Plans (RAPs) prepared for community bushland are to include provision for wildlife habitat creation, enhancement and management.	Key issues for wildlife habitat in bushland reserves are comprehensively addressed in RAPs.	Include information on wildlife and habitat in all RAPs and actions to enhance habitat.	RAPs include information on and actions enhance habitat for wildlife.  Increased quality and extent of wildlife diversity and wildlife habitat in urban bushland reserves.
All Plans of Management and Reserve Action Plans prepared for non-bushland	Key issues for wildlife habitat in non-bushland open space are	Plans for public recreation land will include provision of habitat for wildlife	There is an increase in habitat areas in public recreation land.

Objective	Target	Action	Measure
community lands are to consider the potential for the creation or enhancement of fauna habitat and linkages in areas not essential for other recreational purposes.	comprehensively addressed in management plans.	where suitable.  Plans for public recreation land will consider enhancing habitat links with public and private bushland.	Habitat linkages are enhanced across public recreation land.

### 6.2.7 Ecological Linkages

Ecological linkages previously referred to as fauna corridors, can be loosely defined as any piece of the landscape allowing movement of the biota between large habitat areas. These linkages have a range of benefits as they:

- allow increased migration rates of species and individuals - this maintains species richness and diversity;
- decrease the likelihood of local extinctions and prevent inbreeding;
- provide increased foraging area for species with large ranges;
- provide refuge from predators such as domestic pets;
- widen the variety of habitat available;
- provide refuge from disturbed habitat, e.g. fire affected bushland;
- limit urban sprawl and abate noise.

When assessing reserves for allocation of resources, consideration needs to be given to the value of corridors for the passage of wildlife through and between bushland areas. Linkages need to be maintained not only within Willoughby LGA but to adjoining bushland in other council areas and national parks.

The viability of ecological linkages is dependent on the management of land outside of bushland areas. A significant proportion of bushland within the Willoughby LGA occurs on private land and this bushland often forms critical linkages between and into the bushland reserve system. Backyard habitat programs have engaged the general community in a greater awareness of the importance of linkages and residents have been creating habitat within their own backyards to provide functional habitat and consolidate existing areas of wildlife corridors. Park and streetscape planting are also significant in forming links and Council has been developing areas of open space, including parks and streetscapes, to function as wildlife corridors. These programs should be continued and expanded.

Some infrastructure can impede movement of wildlife between bushland areas, e.g. physical barriers such as roads and effective barriers such as lighting. The critical next step is to provide functional linkages between habitat areas, such as wildlife bridges and better-designed lighting.

Objective	Target	Action	Measure
<b>6.2f Aim: To preserve and increase ecological links across the LGA and regionally to assist the movement of fauna</b>			
Council will identify and consolidate existing Regional Links with other LGAs and NPWS.	Potential ecological linkages mapped.  Improved actual linkages regionally.	Survey areas for potential linkages from aerial imagery followed up with ground-truthing.	Mapping layer of linkages available on council's GIS.  Increased movement of key species through linked areas.
Wildlife habitat extends beyond bushland reserves. Council will consolidate and	Increase in habitat on public land outside of bushland reserves.	Council will maintain maps of ecological linkages in Willoughby LGA and	An increase in locally indigenous species and wildlife habitat on public land outside

Objective	Target	Action	Measure
expand wildlife habitat on council controlled land and encourage retention and expansion of wildlife habitat on private land.		regionally, including gaps to be addressed.  Council will increase habitat for wildlife on community land outside of bushland reserves.  Develop a street tree program based on the use of locally indigenous species where appropriate and involving the community in its implementation.	of bushland reserves.  More suitable, locally indigenous trees used in Council's street tree program.
Wildlife habitat extends beyond bushland reserves. Council will endeavour to create habitat linkages in and across private land with resident participation.	Increase in habitat on private land.	Council will encourage private landholders to improve/maintain wildlife habitat.  Wildlife friendly backyards especially adjacent to bushland.	An increase in locally indigenous species and wildlife habitat on private land.  Increase in resident participation in extending wildlife linkages.

### 6.2.8 Habitat Structures

The significant loss of arboreal and terrestrial habitats in urban areas can in part be addressed by provision of nest-boxes and terrestrial structures. To be effective these habitat structures need to be installed and managed in a systematic program, with locations recorded and use monitored.

Objective	Target	Action	Measure
<b>6.2g Aim: Maintain natural habitat formations and supplement with manufactured structures where natural habitat has been depleted.</b>			
Council will give special consideration to preserving existing trees with significant habitat value.	Identify and protect habitat trees, dead or alive.	Trees with hollows are not to be removed or severely pruned without consultation with council officers responsible for wildlife and habitat.  Record habitat trees.	A register of habitat trees is kept.  Reduction in loss of habitat trees.
Replace arboreal habitat where necessary.	Increase availability of arboreal habitat.	Review availability of arboreal habitat.  Install nest boxes where required.  Monitor and maintain nest boxes.	Increase in arboreal wildlife which is dependent on hollows.
Replace terrestrial habitat where	Increase availability of terrestrial habitat.	Review availability of terrestrial habitat.	Increase in terrestrial habitat-dependant

Objective	Target	Action	Measure
necessary		Install terrestrial shelters where required. Monitor and maintain structures.	wildlife.

### 6.2.9 Other Habitat Management Issues

Objective	Target	Action	Measure
<b>6.2h Aim: Limit, as far as possible, impacts on wildlife from infrastructure.</b>			
Negate or reduce damaging impacts on wildlife habitat when providing infrastructure in open space.	New and upgraded infrastructure will have no increased impact on wildlife and where possible will reduce negative impacts.	Review infrastructure in open space for impact on wildlife.	Increase in or no effect on activity of wildlife after provision of infrastructure.
<b>6.2i Aim: Release of fauna will be managed, as far as possible, to benefit the animal and other fauna in the area.</b>			
Fauna releases will only be permitted in areas from which the fauna originated or within the expected home range of the species. Releases will not be permitted in bushland reserves without the approval of Council's Wildlife Officer.	Development of procedures for the appropriate release of wildlife within the Willoughby LGA.	Maintain contacts with wildlife care agencies. Co-ordinate re-releases with care agencies.	No informal re-releasing of wildlife in the Willoughby LGA.

### 6.2.10 Control of Pest Species and Domestic Animals

There are many introduced species that impact significantly on Australian native wildlife. In the Willoughby LGA they include the European Red Fox (*Vulpes vulpes*), dogs and feral and domestic cats. Rabbits have not established in Willoughby's bushland, but have the potential to impact significantly on native wildlife if they do so, as they have done in other LGAs.

**Foxes** are a major threat to the ongoing survival of many native species and are listed as a key threatening process under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and *Threatened Species and Conservation Act 1995* (TSC Act). Willoughby Council is a member of the Urban Feral Animal Action Group (UFAAG) which comprises representatives from land management agencies across northern Sydney and coordinates and implements cooperative strategic vertebrate pest control programs across the region. The biannual fox baiting program which began in 2000 has resulted in the re-population of many fauna species in recent years, notably Swamp Wallabies, Bandicoots and Brush-turkeys. Sightings of Lyre Birds, which had not been seen in Willoughby LGA for many years, are also indicative of the success of the program.

**Feral cats** are true carnivores, meaning they survive solely on the nutrients found in animal flesh and predation by feral cats is listed as a key threatening process under the EPBC Act and TSC Act. In Australia they mainly eat small native and exotic mammals, as well as birds, lizards and insects. Female feral cats have a high reproductive ability which keeps populations growing despite high death rates of young through predation by other species such as foxes and reptiles. Feral cats have had an impact in some reserves in



Willoughby LGA. Trapping programs, often with the assistance of residents, who reside on the bushland interface, are conducted and the animal is taken to a local veterinarian for euthanasia.

**Domestic cats** also impact on native wildlife through predation. Trapping programs have also been implemented when domestic cats are continually found in Wildlife Protection Areas and bushland reserves. Domestic cats are taken to the local veterinarian for identification and the owner notified.

**Domestic dogs** can impact on native animals in bushland areas. Dog faeces can introduce parasites foreign to native species and dog scent can prevent native animals from moving into areas for foraging, breeding and habitat needs. Dogs off-leash can harm native animals through chasing and possibly wounding or killing the animal. Wallabies are known to eject pouch young when being chased by dogs.

**Rabbits** are a declared pest species in Australia. Competition and land degradation by feral rabbits is listed as a key threatening process to endangered Australian native animals, plants and ecological communities under the EPBC Act and the TSC Act. Rabbits can also cause significant damage to playing fields, public parks and private property. UFAAG implements combined agency rabbit control programs such as Pindone baiting or release of Rabbit Haemorrhagic Disease Virus (RHDV). Rabbits have not yet caused significant impact on Willoughby's bushland or native animals and their population numbers are low, therefore RHDV release is not deemed to be necessary. However, regular monitoring of rabbit numbers and impacts is essential and RHDV release will occur if required. Pet rabbits released into urban areas pose a problem from time to time and a reactive management approach such as trapping is implemented.

**Cane toads** were introduced to Queensland from South America in 1935, in an unsuccessful attempt to control cane beetles. Having no natural enemies, the toads have spread west into the Northern Territory and Western Australia, and south into New South Wales. They are now a major threat to native animals on the far north coast of NSW. Cane toads are occasionally found in Sydney, having been brought down in trucks and landscape supplies from the north coast. There is now an established population of approximately 250 in Taren Point in Sydney's Southern suburbs. Although no sightings have been reported in the Willoughby LGA, there is potential for cane toads to be introduced into the area. Council is regularly updated on cane toad sightings and management requirements in the Northern Sydney area via UFAAG.

### **European Honey Bees**

Native pollinators are essential for the survival of many indigenous plants which have evolved in conjunction with specialist pollinators (e.g. several indigenous orchids).

Competition from feral honey bees (*Apis mellifera*) is a key threatening processes listed under the TSC Act. Feral European honey bees may out compete native fauna for floral resources, may disrupt natural pollination processes and may displace endemic wildlife from tree hollows (from website of Australian Government, Department of Sustainability Environment, Water, Population and Communities). European honey bees also have the potential to harm humans and animals due to their aggression and ability to sting. While some native bees can sting, they are less aggressive and seldom have contact with people. Although an urban area, Willoughby LGA has a large amount of bushland but does not have agricultural industries needing extensive pollination by European honey bees. The large number of native pollinators present in the area are effective for backyard crops. Research is showing that *the native bee might be more efficient at pollinating a range of crops* (John Swift, University of Queensland).

Keeping of European honey bees is regulated through the NSW Apiaries Act 1985, which requires all hives to be registered and to bear their registration number. Due to the potential impact on native flora and fauna, Willoughby City Council does not encourage the keeping of European honey bees and will not approve the placing of hives on public land. Council arranges for the removal of feral honey bees when they are found in natural areas (e.g. in tree hollows and nest boxes) and public land.

**Emerging pest species** are pest species that have already established to a limited extent in Australia, but are still spreading, for example, the Red-eared Slider Turtle (*Trachemys scripta elegans*). It is important to control their spread and, where practicable, eradicate local populations. A control program and a community education program will be implemented when sightings occur.

Objective	Target	Action	Measure
<b>6.2j Aim: Control of domestic and feral animals that impact on native fauna populations</b>			
Council supports target specific, co-ordinated and humane programs for the control of pest animals, primarily foxes, cats and rabbits, in the Local Government Area.	Implementation of an effective pest species management program.  Adherence to model codes of practice and standard operating procedures for the humane capture, handling or destruction of feral animals in Australia.	Monitor and record pest species impacts and sightings.  Develop and implement target specific, effective and humane pest animal control programs within the LGA and when required, a co-ordinated program with UFAAG.	A reduction of pest species populations and reduced impacts on native species.
Council recognises the potential for domestic cats to impact negatively on wildlife and wildlife habitat.	A reduction in adverse impacts from domestic cats on wildlife.  Increase in responsible pet ownership	Council will conduct appropriate trapping programs for domestic cats in WPAs.  Council will continue and expand community education programs aimed at reducing the impact of domestic cats on wildlife.	Reduction in the number of fatalities and injuries to native fauna caused by domestic cats.  Reduction in sightings of cats in bushland.  Increase in the number of individuals of species likely to be effected by cat predation.
Council recognises the negative impacts of dogs on wildlife in bushland. Whilst Council permits dogs on tracks through many bushland areas, Council commits to ongoing community education to reduce their impact.	A reduction of the impacts of domestic dogs on wildlife.  Increase in responsible pet ownership.	Reminder signs to be erected from time to time on formal tracks alerting dog walkers that dogs must be kept on a leash at all times.  Leash-free areas will continue to be promoted on Councils website and at relevant community events, e.g. Fauna Fair and Willoughby Spring Festival.  Reminder signs to be erected from time to time on tracks alerting dog owners and walkers they are required to pick up their dog droppings.	A reduction in off-leash dogs in bushland.  A reduction in the use of bushland by dogs and increased use of leash free areas.  A reduction in dog faeces in bushland.
Council recognises the potential threat of Cane Toad introduction into the LGA.	No Cane Toad populations in the LGA.	Council will conduct community education programs at relevant community events, e.g. the Fauna Fair, to alert the community of the potential cane toad threat and appropriate actions.	No impact from Cane Toads on the local ecology.
Council recognises that honey bees have an adverse impact on bushland and will	Reduction of numbers of honey bees in bushland.	Council will not authorise honey bee hives on council-controlled property. Any	Reduced impact from honey bees on bushland and native fauna and flora.

Objective	Target	Action	Measure
discourage their presence in Willoughby LGA	<p>Increase in native pollinators in Willoughby.</p> <p>Increase in nectar resources for native wildlife</p>	<p>hives on council property will be reported and removed promptly.</p> <p>Feral honey bee infestations on council-controlled property will be removed promptly.</p> <p>Encourage responsible management of European Honey Bees by amateur apiarists to prevent swarming.</p> <p>Council will continue to promote native pollinators through workshops and community education.</p>	
Council will monitor and record new and emerging pest species and commits to controlling their spread, and where possible eradicate local populations.	New and Emerging pest species are controlled and local populations eradicated where possible.	Implement appropriate management actions when emerging pest species are identified in the local area.	Impacts of emerging pest species on native species are mitigated.

### 6.2.11 Wildlife Protection Areas

In June 2004 Willoughby City Council declared several reserves to be Wildlife Protection Areas under the Companion Animals Act 1998. Three were declared to be wholly WPAs and six were declared WPAs with the exclusion of major walking tracks. A list and map of Wildlife Protection Areas are included in Volume 2 Resource Inventory.

Companion Animals Act 1998 No 87 states (authorised at 6 January 2012):

14.1 Dogs are prohibited in the following places (whether or not they are leashed or otherwise controlled):

(h) Wildlife protection areas (meaning any public place or any part of a public place set apart by the local authority for the protection of wildlife and in which the local authority has ordered that dogs are prohibited for the purposes of the protection of wildlife and in which, or near the boundaries of which, there are conspicuously exhibited by the local authority at reasonable intervals notices to the effect that dogs are prohibited in or on that public place).

30.1 Cats are prohibited in the following places:

(b) Wildlife protection areas (meaning any public place or any part of a public place set apart by the local authority for the protection of wildlife and in which the local authority ordered that cats are prohibited for the purposes of the protection of wildlife and in which, or near the boundaries of which, there are conspicuously exhibited by the local authority at reasonable intervals notices to the effect that cats are prohibited in or on that public place).

Objective	Target	Action	Measure
<b>6.2k Aim: Willoughby City Council will designate areas of high habitat value to be Wildlife Protection Areas.</b>			
Council will maintain some reserve areas as Wildlife Protection Areas as provided	No uncontrolled activity of companion animals in WPA	Council will:	No inappropriate activity of companion animals in WPA

Objective	Target	Action	Measure
for in the Companion Animals Act 1998, 14.1 and 30.1.  Council will enforce appropriate levels of control of companion animals in Wildlife Protection Areas.	No discernable impact on wildlife by companion animals	<ul style="list-style-type: none"> <li>• Install and Maintain WPA signage.</li> <li>• Educate park users and nearby pet owners about WPA regulations.</li> <li>• Police WPA regulations – administer infringement penalties where appropriate.</li> <li>• Monitor and record activity of companion animals within WPAs and the reserve network</li> <li>• Monitor wildlife in WPAs.</li> </ul>	
Improve protection of wildlife and habitat from companion animals through the Wildlife Protection Areas provisions of the Companion Animals Act 1998.	Consolidate and expand areas of protection for wildlife from the activities of companion animals	Review WPA zoning alongside fauna records data – and rezone where necessary.	<p>Increased activity of wildlife in areas previously impacted by companion animals.</p> <p>Increased areas of wildlife habitat within the reserve network which are protected from disturbance by companion animals.</p>

## 6.3 Bushland Regeneration and Restoration

### 6.3.1 Legislation and Policy

Council has statutory responsibility under the following Government policies and Legislation with regard to regenerating and restoring bushland in its care:

The Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), the Australian Government’s primary legislation to protect and conserve biodiversity.

Under State Environmental Planning Policy (SEPP) 19 - Bushland in Urban Areas Council has responsibility to prepare management plans for bushland areas that are consistent with the aims and objectives of the Policy (Clause 4 (4)) and identify specific measures to be taken to “...restore and regenerate areas of bushland” (Clause 4 (4) (c)).

Under the Local Government Act 1993 Council is required:

36E (c) to provide for the restoration and regeneration of the land.

36J (d) to restore degraded bushland.

NSW National Parks and Wildlife Act 1974 and the Threatened Species Conservation Act (1995)

To ensure appropriate management of protected and threatened species and communities / habitat.

### **Why do weeds invade bushland?**

Urbanisation results in changes to the ecological processes that operate on bushland ecosystems. The dysfunction of these processes leads to degradation of the bushland resource through invasion by weed species and the loss of vegetation structure and species diversity. Therefore, to simply remove weed species without reference to the cause of the problem and the potential for the natural community to re-establish is an ineffectual and short term response.

Weeds in bushland primarily grow in disturbed areas. The main underlying disturbance factors in urban bushland are:

- Physical disturbance to an area such as construction activities, clearing bushland, mowing, etc.;
- Increased soil moisture due to urban run-off;
- Increased nutrients from urban run-off and garden refuse dumping;
- Increased light levels where trees are killed or lopped, often for views;
- Increase in weed propagules and seed dispersal agents.
- Changed fire regimes: removal of fire, or too frequent fires.

### **How are Bushland Regeneration and Restoration Applied?**

“Bush Regeneration is the practice of restoring bushland by focussing on reinstating and reinforcing the system’s ongoing natural regeneration processes.” (Australian Association of Bush Regenerators (AABR)). Specific targeting of restoration and regeneration works on a site needs to take into consideration the processes affecting weed spread, and should incorporate programs which reduce the degrading influences which affect weed spread.

Regeneration and restoration strategies can be divided into three techniques:

- Assisted Natural Regeneration;
- Reconstruction;
- Fabrication.

In addition, restoring a fire regime appropriate to the vegetation type can be invaluable to regeneration of bushland.

The choice of technique used depends upon the natural condition of the site and the likely resilience of any native plant species or propagules on the site. As a general rule, assisted natural regeneration is applied initially to most regeneration sites, with the exception of highly modified areas.

The thorough assessment of sites prior to determining the appropriate restoration or regeneration technique is essential. This needs to be undertaken by suitably skilled and experienced bushland regeneration practitioners and or managers. Similarly, the application of restoration and regeneration techniques needs to be undertaken or closely supervised by skilled and experienced bushland regenerators.

Bushland regeneration and restoration is a progressive process requiring commitment of resources for follow-up and consolidation works.

Objective	Target	Action	Measure
<b>6.3a Aim: To comply with relevant Legislation and Policies.</b>			
The statutory responsibilities and obligations of State Environmental Planning Policy 19 - Bushland in Urban Areas, Local Government Act 1993, Environment Protection and Biodiversity Conservation Act 1999, National Parks and Wildlife Act 1974 (NSW) and Threatened Species Conservation Act 1995 are acknowledged by Council and will be addressed where necessary and appropriate.	All statutory responsibilities under identified legislation are enacted.	Council will address legislation when necessary and appropriate.	Statutory responsibilities are complied with.
<b>6.3b Aim: To implement weed control programs which are based on regeneration and restoration principles and which increase the bushland resilience to further weed infestation.</b>			
The application of bushland regeneration works is only to be undertaken after detailed site assessment and the clear identification of aims, outcomes and techniques to be applied to each site.	All bushland restoration and regeneration programs are based on documented aims, objectives, site assessment and application of appropriate techniques.	<p>A comprehensive site assessment is made for all proposed and new bush regeneration programs.</p> <p>Continuing bush regeneration sites are regularly assessed to determine if aims, outcomes and regeneration techniques are still appropriate and efficient and modifications made if desirable.</p> <p>Ensure all bush regeneration programs are consistent with bushland regeneration and restoration policies and performance targets contained in this Bushland POM.</p>	All bush regeneration programs undertaken have clear and documented aims, proposed outcomes and techniques to be applied.
Where natural soils are still dominant, assisted natural regeneration techniques are to be applied initially.	<p>Increase in the natural resilience to further significant weed infestation of an area treated with bushland regeneration or restoration techniques.</p> <p>In situations where biophysical attributes have not significantly changed from the natural, the regeneration of a plant community which is representative in structure and species diversity to that of the original plant community.</p>	<p>For degraded areas where natural soils still exist:</p> <ul style="list-style-type: none"> <li>• Assess the potential for assisted natural regeneration;</li> <li>• Develop a strategy based on the potential;</li> <li>• Undertake strategy;</li> <li>• Review site at regular intervals, based on native regeneration, weed regeneration and long term viability of the indigenous plant community;</li> <li>• Where the review process demonstrates insufficient regeneration</li> </ul>	Increase in natural resilience of bush regeneration sites over time.

Objective	Target	Action	Measure
		<p>has occurred for long term stability, develop a strategy for reconstruction of a representative of the original plant community, using local genetic material;</p> <ul style="list-style-type: none"> <li>• Undertake reconstruction;</li> <li>• Monitor.</li> </ul>	
<p>Where evidence indicates that natural soils are not present, the process for natural soils is to be preferred, unless there is strong evidence of insufficient potential for assisted natural regeneration to occur.</p>	<p>Reconstruction and fabrication is used only when natural regeneration is not possible.</p>	<p>For sites where the biophysical attributes have changed significantly and are not easily reversed (fill areas, soils which are chemically modified, etc.) or where there are permanent changes to hydrology, the process outlined for regeneration of native soils is to be followed initially.</p> <p>Where it is considered that there is insufficient potential for assisted natural regeneration to occur develop strategies for either revegetation or reconstruction as appropriate, which use local genetic material.</p>	<p>Minimum use of revegetation and reconstruction in bushland restoration.</p> <p>Local genetic plant material used in revegetation and reconstruction.</p>
<p>An integrated approach will be applied to bushland restoration to maximise effectiveness.</p>	<p>Develop strategies which integrate, where possible, all other works and management activities to maximise their effectiveness.</p> <p>For example:</p> <ul style="list-style-type: none"> <li>• Undertake weed control prior to stormwater mitigation works;</li> <li>• Undertake prior and follow-up weed control in areas which are targeted for control burns;</li> <li>• Undertake weed control in conjunction with manual fire hazard reduction;</li> <li>• Complement regeneration in reserves with regeneration undertaken on adjacent land.</li> </ul>	<p>In preparing Reserve Action Plans review the history of the site and identify areas requiring regeneration or stronger intervention and the degrading influence(s) involved. Degrading influences will include long term neglect, poor maintenance practices, stormwater, sewage overflow, fire hazard management, dumping and activities on adjacent land.</p>	<p>Development of a strategy for weed control integrated with other management activities.</p> <p>Degraded areas and degrading factors identified in Reserve Action Plans.</p> <p>A reduction in weed infested areas and mitigation of factors causing weeds.</p>
<p>In accordance with environmental sustainability principles, garden refuse, exotic</p>	<p>Reduce emissions from transport and dumping by retaining debris on site as</p>	<p>Use appropriate methods for retaining debris on site which minimise impacts to</p>	<p>Council's carbon emissions are not increased by unnecessary</p>

Objective	Target	Action	Measure
and native plant material removed during bush regeneration programs may be stockpiled on site for composting, having regard to minimising negative impacts to bushland from such a pile. On-site stockpiling also reduces the risk of spreading weeds to new locations.	much as possible, while minimising deleterious impacts to bushland.	the site.	transportation of regeneration debris.  There is little or no negative effect from debris retained on site.
Target weeding of specific weed species and infestations which pose an immediate threat to short term native plant community health or resilience may be undertaken, provided there is a commitment to follow-up and maintenance.	Prevention of wide scale spread of a weed species, or prevention of rapid loss of health and resilience of a native plant community, by timely target weeding and appropriate follow-up	Target weeding used to control/eliminate identified threats from specific invasive weeds.  Follow-up of all target weeded areas.	Reduction of specific weeds which pose a threat to native plants and plant communities.
<b>6.3c Aim: To preserve the genetic integrity of regeneration, reconstructed or fabricated sites.</b>			
If natural regeneration processes are deemed inadequate after a specified period of time (usually not less than 2 years) the site should be treated by applying reconstruction and fabrication techniques.  Reconstruction and fabrication can be applied sooner if it is deemed essential to prevent erosion or another degrading occurrence and evidence suggests little or no natural regeneration is likely.	In situations where biophysical attributes have changed significantly from the natural, a native plant community which is representative of a similar plant community found within the region and appropriate to site conditions can be reconstructed or fabricated.	Full assessment of any site where reconstruction or fabrication is proposed to ensure that natural regeneration processes are not possible.	Fabrication of plant communities to mimic local natural areas applied only when strong evidence exists that natural regeneration is not feasible.
The application of reconstruction and fabrication techniques shall be consistent with the policies of maintaining genetic and community integrity contained in this Urban Bushland Plan of Management.	Maintenance of genetic and community integrity.	When natural regeneration processes are deemed inadequate, fabrication to proceed of a plant community to mimic a suitable natural community using local provenance species.	All reconstructions and fabrications are representative of local plant communities.  Local provenance species used in all reconstructions and fabrications.
Integrate prescribed burns with regeneration programmes and ensure adequate follow-up and maintenance.	All prescribed burns have a scheduled follow-up and maintenance weeding program.	As prescribed burns are scheduled, a follow-up and maintenance weeding program is also scheduled.	All prescribed burns are followed by a weeding program.
Wildfire sites will receive adequate follow-up and maintenance weeding to increase resilience to weed invasion and encourage biodiversity.	All wildfire sites will have a follow-up and maintenance weeding program.	When a wildfire occurs, follow-up and maintenance weeding for the site are added to the work program.	All wildfire sites receive follow-up and maintenance weeding.
<b>6.3d Aim: Address sources of ongoing bushland weed infestation.</b>			



Objective	Target	Action	Measure
Bushland regeneration and restoration works are to be integrated with works or actions aimed at mitigating degrading influences on the bushland site, e.g. stormwater mitigation programs, fire hazard management, bush regeneration on adjacent private land etc.	A fully integrated bushland regeneration program combined with other management activities occurring on or adjacent to bushland.	Reserve Action Plans to identify degrading influences and include management actions to mitigate those impacts, in conjunction with regeneration and restoration work.	A decrease in degrading influences and an increase in the effectiveness and efficiency of regeneration works.
<b>6.3e Aim: To ensure adequate resourcing of regeneration work.</b>			
Bushland regeneration and restoration works are not to be undertaken if sufficient follow-up weed control and regeneration work cannot be guaranteed.	Reduction in the effects of weed infestation on regeneration and restoration sites.	Regeneration and restoration is undertaken only when adequate follow-up is available.	Regeneration and restoration work is sustainable and effective.
Maintain, improve and adequately resource Council's bush regeneration and weed control programs.	Achievement, to the highest practicable standard, of regeneration and weed control goals.	Provide resources to adequately achieve the goals set out in this Urban Bushland Plan of Management.	Increase in area of bushland requiring only maintenance regeneration treatment.

## 6.4 Weed Management

The practice of bush regeneration has as its ultimate aim the growth of native plants, although it may often include weed management conducted in a considered manner. This section of the UBPOM focuses on weed management as an end in itself, especially but not exclusively when dealing with noxious weeds.

In simple terms a weed is a plant that is growing where it is not wanted. A weed can have a damaging effect on the economy, the environment, human health and/or amenity. Weeds become of particular concern when they are invasive. Both introduced and native plants can be classified as weeds, dependent on the situation.

**Noxious Weeds** are weeds that have been listed for priority management in state or federal legislation because they are of particular concern.

**Weeds of National Significance (WoNS)** are regarded as the worst weeds in Australia because of their invasiveness, potential for spread, and economic and environmental impacts. WoNS are priority weeds which pose a current or future threat to primary industries, land management, human or animal welfare and/or biodiversity and conservation values.

### 6.4.1 Legislation and Policy

Council has a statutory responsibility under the Noxious Weed Act (1993) as a **local control authority** to control noxious weeds as identified under the Act on land owned, controlled or managed by Council and on private property through the issuing of **weed control notices**.

### 6.4.2 Categories of Noxious Weeds

Noxious weeds can be broken into categories which affect:

- human health;
- agricultural production;
- environmental quality.

Bushland management is particularly concerned with weed species which affect environmental quality. Council also has obligations regarding weeds that affect human health. In Willoughby, an urban area, weeds affecting agricultural production are of lesser local concern.

The Noxious Weed Act 1993 allows for the division of weeds (at both state and local level) into 5 control categories. . The full list has been gazetted as Weed Control Order No. 28 at 30 September 2011. Whilst many of the major noxious species declarations are made at a State Government level, the Noxious Weed Act 1993 allows councils scope to recommend to the Minister of Agriculture declarations and management strategies for noxious weeds on a local basis. This is particularly achieved through *Class 4 Locally Controlled Weeds*. This classification enables councils to differentiate and establish specific control actions in relation to weeds which are a major threat to community health or environmental quality in their area. The Act obliges Council to co-operate with local control authorities of adjoining areas to control noxious weeds, where appropriate.

Sydney Weeds Committees are an association of government and non-government agencies and practitioners working together to improve weed management across all land tenures in the Sydney Region and Blue Mountains Region. Willoughby City Council is a member of the Sydney North Group with several surrounding councils and a list of Noxious Weeds has been developed on a co-operative basis. Noxious weed lists relevant to Willoughby are included in Volume 2 of this Plan of Management (Resource Inventory). Some species listed may not occur in the Willoughby LGA.

### 6.4.3 Control of Weeds

Weed infestations need to be managed in two ways:

- weed control techniques must be chosen to minimise negative environmental impacts;
- weed control treatments should aim to reduce re-infestation of undesirable species through the establishment of more favourable plant species or communities.

Hence, weed control needs to be a sustainable management process - not just focussing on the destruction or control of the weed but also the treatment of the cause and replacement of that weed with a plant species which is more desirable.

Objective	Target	Action	Measure
<b>6.4a Aim: To comply with relevant Legislation and Policies.</b>			
The statutory responsibilities and obligations for noxious weed under the NSW Noxious Weed Act 1993 and the Pesticides Act 1999 are acknowledged by Council and will be addressed where necessary and appropriate.	All statutory responsibilities under identified legislation are enacted.	Council will address legislation when necessary and appropriate.	Statutory responsibilities are complied with.

Objective	Target	Action	Measure
<b>6.4b Aim: To identify and respond to the occurrence of new plant species which pose a potential threat to bushland areas.</b>			
Council will periodically review and seek amendments to Class 4 weeds as necessary. Reviews and amendments will aim to adopt a consistent classification with adjoining land managers (see Resource Inventory of this UBPOM).	Regular review and amendment (if required) of the Noxious Weed classifications and control actions for Willoughby Local Government Area.  Cooperate with other regional authorities in classification of Class 4 weeds.	Review Noxious Weed list regularly, in association with adjoining land managers, to amend Class 4 weed listings and to maintain consistency with adjoining land managers.  Review application lodged with the Minister for Agriculture when necessary.  Continue active membership of the Sydney Weeds Committees (Sydney North).	A Noxious Weeds list which is up to date and consistent with adjoining land managers.
<b>6.4c Aim: To implement measures to control and manage existing and future weed infestations based on addressing the causes and sources of the infestation.</b>			
Council will develop weed control programs which aim to address the causes of the weed infestation as well as the infestation itself. Priority for control programs will be given to infestations where both the amelioration of the cause and control of the infestation can be effected.	Development and implementation of programs to address weed infestations and their causal factors.	Identify major weed infestations and identify their suspected cause(s) in Reserve Action Plans.  Develop strategies which address both the cause and control of the weed infestation.	Reserve Action Plans show current major weed infestations, identify causes and control strategies.  A reduction in major weed infestations.
Council supports an integrated weed control program with adjacent land managers, which is based on catchment management principles.	Development and adoption of joint management weed control programs with owners/managers of bushland on adjoining properties.	Identify areas where weed management will require joint management with other landholders particularly within the same catchment.  Initiate negotiations for joint weed control programs which are both equitable and long term effective.	An increase in the number and effectiveness of co-operative weed control measures undertaken with other landholders.
<b>6.4d Aim: To reduce the environmental impact of weed control programs.</b>			
Weed control will be undertaken in a planned fashion which minimises negative environmental impacts and reduces re-infestation of undesirable species through the establishment of more favourable plant species or communities. In bushland areas, the use of bush regeneration treatments will generally be more appropriate than	Reduction in the frequency and spread of declared Noxious Weeds in Willoughby.  Replacement of treated weed infestations with more desirable indigenous species or plant communities.	All weed control activities to be undertaken to a plan which includes an effective manner of weed control, and which limits risks to people and the environment, and also includes follow-up strategy to limit reinfestation of the target or other weeds.	All weed control programs are carried out in an effective and safe manner, and ongoing maintenance of the site is minimised.

Objective	Target	Action	Measure
broadscale herbicide applications.			
<b>6.4e Aim: To use pesticides in a safe and effective manner.</b>			
Council staff will adhere to requirements of the Pesticides Act 1999.	All requirements of the Pesticides Act 1999 are adhered to.	<p>Staff using pesticides abide by requirements of the Pesticides Act 1999.</p> <p>Staff using pesticides (including herbicides) receive relevant training and be competent in the use of any pesticide being used.</p> <p>All pesticides are stored, handled and used in a safe manner.</p> <p>All pesticides are used in a manner that is effective for the desired result while minimising effects on the wider environment.</p> <p>Council maintains facilities and records for the safe storage and use of pesticides.</p>	<p>Weeds are controlled efficiently while effects on people and the environment are negligible.</p> <p>Staff using herbicide have received relevant training.</p>
<b>6.4f Aim: To develop a greater awareness in the community regarding the problems of weeds in bushland and the contribution urbanisation has on weed spread.</b>			
Council to continue its public awareness program relating to community responsibility under the provisions of the Noxious Weed Act 1993.	<p>Continue production of community interpretive materials on noxious and bushland invasive plants, the cause of their spread and their control on private lands.</p> <p>Reduction in the frequency and spread of declared noxious and bushland invasive plants from private land to community, operational or other private lands.</p> <p>Cessation of sale of declared Noxious Weeds in nurseries in the Willoughby and adjoining Local Government areas.</p> <p>Reduction in the sale of bushland</p>	<p>Continue to produce hard copy and on-line material to inform the public about invasive exotic plants.</p> <p>Continue to provide information and advice to the public about invasive exotic plants at local events and through local media. Extend this to a wider audience when possible.</p>	Public awareness is increased in Willoughby about the need and means to control invasive exotic species.

MANAGEMENT ISSUES, POLICIES, TARGETS, ACTIONS AND MEASURES – BIODIVERSITY

Objective	Target	Action	Measure
	invasive plants (as identified in the Resource Inventory of this UBPOM) in commercial nurseries in Willoughby and adjoining Local Government areas.		

# 7. Fire Management

## 7.1 Ecological and Hazard Reduction

### 7.1.1 Legislation and Policy

Council has statutory responsibilities for bushfire management and its impacts under several Acts and policies, including:

- Local Government Act 1993
- Environment Protection and Biodiversity Conservation Act 1999 (the EPBC Act)
- Rural Fires Act 1997
- Planning for Bushfire Protection 2006
- Bushfire Environmental Assessment Code (BEAC) for NSW (2006)
- State Environmental Planning Policy 19 – Bushland in Urban Areas (1986)
- Threatened Species Conservation Act 1995
- National Parks and Wildlife Act 1974
- Native Vegetation Conservation Act 1997
- ICOMOS (Burra Charter)
- Rural Fires Regulation 2008
- Work Health and Safety Act 2011

#### Council Policy

Operations are to be conducted to achieve the goals set out in the Willoughby City Strategy (2013) Part 2: Ecosystems and Environmental Health. Actions are to be carried out in accordance with the Willoughby City Council Sustainability Action Plan (2011-2015) Target Area 6: Biodiversity and Ecological Integrity, and Council's DCP C.7 Bushfire Hazard Management. These stress that, while bushfire hazard is to be minimised, landscape, biodiversity and environmental qualities are to be maintained.

### 7.1.2 Fire in Bushland - Ecological and Social Implications

Fire has played an integral part in the ecology of the Sydney landscape for tens of thousands of years with the Aboriginal people using fire as an important tool for land management, hunting and gathering and other uses. While fire can cause the death of individual plants and animals, it also stimulates seed germination in many native species and creates habitat such as tree hollows. Most of our native plants and animals have evolved with fire and need it to survive and flourish. In fire management it is important to understand how species, populations and plant communities respond to fire regimes (the frequency, intensity and season of fires). Inappropriate fire regimes can affect some species so severely that they become locally extinct. Because of the complexity of ecosystems a range of fire regimes is essential.

In all situations, fire needs to be managed to protect life, property and the natural environment. Managing fire for human safety and for biodiversity outcomes can be complementary. In the past, fear of wildfire sometimes resulted in programs of increased prescribed burning that led to either the loss of species, or to proliferation of fire sensitive species such as *Pittosporum undulatum*.

In an urban context, bushland reserves pose a lesser threat to life and property than larger forested areas due to there being a reduced fire run, as they are often small, isolated areas of bushland in a predominantly urban environment. Furthermore, urban bushland reserves are more readily accessed by fire fighters than remote bushland locations and fires are generally observed and suppressed at an early stage.

### **7.1.3 Managing Bush Fire Risk in Bushland Areas**

Willoughby City Council employs a full-time Bushfire Hazard Reduction Team to reduce the risk of bushfires in the 300 hectares of bushland for which it is responsible. Fuel reduction within Willoughby Local Government Area is achieved by either manual removal or hazard reduction burning. Council conducts its strategic bush fire hazard reduction program in accordance with the Bushfire Risk Management Plan (BRMP) and prepares an annual hazard reduction program.

Surface fine fuels (thinner than a pencil) such as dead leaves and twigs and near surface fuels such as grass tussocks, dead bracken and low shrubs are defined as bush fire fuel. Trees are not considered to be bush fire fuel, however at the urban bushland interface it is important to ensure there is no canopy connectivity to buildings. The amount of bushfire fuel available depends on how much the vegetation sheds this material, and the overall fuel hazard is measured by the amount of surface fine fuels, elevated fuels (grasses, ferns and shrubs) and by assessing the hazard of the type of bark on trees ([OEH website](#)). The aim of manual removal or a hazard reduction burn is to reduce the amount of these ground and elevated fuels. It is important to note that hazard reduction activities do not prevent a bush fire from occurring but aim to reduce the intensity and spread of a wildfire.

### **7.1.4 Managing Bush Fire Risk on Private Property**

Properties that adjoin bushland areas should be maintained and prepared in order to protect it in the event of a wildfire. This is the responsibility of the property owner. Ember attack is the most common cause of bush fire related house fires; therefore the work an individual does to prepare their property plays a critical role in protecting a home from bush fire. A well maintained yard kept free from fine fuels and keeping gutters free from leaves, twigs and bark are important management actions.

Trees are not considered to be bush fire fuel and can play an important role in minimising the fire spread at the urban bushland interface. Trees can act as ‘ember catchers’, thus preventing embers from potentially reaching the house. Plants that have high moisture or salt content, low volatile oil content in their leaves and are smooth barked, are less flammable and are the recommended plants to choose for gardens.

### **7.1.5 Ecological Management**

In urban bushland areas, hazard reduction burns also have ecological benefits as the fire intervals have well exceeded the maximum fire thresholds for some vegetation categories in the area. This is highly evident in some bushland reserves in the Willoughby area where species diversity has declined. Monocultures and the dominance of mesic species has occurred as a result of this infrequent fire regime. Today, strategic hazard reduction planning must consider fire thresholds for vegetation categories, which are the intervals between fires. Threatened flora and fauna species and ecological communities are identified and mapped and appropriate protective management actions implemented if they are located within the proposed burn area.

The use of fire in bushland areas offers opportunities for promoting natural regeneration of healthy bushland or an increase in the level of weed invasion. Follow-up weed control is essential as burnt areas are prime locations in urban bushland for weed invasion. This applies to both planned fires and wildfires.

For prescribed burns conducted near water bodies, a riparian buffer zone of a specified distance is established and fire should be prevented in these zones. Lighting of a prescribed burn and mechanical removal is not permitted in these buffer zones. This is to prevent bank erosion and sediment from washing into the water way.

Burns that are not conducted for hazard reduction outcomes but to specifically promote the regeneration and germination of plant species and to promote biodiversity are ecological burns.

### **7.1.6 Fauna and Fire**

A major consideration when planning and carrying out a burn is the effect it will have on wildlife in the short and long term. Broad area burns are conducted in a mosaic pattern to retain habitat, refuge and to provide wildlife corridors to connecting areas of bushland. Where possible, burns should be scheduled to minimise disturbance during breeding. Regrowth after fire can offer a favourable habitat to grazing animals such as wallabies and some foraging animals such as bandicoots. Fire stimulates some plant species into flower, which also encourages insect and bird life.

### **7.1.7 Meeting Dual Management Objectives**

In order to meet the dual objectives of ensuring regeneration of the range of species present in the Reserve and ensuring that fuel reduction burns are carried out in a safe manner, burns should occur at a range of intensities, over a variety of seasons in accordance with plant and animal ecological requirements. As fuel reduction burns are often low intensity, it is recommended that medium to high intensity burns be achieved over longer intervals, interspersed with mechanical fuel reduction as necessary. Rainforest gullies should not be burnt as the practice will kill rainforest trees and lead to an increased risk of fire due to drying of the vegetation and fuel layer.

Continued frequent, broad-scale burning could lead to a loss of biodiversity and local extinction of plant and animal species. Each plant community within Willoughby will have an optimum fire frequency. Broad-scale hazard reduction burns should be conducted in a manner that retains patches of unburnt vegetation.

Fire management practices need to be sufficiently flexible to allow this dynamic interaction between various elements of the vegetation to continue. Fires of low intensity may exacerbate weed problems in areas susceptible to invasion.

The assessment of the success of fire protection policies and strategies can only be undertaken by monitoring fire occurrences and their impact. Records of fires occurring in bushland areas in Willoughby LGA should be maintained. Review of policies and strategies should take place in light of this experience.

### **7.1.8 Cultural Heritage Implications for Fire in Bushland**

#### **Aboriginal Sites**

Aboriginal sites occur within many of the bushland reserves in the Willoughby LGA. Hazard reduction activities have the potential to adversely impact on these sites. If a site is within a hazard reduction area, the Aboriginal Heritage Office is consulted and the work is carried out in accordance to prescribed conditions as defined in the BEAC *Conditions for Hazard Reduction and Aboriginal Heritage*.

#### **European Historic Sites**

Many bushland reserves of Willoughby contain relics of European historic significance which are protected under the Heritage Amendment Act 2011. These relics include historic homes, stone walling and ruins. If a site may be affected during a hazard reduction activity conditions must be imposed to protect the site. These conditions must be



consistent with the RFS/NSW Heritage Office document *Guidelines for Bush Fire Hazard Reduction Works Affecting Heritage Items* (Bushfire Environmental Assessment Code 2006).

Objective	Target	Action	Measure
<b>7.1a Aim: To comply with relevant Legislation and Policies.</b>			
Council will address relevant legislation.	All statutory responsibilities under identified legislation are enacted.	Council will address legislation when necessary and appropriate.	Statutory responsibilities are complied with.
<b>7.1b Aim: To implement a strategic hazard reduction program</b>			
<p>The BRMP has a five year tenure. Ongoing review and amendments to the plan are to be recorded and updated at the time of the review process.</p> <p>All hazard reduction treatments are to be in accordance with the BRMP.</p> <p>Burn proposals are to be submitted to the BFMC for approval.</p>	<p>Review and update BRMP to ensure strategic fire management is relevant to the current situation.</p> <p>Commitment to the BRMP.</p>	<p>The BRMP has tenure of five years. Review of the plan is required at this time.</p> <p>Work cooperatively with the BFMC in the preparation and revision of strategic fire management plans and involve all stakeholders.</p>	BRMP is reviewed and updated as required.
Maintain an active hazard reduction program.	<p>An annual hazard reduction program will be prepared. Burns not conducted will be carried over to the following year's program or reviewed in terms of priority.</p> <p>An annual manual fuel removal program will be prepared</p>	Prepare/review hazard reduction program annually.	Hazard reduction program prepared annually and implemented.
<b>7.1c Aim: Strategic fuel management.</b>			
Fuel reduction will be undertaken in areas identified in the BRMP.	Fuel reduction activities will be consistent with the BRMP.	<p>Undertake fuel reduction activities in areas identified in the BRMP, where hazardous fuel loads are present.</p> <p>Annually monitor and record fuel loads in bushland areas identified in the BRMP and action accordingly.</p> <p>Fuel reduction will be achieved through hazard reduction burns and manual fuel removal. The selective removal of weeds, garden refuse and exotic plant material during bush regeneration programs will</p>	<p>Fuel load information is collected and recorded.</p> <p>Fuel loads will be managed to reduce the impact of unplanned fires.</p>

Objective	Target	Action	Measure
Maintain Asset Protection Zones (APZs) in accordance with BRMP. (See also <a href="#">Boundary Management</a> .)	APZs will be in accordance to the RFS <i>Standards for Asset Protection Zones</i> .	also assist. The maintenance of APZs will be done by manual removal, mowing, brush cutting or prescribed burns where appropriate.	All APZs are reviewed annually.
<b>7.1d Aim: To minimise the risks and impacts of bushfire on life, property and the environment within the bushland reserves and the urban bushland interface through strategic hazard reduction activities.</b>			
Hazard reduction activities will be undertaken by Council's Bushfire Management Team. In larger area burns, the burn will be conducted by FRNSW with the cooperation of the Bushfire Management Team. Residents who live at the urban bushland interface will be encouraged to maintain their properties to help protect them in a wildfire event.	An effective fire management program with cooperation between Council, FRNSW and residents at the urban bushland interface.	During Total Fire Ban days, the closure of bushland reserves will be considered.  Incorporate BRMP treatments into the Reserve Action Plans where applicable. Specific treatments to address include establishing and maintaining APZs, manual fuel removal and proposed hazard reduction burns.  Maintain the Bushfire Management Team on a permanent basis.	The impact of unplanned fires is minimised.
<b>7.1e Aim: To maintain all records of hazard reductions works and fire history</b>			
The BRIMS (Bushfire Risk Management System) is a state wide database where all hazard reduction works are recorded. Council commits to recording all hazard reduction works and keeping the database updated.  Fire history records are important in hazard reduction planning as they assist in ecological management in ensuring that the fire regimes are within threshold.	A commitment to maintaining hazard reduction work records and fire history maps.	Register all proposed and completed hazard reduction works in Bushfire Risk Information Management System (BRIMS).  Maintain the fire history record for all bushland in WCC.	Fire history maps for Willoughby will be updated annually.
<b>7.1f Aim: To manage fire such that the fire regimes are beneficial to the maintenance of the age, structure and species diversity of the native bushland vegetation</b>			
Appropriate fire regimes are recognised as an essential environmental factor in the maintenance and conservation of native flora.	Biodiversity of plant communities in hazard reduction or ecological burn areas will be maintained.	Appropriate fire thresholds for vegetation categories will be maintained or introduced in prescribed burn planning.  Establish a monitoring program for all proposed prescribed burn sites. The monitoring program should include: • Maintain the fire history record for all	Species diversity maintained or improved.

Objective	Target	Action	Measure
		bushland in the LGA <ul style="list-style-type: none"> <li>• Mapping and review of vegetation communities</li> <li>• Permanent photographic points for long term comparison of the site in selected reserves. These reserves will be ones where either the minimum or maximum fire thresholds have been exceeded.</li> <li>• Conduct a pre burn species list using quadrats or transects to determine species and densities. Post burn species lists to be done at 6 months and 1, 2, 3, 5, and 10 years after the fire.</li> </ul>	
<b>7.1g Aim: To manage fire such that the fire regime and implementation of the burn is beneficial to flora and fauna diversity and habitat.</b>			
Broad area burns are to be conducted having regard to the needs of flora and fauna.  Where possible, burns should be scheduled to minimise disturbance during breeding.	Broad area burns only implemented in areas identified in the BRMP.  Protection and provision of habitat.	All relevant data bases should be accessed to establish if any threatened species, endangered populations or EECs are present within the burn site. If they do occur, appropriate management actions as per the BEAC Threatened Species Hazard Reduction List should be implemented to prevent any adverse impacts occurring.  Broad area burns will be conducted in a mosaic pattern to retain habitat and wildlife corridors and to provide refuge.  To ensure that plant and animal diversity is maintained, the fire threshold for vegetation categories, intensity and season must be addressed when planning hazard reduction or ecological burns.	Improved biodiversity outcomes
<b>7.1h Aim: Protection of threatened species, endangered populations and endangered ecological communities.</b>			
If a hazard reduction activity or ecological burn is likely to impact on any known threatened species, endangered populations or endangered ecological communities, the works must comply with the conditions set in the BEAC Threatened Species Hazard	Threatened species, endangered populations and endangered ecological communities protected in all hazard reduction activities and ecological burns.	Implement appropriate management conditions to mitigate any adverse impacts.	Threatened species, endangered populations and endangered ecological communities are protected.

Objective	Target	Action	Measure
Reduction List.			
<b>7.1i Aim: To conduct ecological burns in areas that would benefit from a burn but are not identified in the BRMP.</b>			
Ecological burns are not identified in the BRMP. Any proposed ecological burns require approval from the Office of Environment and Heritage (OEH).	Improved biodiversity outcomes.	Submit ecological burns for approval by the Office of Environment and Heritage (or relevant agency).	Ecological burns conducted.
<b>7.1j Aim: Prevent post fire weed invasion in prescribed burn sites.</b>			
Where a hazard reduction burn is undertaken, Council is to implement post fire weeding at the site for a minimum of one year after the burn.	Minimum weed invasion following fuel reduction programs and improved regeneration of native species.	Incorporate post fire weeding programs into planning for broad area and ecological burns for a period of 12-18 months. Teams to be fully qualified bush regenerators, or Bushcare groups under supervision of a Council appointed trained bush regenerator.	Increased indigenous biodiversity.
<b>7.1k Aim: Protection of riparian zones during hazard reduction activities.</b>			
Riparian buffer zones are to be established during hazard reduction operations as per distances specified in the BEAC.	Riparian zones protected.	Establish riparian buffer zones in the preparation, planning and implementation of a prescribed burn. All personnel involved to be briefed.	Prevention of bank erosion Prevention of sedimentation of water bodies Protection of aquatic fauna species Protection of riparian habitat
<b>7.1l Aim: Appropriate management of green waste and prevention of further smoke emissions.</b>			
Burning of vegetation refuse removed during manual fuel removal or bush regeneration programs is not permitted. It is to be composted on site or disposed of in a green waste facility.	Reduced smoke emissions. Commitment to Council's Sustainability Charter.	Dispose of vegetation refuse in an environmentally sustainable manner.	Smoke pollution is minimised.
<b>7.1m Aim: To prevent the deleterious impacts of bushfires on the cultural and heritage values of the bushland reserves.</b>			
Hazard reduction activities that may adversely impact on an Aboriginal site will be done in accordance with the BEAC <i>Conditions for Hazard Reduction and Aboriginal Heritage</i> .	To protect items of Aboriginal heritage from adverse impacts of fire.	Access site records for areas proposed for hazard reduction actions (both manual removal and fire) and ecological burns to identify if there are any Aboriginal sites within the proposed area. If sites are present consult with the local Councils Aboriginal Heritage Office and implement	Items of Aboriginal heritage are protected from adverse impacts of fire.

Objective	Target	Action	Measure
<p>Hazard reduction activities that may adversely impact on a European heritage site will be done in accordance with the BEAC <i>Guidelines for Bush Fire Hazard Reduction Works Affecting Heritage Items</i>.</p>	<p>To protect items of European heritage from adverse impacts of fire.</p>	<p>Conditions for Hazard Reduction and Aboriginal Heritage. Access site records for areas proposed for hazard reduction actions (both manual removal and fire) and ecological burns to identify if there are any European heritage sites within the proposed area. If sites are present implement The BEAC <i>Guidelines for Bushfire Hazard Reduction Works Affecting Heritage Items</i>.</p>	<p>Items of European heritage are protected from adverse impacts of fire.</p>
<p><b>7.1n Aim: To involve the public in fire management through community fire awareness and education programs.</b></p>			
<p>Council recognises that fire management includes community education and awareness of fire and its role in urban bushland reserves, as well as fire suppression and fire mitigation.</p>	<p>Recognition by Council of the diverse nature of fire management</p>	<p>Council continues to actively involve the community in fire management.</p>	<p>Community education and engagement is continued.</p>
<p>A community education program regarding fire management is identified in the Bushfire Risk Management Plan (BRMP) and will be prepared and implemented in consultation with the Hunters Hill, Ryde, Lane Cove and Willoughby Bushfire Management Committee (BFMC). The aim of the program is to educate the public on how to prepare and maintain their properties in the event of a wildfire event and to keep the community informed of Council's annual hazard reduction program.</p>	<p>Develop an improved community engagement/awareness program in consultation with the BFMC in regards to community education identified in the BRMP. Program to include:</p> <ul style="list-style-type: none"> <li>• Community Open Days with FRNSW detailing Councils strategic fire hazard reduction program</li> <li>• Information on the role and responsibility of private landholders in property protection and maintenance</li> <li>• Guided walks with a fire interpretation component.</li> </ul>	<p>Develop and distribute literature, interpretive information, conduct community education days, interpretive walks and public forums on fire management and hazard reduction.</p>	<p>Increased community awareness and reduction in fire hazard on private land through appropriate maintenance and management practices.</p> <p>Increased community awareness of Council's fire management program.</p>
<p>Community consultation will be encouraged in the preparation and finalisation of strategic fire management plans and related documents. Draft plans and documents will be displayed for a specified period to provide for public comment.</p>	<p>Implementation of effective public consultation and participation processes relating to strategic fire management planning.</p>	<p>Publicly exhibit new and reviewed fire management plans (draft) for public submissions.</p>	<p>Fire management planning documents will be on display for public comment and information.</p>

# 8. Recreation and Access

## 8.1 Recreation Use, Structures and Facilities in Bushland

### 8.1.1 Legislation and Policy

Willoughby City Strategy (2013)

ECOSYSTEMS AND ENVIRONMENTAL HEALTH

*Goal: Conserve the natural ecosystem for its intrinsic ecological, educational, scientific, and recreational value.*

2.1.2 *The community values the natural environment.*

- a. Provide safe pedestrian links into, through and between bushland areas without endangering natural ecosystems.

*Willoughby's open space needs to meet the recreational and leisure demands of the community, as well as to protect and sustain the natural environment. However, space for sport and recreational facilities is limited by available land. As the population increases and demographics change, more people use existing open space, community and recreational facilities, placing more strain on the natural environment. Balancing the demands of sporting and community infrastructure with the need to preserve and sustain the natural environment is critical.* From Community and Cultural Life, Willoughby City Strategy 2013

Much of Willoughby's bushland is zoned E2 Environmental Conservation which prohibits major recreation facilities and allows, with consent, only environmental facilities environmental protection works and roads.

### 8.1.2 Location, Nature and Maintenance of Facilities and Structures

In assessing the use of bushland for recreational activity, Council has a responsibility to consider possible effects on fauna and flora, including noise, light at night, erosion, soil disturbance and destruction of plants.

Recreation facilities generally considered to be compatible with the conservation of bushland include:

- Walking tracks;
- Boardwalks;
- Areas for nature study.

Whilst the above facilities are generally considered acceptable, there is a need to assess each bushland area or plant community as to its capacity to sustain such a use without permanent deterioration or damage to that area. Narrow walking tracks with a natural surface will generally be the most appropriate for relaxing recreational activity in bushland areas. With few exceptions (e.g. the loop vehicle road at Harold Reid Reserve, paved shared paths at Artarmon Reserve and Flat Rock Gully), tracks through bushland in Willoughby have been designed for pedestrians. Riding of bicycles is incompatible with bushland pedestrian walking tracks due to increased risk of erosion and possible risk to pedestrians and wildlife.

When planning for recreation facilities, the location of any facility should minimise fragmentation of the bushland area and avoid sensitive heritage sites. This may require that existing facilities be rationalised or combined to reduce overall impact on an area.

Safety considerations also need to be taken into account when planning for or installing recreation facilities. Some areas may require special treatment or be excluded from community access due to unacceptable levels of risk to recreational users. The installation of recreation facilities by Council is equivalent to an invitation for the community to enter and use an area, so unless user safety can be reasonably guaranteed, the construction of such facilities may significantly increase Council liability.

When consideration is given to developing or upgrading facilities in natural areas, not only the initial construction cost needs to be considered but resources for ongoing maintenance of the bushland need to be planned, as well as maintenance of the facility. Increased community use of the area can lead to weed invasion and deterioration of the bushland, as well as wear and tear on the facility.

### 8.1.3 Active Recreation Facilities and Structures

#### Sporting Facilities

Active and competitive sports in bushland reserves can have serious impacts on the ecological values of bushland and are generally considered to be incompatible with the conservation of bushland. Areas of bushland in Willoughby are relatively small and loss or damage will have proportionally more impact than if the same amount of damage was sustained within a larger area, such as a National Park. Accordingly, active and competitive sporting facilities, for example bike riding (including BMX and mountain bikes), abseiling, or bouldering, should not be located in Willoughby’s bushland areas. Where it is indicated that there is a community need for active sports facilities, they should be located in non-bushland areas.

There are benefits for the community to have recreational and/or sporting facilities close to bushland reserves i.e. visual appeal of playing sport in a bushland setting, however sporting fields and other turf based recreation facilities can also have a serious impact on bushland, particularly when located upslope of and adjoining bushland. Due to the need for irrigation and fertilisation of these facilities, leaching of nutrients into bushland areas can have a serious degrading influence. The other serious impact associated with sporting facilities is light pollution. Light pollution can have adverse effects on both flora and fauna populations, with the largest impact on nocturnal species. Hence, the installation and management of such facilities need to take into consideration impact on adjoining bushland areas.

#### Playgrounds and Equipment

Installation of playgrounds and play equipment should be located in non-bushland areas to avoid destruction of natural ecosystems. When these facilities are adjacent to bushland the provisions of SEPP 19 are to be taken into account.

Objective	Target	Action	Measure
<b>8.1a Aim: To comply with relevant Legislation and Policies.</b>			
The installation of recreation facilities in a bushland reserve is to be in accordance with this Plan of Management and consistent with the aims and objectives of SEPP 19.  Requirements of WLEP 2012 will be adhered to.	Fulfilment of requirements of SEPP 19, Reserve Action Plans and Plans of Management.  Requirements of WLEP 2012 will be met.	Approval for construction or modification of recreation facilities in bushland will only be given if the provisions of this Urban Bushland Plan of Management, SEPP 19 and WLEP 2012 are complied with.	All recreation facilities installed in bushland comply with provisions of this Urban Bushland Plan of Management, SEPP 19 and WLEP 2012  .
<b>8.1b Aim: To limit the nature and provision of recreation structures and facilities in bushland areas.</b>			
Recreation facilities and structures will not be constructed in bushland areas if the direct and indirect adverse impact of those structures is	Minimal direct or indirect impact on bushland from recreational structures in or adjacent to bushland.	All proposed recreation facilities and structures in bushland must be assessed for their impact on bushland and habitat	Impacts on bushland from recreation facilities are minimal.

Objective	Target	Action	Measure
deemed by Council's Bushland Manager to endanger the natural ecosystem of the bushland reserve.	Recreational use of bushland is based on the conservation of natural ecosystems balanced with recreational needs of the community.	values.  All recreation facilities and structures in bushland must be approved by Council's Bushland Manager.	
Playgrounds and play equipment will not be constructed where they would impact adversely on bushland.	No increase, or a decrease, in impacts on bushland from play equipment.	Playgrounds and play equipment will not be constructed in, or expanded into, bushland.	No expansion of existing playgrounds and play equipment into bushland.  No construction of new playgrounds or play equipment in bushland.
Active sporting or recreational facilities will not be located in bushland reserves and where such facilities are constructed or utilised without approval, they will be removed.	No increase, and reduction where possible, of active recreational facilities in bushland reserves.	No approval to construct active recreational facilities in bushland reserves.  Removal of unauthorised active recreational facilities in bushland reserves.	No active recreational facilities are constructed in bushland reserves.  Unauthorised active recreational facilities are removed from bushland reserves promptly.
Active and competitive recreational activities are not permitted in bushland where they would impact adversely on the bushland or on people participating in more-relaxed and low-impact activities.	No active and competitive recreational activities impact on bushland and other bushland users.	No approval will be given to conduct active and/or competitive recreational activities in bushland.  Where unauthorised active recreational activity occurs in bushland, action is taken promptly to exclude the activity.	Active and competitive recreation does not impact on bushland.
<b>8.1c Aim: To plan and provide recreation facilities consistent with the need to facilitate public enjoyment of the bushland compatible with its conservation.</b>			
The location and maintenance of existing and proposed recreation facilities will aim to reduce reserve fragmentation and other adverse impacts on the bushland and on heritage relics.	No unacceptable fragmentation or deterioration of bushland quality as a result of installation or maintenance of recreational facilities.	Evaluate impacts of all recreational facilities for an area when preparing the Reserve Action Plan, both individually and collectively.	Minimal impact on the bushland from all recreation facilities in a reserve.
Council's allocation of funding for ongoing bushland regeneration and restoration work will be integral to the budgeting for the initial construction cost of recreation facilities and structures in bushland.	Where necessary, bushland regeneration and restoration works will be implemented in areas adjoining recreation facilities and structures.	Include costing for bushland regeneration, restoration and ongoing maintenance of bushland values with budget allocation for new recreation facilities.	Bushland restoration is fully costed into capital budget.
Where active sporting facilities are located upslope of, or adjoining bushland, the management practices for those facilities will be reviewed and	Management practices for active sporting recreation facilities modified to be sympathetic with adjoining bushland management.	Management practices for active recreation facilities are designed and implemented to minimise any impact on nearby bushland in consultation with the	A reduction in degrading influences of active sporting facilities which are adjacent to or upslope of bushland.



Objective	Target	Action	Measure
modified to reduce existing or potential impacts on the bushland area.		Parks Asset Co-ordinator.	
Where sporting or recreational facilities exist near bushland best practice methods be employed to minimise light pollution.	Reduction in light pollution from sporting and recreational facilities.	Any proposed installation or upgrading of lighting that could impact on nearby bushland and fauna habitat is referred to Council's Bushland staff.	Minimal impact on bushland and fauna habitat from lighting of sporting or recreational facilities.
<b>8.1d Aim: To ensure that recreation structures and facilities in bushland are maintained to the highest possible standard.</b>			
All recreation facilities located in bushland areas will be correctly installed and adequately maintained to minimise risk and Council's level of liability in accordance with Council's.	No unacceptable increase in Council liability due to the installation or inadequate maintenance of recreation facilities in bushland areas	Construction of recreation facilities in bushland areas will be of a high standard.  Recreation facilities in bushland areas will be regularly maintained to a high standard.  Recreation facilities are included in the relevant Council Asset Management Plans.	Safe use of recreational facilities in bushland.  Recreational facilities are regularly maintained to appropriate standard in accordance with the relevant Asset Management Plan.
Construction materials and techniques for facilities and structures in bushland areas will be visually and environmentally sympathetic with the site.	Use of visually and environmentally sympathetic materials for facilities located in bushland reserves.	Any new or upgraded facilities and structures in bushland will be designed and built to be visually and environmentally sympathetic with the surrounding natural area.	Facilities and structures in bushland are sympathetic to the natural surroundings.

## 8.2 Access through/into Bushland

### 8.2.1 Legislation and Policy

Council has a statutory responsibility under State Environmental Planning Policy 19 - Bushland in Urban Areas to ensure that the management of bushland areas is consistent with the aims and objectives of the Policy. Furthermore, in the production of plans of management for reserves, the assessment and determination of appropriate vehicular and pedestrian access needs to be addressed within the aims and objectives of the policy.

Where private access is provided on community lands, the issuing of leases or licences under the Local Government Act 1993 may be required.

### 8.2.2 Vehicular and Pedestrian Access

Vehicular and pedestrian access through and into bushland areas can cause considerable management problems. Fragmentation of bushland areas can be a particularly significant problem resulting in the accelerated deterioration of plant communities and fauna habitat.

Vehicular access provided historically or currently through reserves includes:

- Private residential access on informal (but gazetted) roads;
- Private residential access on easements;
- Service vehicle access for park and public authorities service management;
- Temporary access to private lands for essential purposes.

Pedestrian access is generally confined to:

- Formally constructed and managed track networks to facilitate recreational use and reserve management;
- Informal tracks, often arising from adjoining private property.

Informal pedestrian access can result in significant adverse impact on bushland reserves. In addition to initial destruction, it can lead to fragmentation and accelerated deterioration of bushland. There is also increased Council liability from poorly constructed tracks. Formal pedestrian access needs to be adequately planned and maintained to prevent reserve degradation and increased Council liability (see **Recreation Use, Structures and Facilities in Bushland** for discussion on the appropriate planning, management and impact mitigation of these facilities).

Generally, it is important for the long term sustainable and cost effective management of bushland areas that vehicular and pedestrian access be rationalised to that deemed essential for management or recreational purposes.

Objective	Target	Action	Measure
<b>8.2a Aim: To comply with relevant Government Legislation and Policies.</b>			
In relation to access through and into bushland areas, the statutory responsibilities and obligations of State Environmental Planning Policy 19 - Bushland in Urban Areas and the Local Government (1993) are acknowledged by Council and will be addressed when necessary and appropriate.	All statutory responsibilities under identified legislation are enacted	Council will address legislation when necessary and appropriate.	Statutory responsibilities are complied with.
<b>8.2b Aim: To ensure that essential pedestrian and vehicular access through or into bushland minimises the impact on the area.</b>			
The standard of construction, material use and maintenance of vehicular and pedestrian access routes into or adjoining bushland will ensure minimal direct or indirect impact on these areas.	Minimal impact on bushland due to construction and or maintenance of tracks and trails.	Track design and construction will emphasise safety for users, minimal disturbance to bushland and visual resemblance to the natural landscape.  Regular inspection and maintenance of tracks.	Tracks through bushland are safe and well maintained, with a minimum impact on the bushland.
<b>8.2c Aim: The removal of non-essential pedestrian and vehicular access and the restoration of affected areas.</b>			
Access through bushland is to be kept to a	No unacceptable adverse	Stabilise and restore all closed tracks,	Reserves with a rationalised track

Objective	Target	Action	Measure
<p>minimum to allow pedestrian, and where essential vehicle, access and authorised tracks are to be marked on Reserve Action Plans.</p>	<p>environmental impact on bushland on community lands arising from the construction or maintenance of essential vehicular and pedestrian access.</p> <p>Restoration to bushland of non-essential tracks and trails to the highest practicable standard.</p>	<p>preferably using assisted natural regeneration and reconstruction techniques.</p> <p>Show authorised tracks on Reserve Action Plans.</p>	<p>and trail system.</p>
<p>Council will rationalise the number and location of tracks and vehicular access within and adjacent to bushland.</p>	<p>A track system appropriate to each bushland area, which is clearly marked and interpreted appropriately.</p>	<p>Determine the appropriateness of existing pedestrian and vehicular access routes.</p> <p>Track and trail routes approved to be retained are to be indicated in Reserve Action Plans.</p> <p>Authorised tracks and trails are to be clearly marked and interpretative material produced as applicable.</p>	<p>Reduction in the number of inappropriate routes.</p>
<p>Council does not support the temporary or permanent use of bushland on community lands for access to private lands or facilities.</p>	<p>No further provision of permanent private access through bushland on community lands.</p>	<p>The removal of privately constructed tracks on community land to be negotiated with landholders.</p> <p>Presence of privately constructed tracks to be noted on Reserve Action Plans</p>	<p>Decrease in unofficial tracks on community land.</p>

# 9. Operations and Training

## 9.1 Council Staff

Many activities undertaken by Council will directly or indirectly impact upon bushland areas. These activities may be field or office based. For example, the impact of planning decisions relative to bushland or adjoining areas may have a significant impact on natural areas. Similarly, field maintenance or construction activities may have the potential to unnecessarily damage or compromise bushland quality. Therefore, whilst day to day management of bushland may lie with the Open Space Branch and particularly the Open Space Bushland Branch, protection of bushland and its values is the responsibility of several divisions and branches within Council. Under the Local Government Act 1993, environment conservation and protection is a service function of councils. Also, fulfilling the aims, objectives and statutory responsibilities outlined in State Environmental Planning Policy 19 - Bushland in Urban Areas necessarily involves other sections within council.

Ensuring that staff within each section of Council acquires and maintains adequate knowledge and understanding of bushland management and the implications for their work practices is essential not only to improve management of bushland areas but also to fulfil the statutory obligations under the Local Government Act 1993 and State Environmental Planning Policy 19 - Bushland in Urban Areas.

Willoughby City Council employs staff in the Open Space Bushland Branch specifically to work on the conservation and enhancement of its natural areas, including field staff. Activities can include planning, education, wildlife conservation, bush regeneration, bushfire management, weed management, feral animal control, Aboriginal heritage site preservation, construction to mitigate deleterious impacts or improve access, volunteer management. Bushland staff and contractors are also offered an opportunity via the Aboriginal Heritage Office (AHO) to participate in the Aboriginal Site Monitoring program. Staff and contractors can be trained in Aboriginal heritage site awareness to assist and notify the AHO of any management issues. Currently rock art sites, engravings, burials, grinding grooves and extensive shell middens are examples of the types of sites being monitored. All work which impacts on natural areas will be carried out so that it is consistent with this UBPOM and it addresses the objectives of the relevant Reserve Action Plan.

Objective	Target	Action	Measure
<b>9.1a Aim: To comply with relevant Legislation and Policies.</b>			
The statutory responsibilities and obligations of Local Government Act 1993, Environment Protection and Biodiversity Conservation Act 1999, National Parks and Wildlife Act 1974 (NSW) and Threatened Species Conservation Act 1995, State Environmental Planning Policy 19 - Bushland in Urban Areas, Work Health and Safety and Pesticides Acts are acknowledged by Council and will be addressed where necessary and appropriate, across all divisions and branches of Council.	All statutory responsibilities under identified legislation are enacted.	Council will address legislation when necessary and appropriate.	Statutory responsibilities are complied with.

Objective	Target	Action	Measure
<b>9.1b Aim: To comply with relevant Willoughby City Council policies, strategies and plans.</b>			
Willoughby City Strategy (Goal) and WCC Sustainability Action Plan (6.1): <i>Conserve the natural ecosystem for its intrinsic ecological, educational, scientific, and recreational value.</i>	Staff whose work can directly or indirectly impact on natural ecosystems fulfil responsibilities of the Willoughby City Strategy.	Council will ensure the goals of the Willoughby City Strategy are met.	The values of the natural ecosystem of Willoughby are being conserved.
<b>9.1c Aim: Ensure that the functions conferred or imposed on Council and its staff under any law or council policy with implications for bushland or environmental management, are implemented.</b>			
Council will ensure that all staff whose actions may impact on bushland are aware of their responsibilities under relevant legislation and aware of techniques for mitigating the impacts of their operations.	Increased effectiveness and compliance with Council's statutory responsibilities towards bushland management.	Council will ensure that all staff whose actions may impact on bushland are made aware of their responsibilities and are able to implement actions to mitigate the impacts of their operations.	Outcomes from actions and decisions of council officers comply with all legislation and policies for the protection and enhancement of the natural environment.
<b>9.1d Aim: Ensure that staff with appropriate training and expertise are employed by Council to manage and maintain bushland to a high standard.</b>			
Council will maintain professional staff with appropriate training and experience for bushland management.	Staff whose work can directly or indirectly impact on natural ecosystems have the required skills, knowledge and competency to ensure positive outcomes.	Set qualification and/or experience standards for all staff working in bushland management.  Through the appointment and staff review processes, Council will ensure staff have relevant qualifications, experience and skills to ensure positive outcomes for the natural environment.  Council will assist staff to continue to upgrade skills and qualifications to achieve the best positive outcomes for the natural environment.	High level of performance from Council staff.
<b>9.1e Aim: Ensure that activities undertaken by Council staff in all Divisions minimise their impact on bushland areas.</b>			
Council staff responsible for the mitigation or control of activities which impact on bushland areas will be trained so as to increase their awareness of their responsibilities to minimise impacts and how they can comply.	Increase in general awareness of bushland management issues throughout relevant Council departments.  Reduction in direct and indirect impacts associated with Council activities and actions.	Target staff whose duties and responsibilities can impact on bushland and provide information and training to educate them on issues pertaining to conservation of bushland.	Outcomes from actions and decisions of council officers do not have detrimental impacts on the natural environment.

## 9.2 Consultants

At times Council uses consultants in place of staff. Where consultants are employed to carry out planning and functions of Council that can directly or indirectly impact on bushland, Council has the responsibility to ensure that they have appropriate knowledge, skills, training and experience. Any work carried out by consultants must comply with legislative and policy requirements applicable to natural area management.

Objective	Target	Action	Measure
<b>9.2a Aim: To ensure that the work of consultants employed in roles that can impact on bushland complies with this Urban Bushland Plan of Management.</b>			
Council will ensure that work carried out by consultants employed by Council in roles that can impact directly or indirectly on bushland will comply with this Urban Bushland Plan of Management.	Work of consultants shall not, directly or indirectly, have a negative impact on the natural environment.	Council will ensure that all consultants have appropriate knowledge, skills, training and experience.	Work by consultants is consistent with this UBPOM.

## 9.3 Contract Labour

Contractors are used by Council at various times to implement work in bushland areas to augment work by council's Bushland staff. This work can include bushland regeneration, weed control and installation and maintenance of facilities such as tracks, seating, and erosion control work. Where contract labour is engaged, work must be managed so that it is consistent with the aims and objectives of this UBPOM and addresses the objectives of the relevant Reserve Action Plan and will be to a standard which is satisfactory to Council.

Council has legal responsibility to ensure contractors engaged in bushland management work comply with the Work Health and Safety Act 2011 and the Pesticides Act. Contractors are required to follow Willoughby City Council's Code of Conduct.

Objective	Target	Action	Measure
<b>9.3a Aim: To comply with relevant Legislation and Policies.</b>			
The statutory responsibilities and obligations under identified legislation are enacted, as for Council employees.	All statutory responsibilities are adhered to.	Council will ensure that contractors address legislation when necessary and appropriate.	Statutory responsibilities are complied with.
<b>9.3b Aim: To comply with relevant Willoughby City Council policies, strategies and plans.</b>			
All contract work in bushland will be carried out so that it is consistent with this UBPOM and address the objectives of the relevant Reserve Action Plan.  Contract labour will comply with Council's Code of Conduct.	Compliance of contract activities to the aims and objectives this UBPOM and the relevant Reserve Action Plan.  Council's Code of Conduct is adhered to by contractors while working for WCC.	Contractors to be working in bushland will undertake an induction of Council's requirements including: <ul style="list-style-type: none"> <li>• Adherence to the UBPOM</li> <li>• Adherence to relevant Reserve Action Plans</li> <li>• Adherence to Work Health and Safety</li> </ul>	Achievement of objectives and actions set out in the Reserve Action Plan.

Objective	Target	Action	Measure
WCC's Contract Management Process and Purchasing Policy will be complied with.	Processes for selection of contractors will be fair and open and aimed to provide the best outcomes for natural area regeneration and restoration in Willoughby.	Act <ul style="list-style-type: none"> <li>Adherence to Council's Code of Conduct.</li> </ul> Council will supply contractors with all relevant information.  Council will clearly define for contractors the objectives for each area of bushland and, if necessary, means of achieving them.	
<b>9.3c Aim: Contractors maintain a high standard of performance.</b>			
Contract management for natural area regeneration and restoration will involve a flexible "adaptive Management" model based on ongoing communication and negotiation between the contractor and contract administration with WCC.	Ongoing communication and negotiation between the contractor and WCC contract administration is maintained.	Council Bushland staff will actively monitor, advise and instruct contractors to ensure that the aims and objectives of the specified works are satisfactorily completed to Council's specifications.	Work is completed by contractors to a satisfactory standard.
Contractors will be assessed by the quality of their work and standard of their workforce.	Contractors perform their allotted work to a high standard.	Selection of contractors will be based on their ability to perform to a high standard rather than being selected on price.	Work performed by contractors is of a high standard.
Activities by contractors must be based on sound ecological principles and practices and determined on a site specific basis in consultation with WCC Bushland staff.	Actions on each site will be based on sound ecological practices as outlined in this UBPOM and Reserve Action Plans.	Contractors will comply with the principles and actions within this UBPOM and relevant Reserve Action Plans, in consultation with WCC Bushland staff.	Activities related to Plans are completed and ecological processes are conserved and restored.
Contractors are required to document and report to council on their work and performance target.	Documentation to adequately describe activities will be forwarded by contractors to WCC as directed.	Reports from contractors that document progress on the site are received regularly and upon completion of the project.  Council contract administration staff process reports and assess progress.	There are adequate records to document each bushland project.
Administration of contract works will include assessment relating to ecological performance and costs.	Ongoing evaluation results in being able to maximise ecological achievements in future projects while achieving value for expenditure.	Ecological achievements are evaluated by contract administration staff and compared to expenditure.  This evaluation is taken into account in future contract decision making.	Value for expenditure is achieved in bushland projects.

# 10. Planning and Administration

Leases and Licences  
Funding  
Plans of Management for Bushland

## 10.1 Leases and Licences

### 10.1.1 *Legislation and Policy*

Council has a statutory responsibility under the Local Government Act 1993 to issue leases or licences for activities which either result in exclusive control for a set period or intermittent, short term occupation, control and use of all or part of a bushland area on community land.

The aims and objectives of State Environmental Planning Policy 19 - Bushland in Urban Areas and the requirements of the Local Government Act 1993 apply to existing leases and licences and will apply when leases and licences are subject to renewal.

### 10.1.2 *Leases Relating to Bushland (as at June 2013)*

#### **Leases on Council-Owned Land Classified as Community Land**

- Castle Cove Country Club for the golf course and tennis courts
- Tennis courts at Cortile Reserve, The Parapet
- Tennis courts at 52 Fullers Road
- Scouts at Blue Gum Park
- North Arm Sailing Club, Harold Reid Reserve

#### **Leases on Crown Land Classified as Community Land (as at June 2013)**

- Cleland Tennis Courts
- Castlecrag Marine at Sailors Bay Park
- Chatswood Golf Course at Fullers/Burns
- Tennis Courts at Talus Street Reserve
- Boat Repair/Marina at Clive Park
- Sailing Club at Clive Park
- Sea Scouts at Clive Park
- Golf Course at Northbridge Park
- OOSH at Northbridge Park



- Men’s Shed at Northbridge Park
- East Willoughby Preschool, Willoughby Park
- Willoughby Bowling Club at Willoughby Park
- Northbridge Bowling Club at Warners Park (small portion on Crown Land)

### 10.1.3 Management of Impacts of Leases and Licences

The assessment of leases and licences issued for activities in or adjacent to bushland areas need to take into account the direct and indirect adverse impacts of the proposed permitted use. If the impact is deemed to be beyond the limit of acceptable change for the bushland area, the lease or licence for that permitted use should not be issued due to the potential for Council to inherit significant management liabilities in excess of potential income. Furthermore, leases and licences need to be issued conditionally on the minimisation of adverse impact on bushland.

Objective	Target	Action	Measure
<b>10.1a Aim: To comply with relevant Government Legislation and Policies.</b>			
The statutory responsibilities and obligations of State Environmental Planning Policy 19 - Bushland in Urban Areas and the Local Government Act 1993 are acknowledged by Council and will be addressed when necessary and appropriate.	Compliance with all statutory responsibilities and obligations relating to conservation of bushland.	All leases and licences comply with requirements to protect and conserve bushland.	No lease or licence is in breach of Council’s obligations to protect and conserve bushland.
<b>10.1b Aim: To ensure that leases and licences for activities undertaken in, or adjoining, or impacting on, bushland areas are compatible with the sustainable management of bushland.</b>			
Council will ensure that leases and licences comply with the policies contained within this Plan of Management for the conservation of bushland.	New and existing leases and licences will comply with the policies in this Plan of Management.	No lease or licence will contain or allow actions that conflict with this Urban Bushland Plan of Management.  Holders of leases and licences will be provided with information on management practices compatible with sustainable management of bushland.	Bushland on leasehold land is being managed to achieve the aims and objectives of this Urban Bushland Plan of Management  An up-to-date list of leases and licences within bushland reserves is maintained.  There is ongoing liaison with holders of leases and licences on or adjacent to bushland and they have been provided with information on management practices compatible with sustainable management of bushland, including current Reserve Action Plans.

Objective	Target	Action	Measure
Leases and licences for public and non-public activities in bushland will not be issued if the direct or indirect adverse impacts of the permitted use on the bushland is deemed by Council's Bushland Manager to be beyond the limit of acceptable change for that area or not in the greater community interest.	No deterioration of bushland conditions as a result of leased or licensed activities.	Assess the potential impact upon bushland of any proposed lease or licence.	All leases and licences in or adjacent to, bushland are accompanied by an environmental evaluation.
Prior to re-issuing of leases and licences the performance criteria and the prior performance of the lessee or licensee will be reviewed by the Bushland Manager.	No lease or license will be re-issued without re-evaluation of the performance criteria, and evaluation of the performance of the lessee or licensee.	Review all leases and licences and their performance criteria prior to renewing.  Evaluate the environmental performance of the lessee or licensee in relation to the principles of the Urban Bushland Plan of Management prior to renewing.	Each renewed lease or license has undergone a review of performance criteria and is deemed to comply with the policies contained in Willoughby's Urban Bushland Plan of Management.  The environmental performance of a lessee or licensee has been evaluated and judged to be satisfactory and in accordance with the principles of the Urban Bushland Plan of Management prior to renewal.
All leases and licenses will be prepared by skilled staff or engaged professionals and will cover all relevant aspects to ensure adherence to legislation and policies and protection of Council from liability.	Leases and licences are to be consistent with the Urban Bushland Plan of Management and legally binding.	Provisions of the Urban Bushland Plan of Management will be included in leases and licences that have the potential to impact on bushland.  Where impacts are assessed to be within the limits of acceptable change and in the community interest by Council's Bushland Manager, it should be drawn up by a suitably qualified person.  Adequate insurance cover to be demonstrated by lessee or licensee.	All leases and licenses that have potential to impact on bushland include provisions in line with this Urban Bushland Plan of Management and have provisions for adequate insurance cover.
The use of public tendering and fees to be charged will be at the discretion of Council and be in accordance with relevant legislation and Council policies.	Use of tendering and level of fees to be in accordance with relevant legislation and Council policies.	Council will decide on whether tendering is appropriate to a lease or licence, in accordance with relevant legislation and Council policies, and taking into account benefits to the community and bushland assets.	Decisions on tendering and fees are made by Council in accordance with relevant legislation and Council policies and for the benefit of the community and bushland assets.

Objective	Target	Action	Measure
		Council will decide on fees charged for leases and licences, in accordance with relevant legislation and Council policies, and taking into account benefits to the community and bushland assets.	

## 10.2 Funding

Willoughby is fortunate to have large areas of bushland in an urban area. The urban surroundings, however, lead to constant and major impacts on the bushland, which are expensive to mitigate. To maintain this significant resource, substantial and ongoing investment is required.

Funding for maintenance and improvements in bushland comes from:

- Recurrent funding: Used for staff, particularly technical support staff.
- Capital funding: Used for improvements within bushland areas.
- e.restore: Projects include several relating to bushland (about 25% of e.restore expenditure). The most substantial is Natural Area Management, which includes conservation and maintenance. Also included are Catchment Management Actions and Community Project Events. Streetscape – Linkage and Streetscape - Canopy Replenishment are projects to improve linkages between natural areas.
- Grants: From time to time grant funds are acquired for specific projects. These often require matching funds from Council. Costs of acquiring and administering grant funds must be taken into account when assessing the benefits of a grant when compared with expenditure fully funded by Council.
- Leases and licences: Funds generated by leases and licenses that impact on bushland are small.

Objective	Target	Action	Measure
<b>10.2a Aim: To ensure that Council funding allocations for bushland management work reflect community expectations for this valuable resource.</b>			
Council will implement and periodically review the funding allocation recommendations for bushland management.	There will be no decrease in real terms of funding available to bushland activities.	Funding directed to bushland maintenance and related activities will, in real terms, be maintained or increased.	Annual budgetary reviews show continuity or increase in funding available for bushland.
<b>10.2b Aim: To seek additional external funds for bushland management work to supplement Council funding allocations.</b>			
Council supports the acquisition of external funds for bushland management works in conjunction with the role and function of the Bushland Committee.	Increase in the available financial resources for bushland management above Council's budget allocations.	Identify opportunities for grants to benefit Willoughby's bushland.  Asses each proposed grant project to ensure it complements overall management goals and policies  Calculate costs and benefits of each proposed grant to ensure there is a real benefit when compared to Council fully	Applications for and participation in grant funding lead to an increase in resources available for bushland.

Objective	Target	Action	Measure
		funding the project.	
<b>10.2c Aim: Reduce Council financial liability for restoring degradation to natural areas arising from leases, licences and bonded activities.</b>			
Council supports that funds derived from leases, licences and unremitted bonds which accrue from activities in, or have a degrading effect on, bushland, are used for bushland management works to mitigate any adverse effects of these activities.	No financial penalty to Council for bushland management work required as a result of adverse impacts associated with leases, licences and bonded activities.	Funds derived from leases, licences and unremitted bonds, accrued from activities which occur in, or have a degrading effect on, bushland are allocated for bushland management works.  Use funds to undertake restoration and/or maintenance work on affected bushland.	Monies derived from leases, licences and bonds are used for bushland management, when those activities occur in, or have a degrading effect on, bushland.

### 10.3 Asset Management

The term ‘asset management’ is used to describe the process by which councils manage physical assets to meet current and future ‘levels of service’ (NSW Division of Local Government Integrated Planning and Reporting Manual). Asset management is not a new concept and previously has been applied implicitly to the following bushland assets: vegetation, seating, walking tracks, signage, fencing, Aboriginal heritage sites and other local heritage sites. Funding constraints and legislative changes have meant that Council needs to review its asset management practices and devise a strategy for their continuous improvement. This will involve formalising the knowledge about community expectations, maintenance standards and asset output in order to optimise both expenditure and service provision over a much longer time scale. This long term planning requires much more detailed knowledge about bushland assets and their service than has previously been available, as well as modifications to existing management processes.

Data collection and asset management planning within the organisation has been focussed on physical infrastructure assets so far. The benefits of a coordinated approach to asset management should not, however, be limited to physical assets within bushland areas. Rather, the development of a coordinated systems, maintenance schedules and long term plans could benefit all areas that face limitations, including ‘green’ or ‘soft’ bushland assets and regeneration work. Asset management practices will assist Council to continue to deliver the best possible service within the limits of available funding, for the needs of future generations as well as the present community.

Objective	Target	Action	Measure
<b>10.3a Aim: To provide financially sustainable physical infrastructure that meets the needs of the community (Willoughby City Strategy 2013-2029).</b>			
To add the Bushland assets class to other major Open Space, Property and Engineering asset classes covered by Asset Management Plans (AMPs).	An AMP for each major class of assets which is publicly available and which details how Council plans to acquire, manage, record, review and dispose of man-made assets over a minimum of 15 years and natural assets over its lifetime.	Complete first draft of Bushland AMP and review annually.	Bushland AMP complete.

Objective	Target	Action	Measure
To record bushland asset information for planning and maintenance purposes.	Compilation of an asset register listing all bushland reserves and the assets situated within them such as seating, walking tracks, fire access roads, signage and fencing.	Collect data relating to the quantity, location, dimensions, condition, values and where possible and/or appropriate, usage levels of bushland assets, and maintain in a corporate asset register.	Bushland asset data is collected and recorded in Council's asset register.
To have sufficient funds for the appropriate maintenance and renewal of assets throughout their life cycle and possible changes to requirements in the future.	Whole of life cycle costs are estimated for all existing and proposed assets. These are assessed in line with projected demographic changes, cultural trends, projected climate variations and community need.	Estimate costs for acquisition, maintenance, operation, upgrade, disposal & replacement of bushland assets. Use Council's corporate software to model replacement costs. Review demographic forecasts and predict other changes in requirements due to e.g. acquisition of new bushland reserves and maintenance of areas impacted by increased stormwater effects due to increased population density. Include forecast effects in long term financial plans.	Sufficient funds are available to maintain assets at an acceptable level.
To provide a level of service which matches community expectations in regard to provision, development and maintenance of bushland assets.	'Acceptable' levels of service provision are defined which balance community feedback with the technical expertise of staff, and which minimise risks to Council and the community.	Define target 'levels of service' in relation to the area and distribution of bushland reserves provided, the quality and number of assets provided within each reserve and the maintenance of vegetation and other assets. Use community feedback results and staff expertise to define these targets.	Defined target levels of service are met.
To improve the objectivity with which capital projects are assessed.	Formal objective criteria are developed to prioritise capital work projects as part of Council's annual budget review process, particularly under budget-limited conditions.	Develop criteria and a weighted scoring system, basing criteria on service level objectives.	Formal established objective criteria are used each year to determine priority of capital works projects.
To minimise risk to Council and the community.	Strategic, financial, environmental, service delivery and community wellbeing risks are minimised.	Develop a risk assessment methodology for assets, undertake regular risk assessments of assets and develop plans to mitigate critical risks.	Risk management principles are applied at each stage of asset management, new works and acquisitions and in the review of asset performance.

## 10.4 Plans of Management for Bushland

### 10.4.1 Legislation and Policy

Council has a statutory responsibility under the Local Government Act 1993 to prepare and periodically review plans of management for community lands, which includes bushland. Also, under the same provisions, Council cannot change the nature or use of community land if it is inconsistent with an adopted Plan of Management.

Furthermore, Council has a statutory responsibility under State Environmental Planning Policy 19 - Bushland in Urban Areas to ensure that all plans of management for bushland areas are consistent with the aims and objectives of SEPP 19.

### 10.4.2 Development of Reserve Action Plans

This Urban Bushland Plan of Management is a generic plan applying to all bushland in Willoughby. The specific implementation of the policies contained within this plan will vary according to bushland type, tenure, use, etc.

Individual Reserve Action Plans provide the specific management strategies to be applied to individual bushland areas, while applying the aims, objectives and policies contained within this document

Objective	Target	Action	Measure
<b>10.4a Aim: To comply with relevant Legislation and Policies</b>			
The statutory responsibilities and obligations of State Environmental Planning Policy 19 - Bushland in Urban Areas and the Local Government Act 1993 are acknowledged by Council and will be addressed where necessary and appropriate.	All statutory responsibilities under identified legislation are enacted.	Council will address legislation when necessary and appropriate.	Statutory responsibilities are complied with.
<b>10.4b Aim: To ensure that the Aims, Objectives, Targets, Actions and Measures remain achievable and relevant.</b>			
Council supports the regular review and updating of this Urban Bushland Plan of Management by staff or consultants experienced and qualified in Bushland Management, in conjunction with Council's Natural Heritage and Bushland Advisory Committee, to ensure that the Plan remains consistent with the aims and objectives of SEPP19 and the Willoughby City Strategy and the ability of Council to resource and implement the plan.	Council supports the regular review and updating of this Urban Bushland Plan of Management by staff or consultants experienced and qualified in Bushland Management, in conjunction with Council's Natural Heritage and Bushland Advisory Committee, to ensure that the Plan remains consistent with the aims and objectives of SEPP19 and Council policy and the ability of Council to resource and implement the plan.	Volume 1, Policy and Management Issues – update as required to reflect changes in legislation and improved bushland management techniques. Major review after 5 years.  Volume 2, Resource Inventory - update as required to reflect changes in inventory information, new mapping, etc. Major review after 5 years.	Changes in policy and management practices are reflected in the UB POM.  Maintenance of up to date bushland resource information and inventory.  Up to date documents are available to public and staff.
<b>10.4c Aim: To provide specific bushland management strategies for individual bushland areas.</b>			
Council supports the production of Reserve Action Plans for bushland reserves that provide for the policies and management	A Reserve Action Plan is produced for each reserve, or group of reserves, that is consistent with the aims and	Continue to develop individual RAPs based on the policies and actions set out in this Bushland Plan of Management.	Reserve Action Plans are in place for all bushland reserves.

MANAGEMENT ISSUES, POLICIES, TARGETS, ACTIONS AND MEASURES – PLANNING AND ADMINISTRATION

Objective	Target	Action	Measure
<p>issues of the UBPOM to be implemented through appropriate management and on-site works in each reserve.</p>	<p>policies of the UBPOM. RAPs are updated regularly. RAPs are available to the public.</p>	<p>Within the life of each RAP, actions listed are reviewed regularly for relevance and feasibility.  RAPs are made available to the public.</p>	<p>Reserve action plans are the subject of a major review after 5 years.  RAPs are available to the public.</p>

# 11. Bushland and Habitat outside Reserves

Bushland and Habitat outside Council Reserves  
 Bushland and Habitat on Private Property  
 Bushland and Habitat on Land Controlled by Other Authorities  
 Bushland and Habitat in Non-bushland Reserves  
 Bushland and Habitat in Streetscapes

## 11.1 Bushland and Habitat outside Council Reserves

### 11.1.1 *Role and Value of Bushland and Habitat outside Bushland Reserves*

Bushland in Willoughby is mostly contained in reserves under the care and control of Council. For some Council controlled reserves the landholder is Willoughby City Council, for others the landholder is, in whole or in part, another authority: e.g. the State of NSW, the Minister for Lands, NSW Minister Administering the EPA Act and Crown Land. Council confers control of some land containing bushland or adjacent to bushland through leases, such as to golf clubs. Bushland can exist on road reserves, either as small pockets or as an extension of the adjoining reserve. Bushland also exists on land controlled by other authorities, such as National Parks and Wildlife Service, Sydney Water and Roads and Maritime Services. A relatively small amount of bushland is on privately-owned land, such as residential properties and golf courses. Some privately-owned bushland is on land earmarked for acquisition as open space and it is important to ensure preservation of this bushland until acquisition can occur. Preservation of existing bushland is the priority, with revegetation of degraded areas and creation of bushland and habitat useful adjuncts. (See also [Extent of Bushland Included in this Plan of Management](#) earlier in this document.)

#### **Maintaining Biodiversity**

Maintaining the greatest amount of bushland on both community and private land assists in maximising biodiversity through the retention of the broadest possible complex of plant and animal communities. Many plant communities occurring on the Hawkesbury sandstone and shale soils of Willoughby are highly complex and can display considerable diversity in their floristic and associated fauna populations. Therefore, maintaining the greatest amount of these communities will assist in maintaining the complexity of plant and animal species and as such assist in maintaining biodiversity.

#### **Ecological Linkages**

It is important to maintain links between larger areas of bushland. Larger areas of bushland in Willoughby are fragmented in the urban landscape. Corridors, whether a continuous vegetated corridor or a stepping-stone corridor, provide a useful function in connecting fragmented plant and fauna populations and tend to increase the diversity and abundance of many species in connected patches. These links can be provided by: bushland and habitat on private property; habitat elements in non-bushland reserves; habitat along road reserves.

#### **Scenic and Environmental Protection:**

Large sections of residential development in the Willoughby area are on steep, visually prominent lands and foreshores. Bushland remaining on these lands contributes significantly to the visual character of the area and Middle Harbour whilst assisting with preventing erosion and land-slipping. Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005 applies in many of these areas and has amongst its aims “to ensure the protection, maintenance and rehabilitation of watercourses, wetlands, riparian lands, remnant vegetation and ecological connectivity”. There are also more than 170 known Aboriginal heritage sites found in the Willoughby LGA.



### Natural Heritage Register

The Willoughby City Council Local Government Area has many natural heritage places and items, such as trees and natural vegetation, fauna habitat and geological features. Protection and management of these places and items has become increasingly important to the local community and therefore to the Council. Many items are contained within reserves, but many items are also on land zoned for other uses. The need for a study was identified by the Urban Bushland Plan of Management (1997). The Natural Heritage Register project commenced in 2000 and will continue for some time to come.

The aim of the [Natural Heritage Register](#) is to identify and list items of natural heritage that remain outside bushland reserves (which have already been extensively surveyed) and to promote their greater protection, as these items are increasingly under threat from the pressures of urban development and consolidation. Road verges, drainage easements, non-reserve public land and private land are being surveyed. There is extensive resident consultation and wide support. This major ongoing project will enable the Council to develop strategies to monitor and protect the health of all of Willoughby’s natural heritage, not just that contained in bushland reserves.

### 11.1.2 Legislation and Policy

The Environmental Planning and Assessment Act 1979 encourages the protection of the environment, including conservation of native animals and plants. In Willoughby, much of the bushland on private property is on land zoned E4 Environmental Living in WLEP 2012. The objectives of this zone focus on ensuring residential development does not have an adverse effect on areas of ecological, scientific or aesthetic value.

Council has a responsibility under State Environmental Planning Policy 19 - Bushland in Urban Areas (Clause 9) to consider the need to retain any bushland on land adjacent to public bushland. Where bushland in Willoughby LGA is adjacent to, or within sight of, Middle Harbour, Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005 can apply.

Council’s WLEP 2012 5.9 Preservation of Trees or Vegetation and WDCP C.9 Preservation of Trees or Vegetation have provisions to minimise loss of trees and native bushland on private property. An objective under WDCP C.9 is: To provide for no net loss over time of tree cover and bushland in Willoughby City. The LEP specifies that restrictions apply to clearing of native vegetation under the Native Vegetation Act 2003 when land is zoned E4 Environmental Living. Most residential properties adjacent to bushland are zoned as E4. Restrictions on pruning also apply to areas zoned E4. Consent of Council is required to prune or remove all trees listed as items under the Willoughby Natural Heritage Register, or covered by the Threatened Species Conservation Act 1995. Council’s draft Tree Management Policy and draft Street Tree Master Plan include provisions for enhancing habitat value and providing ecological linkages.

Authorities and corporations may access bushland to provide and maintain essential services such as electricity, water, and sewer. Legislation includes: Electricity Supply Act 1995, and associated Regulations; State Environmental Planning Policy (Infrastructure) 2007; Land Acquisition (Just Terms Compensation) Act 1991. State Environmental Planning Policy 19 - Bushland in Urban Areas (Clause 6.2) allows that disturbance of bushland without council consent is allowed *for the purpose of constructing, operating or maintaining lines for electricity or telecommunication purposes, or pipelines to carry water, sewerage or gas or pipelines licensed under the [Pipelines Act 1967](#), or for the purpose of constructing or maintaining main roads.*

Objective	Target	Action	Measure
<b>11.1a Aim: To comply with relevant Legislation and Policies relating to protection of bushland and habitat across Willoughby Local Government Area.</b>			
The statutory responsibilities and obligations of the Environmental Planning and Assessment Act (1979), Threatened Species Conservation Act 1995, State	Compliance with all legislation and policy.	Maintain responsibilities under identified legislation.  Follow objectives and provisions of	All responsibilities under identified legislation are enacted.  Council policies are adhered to.

<p>Environmental Planning Policy 19, Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005 and Native Vegetation Act 2003 are acknowledged by Council and will be addressed when necessary and appropriate.</p> <p>Objectives and provisions of WLEP 2012 and WDCP will be adhered to.</p> <p>Council policies and guidelines for protection of bushland will be followed.</p>		<p>Council policies, programs and procedures.</p>	
<p><b>11.1b Aim: Continue and improve protection of bushland and habitat throughout Willoughby.</b></p>			
<p>Council will continue to develop and maintain policies and practices to encourage protection and expansion of bushland and habitat across Willoughby LGA.</p>	<p>All policies and practices that could affect bushland and habitat, when being developed or reviewed, will have as an objective the protection and possible expansion of bushland and habitat.</p>	<p>Integrate consideration of the protection and expansion of bushland and habitat into relevant policy and practices.</p>	<p>The protection and expansion of bushland are integrated into all relevant policies and practices.</p>
<p>Council will continue to identify and document bushland and habitat on land outside of bushland reserves.</p>	<p>Comprehensive identification and documentation of areas of bushland outside of bushland reserves.</p>	<p>Continue to develop the Natural Heritage Register.</p> <p>Continue to utilise the NHR in the protection of bushland and habitat and explore additional applications for the NHR.</p>	<p>There is a comprehensive listing of bushland and habitat in WCC.</p> <p>The NHR is being used as a tool in the protection of existing bushland in WCC.</p>

## 11.2 Bushland and Habitat on Private Property

Objective	Target	Action	Measure
<p><b>11.2a Aim: Continue to encourage the retention, expansion and appropriate management of bushland on private property</b></p>			
<p>Council will support and actively encourage the retention, expansion and appropriate management of bushland on private property.</p>	<p>Continue and expand the program to educate and encourage the community to maintain and enhance the function of private bushland for its wildlife corridor and habitat values.</p>	<p>Continue the program of workshops to inspire, educate and encourage residents to preserve, manage and create bushland and habitat on their property.</p> <p>Continue to develop habitat linkages programs that involve residents.</p>	<p>Workshops are run regularly.</p> <p>Habitat linkages programs that include private property are devised and run across various areas of Willoughby.</p> <p>No decrease in the area of bushland on private property.</p>

Council supports the maintenance or creation where possible, of buffer zones of appropriate indigenous vegetation on private land adjoining bushland reserves.	Existing bushland buffer zones which occur on private land are maintained.  An increase in restored or recreated buffer zones on private land.	Target land holders with bushland adjacent to reserves with information and education programs outlining the importance of maintaining and expanding the bushland on their land.	Bushland adjacent to bushland reserves is maintained in good or improving condition.
Council will support land owners and managers in their efforts to retain, expand and appropriately manage bushland on their property, especially for land earmarked for acquisition as open space.	Land owners and managers with bushland on their property are given advice and assistance to manage that bushland.  A program of practical assistance is developed to help landholders manage their bushland, especially when land is earmarked for acquisition as open space.	Council's Habitat Officer to continue to advise residents on preserving bushland and habitat on their property.  Investigate extending the Bushcare program to offer assistance to landholders to retain bushland. Develop guidelines for such assistance which takes into consideration the biodiversity value of the particular bushland and the situation of the landholder.	Bushland earmarked for acquisition as open space remains in good condition.  Significant bushland and habitat on private property remains in good condition.
Council will support the NSW Government in the acquisition of privately-owned bushland for open space purposes and will agree to take on the care and control of such bushland.	Privately-owned bushland identified to be acquired as open space is gradually transferred to public ownership under the care and control of Council.	Council will co-operate with State Government authorities in the acquisition of identified privately-owned bushland and manage such bushland according to this UBPOM.	Privately-owned bushland identified as important for acquisition is gradually acquired for open space and is then managed according to this UBPOM.

### 11.3 Bushland and Habitat on Land Controlled by Other Authorities

Objective	Target	Action	Measure
<b>11.3a Aim: To integrate Willoughby's bushland management practices with adjoining land management organisations.</b>			
Council will aim to develop co-operative management practices and policies with other organisations which own or are responsible for the management of bushland adjoining Willoughby LGA (e.g. Lane Cove National Park, adjoining Councils).	Integrate bushland management practices and policies with adjoining Councils and organisations which are responsible for the management of bushland adjoining the Willoughby Local Government Area.	Continue liaison with adjoining Councils and Lane Cove National Park to ensure management practices are consistent across boundaries.  Continue with joint bushland regeneration programs with adjoining land managers at areas where responsibilities intersect.	Bushland is managed consistently across boundaries with adjoining bushland management organisations.
<b>11.3b Aim: To reduce impacts on bushland areas through the development of strong and positive working relationships with public authorities and corporations whose activities impact on bushland.</b>			
Council will liaise with public authorities and corporations which plan activities that would impact upon bushland to	Mitigation of significant impacts and restoration of sites affected by the activities of public authorities and	Council will provide advice and assistance to any authority to minimise impacts on bushland.	When lawful disturbance of bushland is essential, such as by authorities and corporations providing essential services,

<p>attempt to devise alternate solutions to avoid such impacts.</p> <p>Council will liaise with public authorities and corporations whose activities impact upon bushland, to minimise impacts and maximise the effectiveness of restoration programs.</p>	<p>corporations in bushland areas.</p> <p>Restoration standards to be consistent with best conservation practice and with the principles and policies outlined in this Urban Bushland Plan of Management.</p>		<p>disturbance is kept to a minimum and restoration is to a high standard.</p>
<p><b>11.3c Aim: To ensure that when Council temporarily relinquishes control of bushland by a lease or other means, bushland on the site is conserved and maintained.</b></p>			
<p>When leasing or otherwise granting control over land containing bushland, Council will provide for the conservation and maintenance of that bushland in any agreement.</p>	<p>All lease or other agreements that cover land containing bushland provide for the ongoing conservation and maintenance of that bushland.</p>	<p>Lease agreements and other agreements entered into by Council that could affect bushland will provide for conservation and maintenance of that bushland.</p> <p>Draft lease or other agreements that could affect bushland are referred to the Bushland Manager.</p>	<p>Bushland that is leased or otherwise temporarily controlled by other bodies is returned to Council control in good condition.</p>

## 11.4 Bushland and Habitat in Non-bushland Reserves

Objective	Target	Action	Measure
<p><b>11.4a Aim: To create habitat and linkages for native plants and wildlife in reserves other than bushland reserves.</b></p>			
<p>Reserves that are designed and used as developed parkland, sportsgrounds and playgrounds may have potential to incorporate habitat and bushland plants, when this is appropriate to the design, purpose and requirements.</p> <p>When designing for such reserves, consideration will be given to including plants and design elements that provide habitat for native wildlife.</p>	<p>Some habitat for native wildlife will be included in non-bushland reserves when appropriate to design, purpose and requirements of reserve</p>	<p>Evaluate the opportunities for including habitat for native wildlife in non-bushland reserves, with the assistance of Council's Habitat Officer.</p>	<p>Increase in habitat for native wildlife in non-bushland reserves.</p>
<p>When designing reserves that are to be used as developed parkland, sportsgrounds and playgrounds, consideration will be given to proximity to bushland and the opportunity to provide a</p>	<p>Non-bushland reserves will add to the vegetation and habitat linkages throughout Willoughby when appropriate to design, purpose and requirements of reserve.</p>	<p>Evaluate the opportunities for creating ecological linkages with natural areas in all non-bushland reserves, with the assistance of Council's Bushland staff.</p>	<p>Increase in ecological linkages between non bushland reserves and natural areas.</p>

continuous or stepping stone vegetation corridor using local plant species.			
Non-invasive plant species will be used in reserves and environmental weeds or potential transformer weed species will be avoided.	No plants in non-bushland reserves will have a negative impact on the surrounding environment	In non-bushland reserves, plants will be chosen to avoid negative impacts on nearby areas, particularly bushland.	No weed spreading in bushland from non-bushland reserves.
When designing non-bushland reserves, consideration will be given to inclusion of suitable local native plant species, which can demonstrate their potential for use in home gardens.	Where appropriate to design, purpose and requirements, public gardens will, show the potential for using local native plants in garden settings.	Planting schemes for open space areas will consider inclusion of local native plant species suitable for use in home gardens.	Residents are encouraged by displays of local native flora to incorporate such plants in their gardens, leading to an increase in habitat for native species across Willoughby.
In reserves, drainage will be designed to avoid contamination of any waterway or nearby bushland with excess moisture, nutrients, rubbish or weed propagules.	Drainage from non-bushland reserves will not have a negative impact on the surrounding environment.	Drainage in non-bushland reserves will be designed to avoid impacts spreading from the reserve into waterways and bushland.	No adverse effects on bushland from non-bushland reserves.

## 11.5 Bushland and Habitat in Streetscapes

Objective	Target	Action	Measure
<b>11.5a Aim: To create habitat and linkages for native plants and wildlife in streetscapes.</b>			
The draft Street Tree Master Plan identifies the value of using street trees to enhance ecological linkages, especially in streetscapes conserving a strong natural landscape character.  Council supports street trees being utilised to support ecological linkages and the use of suitable local-occurring plants.	Street tree plantings will be used to enhance identified ecological linkages by the use of suitable local species.	Comply with provisions in the draft Street Tree Master Plan to enhance identified ecological linkages.	Increase in street trees that are locally occurring species and which can support native wildlife and help preserve genetic diversity.
All residents are responsible for caring for the verge or nature strip that fronts or backs onto the property in which they reside. Council acknowledges that turning verges into gardens, including native habitat gardens, offers benefits, as long as the safety and amenity of the community is addressed.	In built-up areas identified as having a value as habitat and vegetation linkages, residents are encouraged and assisted to create and maintain native habitat verge gardens.	Where it is identified that ecological linkages are desirable, residents will be encouraged to maintain their verge/nature strip as a native habitat garden, while maintaining safety and amenity.  Council will produce and publish guidelines for creating safe native habitat verge gardens.	An increase in native habitat verge gardens, especially in identified ecological corridors.

MANAGEMENT ISSUES, POLICIES, TARGETS, ACTIONS AND MEASURES – BUSHLAND AND HABITAT OUTSIDE BUSHLAND RESERVES

		Council will assist residents to create and maintain verge gardens as part of ecological linkages.	
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# 12. Cultural Heritage Management in Bushland

## 12.1 Aboriginal Heritage and Non-Indigenous Heritage

Places of cultural significance enrich people's lives, often providing a deep and inspirational sense of connection to community and landscape, to the past and to lived experiences. They are historical records that are important expressions of Australian identity and experience. Places of cultural significance reflect the diversity of our communities, telling us about who we are and the past that has formed us and the Australian landscape. They are irreplaceable and precious.

Preamble to the Burra Charter 2013.

### 12.1.1 Legislation and Policy

Our environmental heritage involves places and landscapes of historic, cultural, social, spiritual, archaeological, architectural or aesthetic significance. Preserving the heritage of Willoughby is a priority of the community, and this is reflected in Council's planning controls. As set out in the Willoughby City Strategy, the Council will identify and protect heritage items, conservation areas, environmentally sensitive areas and Aboriginal sites (3.1.3). It will acknowledge, respect and protect Aboriginal heritage and promote the conservation of local history and heritage (1.1.3).

Local government responsibility for heritage management is enshrined within two acts: the Heritage Act 1977 and the Environmental Planning and Assessment Act (EP&A Act) 1979.

Councils have responsibilities under Sections 170 and 17A of the Heritage Act 1977 (NSW) to identify, conserve and manage heritage assets owned, occupied or managed by that agency. Under the Environmental Planning and Assessment Act 1979 local councils are required to identify items of local heritage significance in a heritage schedule to the Local Environmental Plan. It also specifies that Aboriginal sites and places of significance should be assessed as part of any planning process.

The National Parks and Wildlife Service is responsible for the protection of Aboriginal objects and Aboriginal places in New South Wales under the National Parks and Wildlife Act 1974 (NPW Act).

- An Aboriginal place is "a place that, in the opinion of the Minister, is or was of special cultural significance with respect to Aboriginal culture" and is published in the Government Gazette. No Aboriginal places have been recorded in Willoughby.
- "Aboriginal object" means any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains. A person must not harm or desecrate an Aboriginal object. The National Parks and Wildlife Service is responsible for maintaining the Aboriginal Heritage Information Management System (AHIMS), which contains information and records regarding Aboriginal objects and sites in New South Wales.
- An "historic site" means lands reserved as a historic site under the NPW Act. Otherwise the word "site" has a dictionary meaning in the Act.

Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005 has provisions to conserve and protect heritage items in the waterway and within the land-water interface that are not covered by council's planning instruments. Schedule 4 lists heritage items to be protected, including H C Press former picnic grounds now part of H C Press Reserve.

State Environmental Planning Policy 19 - Bushland in Urban Areas includes the aim "to protect archaeological relics" (Clause 2 2(j)).

Council should also manage its sites of Cultural Significance in accordance with the principles, processes and practices as outlined in the Australia ICOMOS Burra Charter, 2013. Although the Burra Charter is not cited formally in any act it is nationally recognised and underpins heritage management in New South Wales and Australia. The policies and guidelines of the Heritage Council of NSW and the NSW Heritage Branch are consistent with and guided by the Burra Charter.

### Council Policy

WLEP 2012, Clause 5.10 Heritage Conservation has the objectives:

- (a) to conserve the environmental heritage of Willoughby,
- (b) to conserve the heritage significance of heritage items and heritage conservation areas, including associated fabric, settings and views,
- (c) to conserve archaeological sites,
- (d) to conserve Aboriginal objects and Aboriginal places of heritage significance.

Significant items of Non-Indigenous local heritage are listed in Schedule 5 Environmental heritage of WLEP 2012. There are two sites occurring in Willoughby's bushland that relate to European settlement listed in Schedule 5, both in Flat Rock Gully.

WDCP, Section D.1.16.2, Performance Criteria:

- 1. Development in the E4 Environmental Living zone will be assessed by Council in terms of:
  - x) potential impact on Aboriginal archaeological sites.

WDCP, Section D.1.16.3, Controls:

- 9. Sites containing identified or potential Aboriginal archaeological sites may be required to submit an archaeological assessment report and / or Aboriginal assessment report.

### Aboriginal Heritage Office

Willoughby City Council manages local Aboriginal heritage through the Aboriginal Heritage Office (AHO), which operates to protect and conserve Aboriginal heritage sites and create an understanding of local Aboriginal heritage through information and education. Willoughby City Council was a founding member of the Aboriginal Heritage Office in 2000. At present the AHO is funded equally by eight partner Councils: Lane Cove, North Sydney, Manly, Warringah, Willoughby, Ku-ring-gai, Pittwater and Ryde. Additional funds are acquired through grants from time to time for particular projects. The AHO conducts a range of activities in the areas of the partner Councils and in 2013 was staffed by the Aboriginal Heritage Manager plus 5 other staff, with assistance from volunteers. There are over 170 sites of Aboriginal culture and heritage known in the WCC area, with more being discovered. As a partner of the AHO, WCC receives advice, assistance and expertise for matters pertaining to Aboriginal heritage. The AHO conducts training for Council staff in awareness and legislation relating to Aboriginal heritage. WCC and the AHO conduct joint interpretive events.

#### 12.1.2 Direct and Indirect Impacts

Sites of Aboriginal or European heritage can be affected directly or indirectly by many activities associated with either urban impact or reserve management:

**Stormwater drains:** Concentrated water flows can directly affect Aboriginal carvings, artwork, middens and habitation sites through erosion.

**Weed invasion and control:** Rampant weed growth and the subsequent control of weed infestations can have a direct physical impact on sites, including the destruction of historical record.

**Walking tracks:** The inappropriate location of walking tracks can directly disturb sites through: physical damage or removal; indirectly through alteration of natural water flow; or impact from increased visitation levels.

**Fire:** See Fire Management re managing the effects of fire on heritage artefacts.



Damage from direct human impact can occur through vandalism and can also be caused without malicious intent by inappropriate recreational activities.

### 12.1.3 Interpretation of Cultural Sites

Interpretation of sites of heritage significance is often desirable, and can be achieved by on-site signage, by information linked to electronic devices and by interpretive events. However the level and type of interpretation needs to be considered in terms of several factors, including the ongoing preservation of the site. Interpretation of Aboriginal heritage needs particular care, and guidance from the Aboriginal Heritage Office is essential.

### 12.1.4 Natural Heritage Sites

#### Natural Heritage Register

The Willoughby City Council Local Government Area has many natural heritage places and items, such as trees and natural vegetation, fauna habitat and geological features. Protection and management of these places and items has become increasingly important to the local community and therefore to the Council. Many items are contained within reserves, but many items are also on land zoned for other uses. The need for a study was identified by the Urban Bushland Plan of Management (1997). The Natural Heritage Register project commenced in 2000 and will continue for some time to come.

The aim of the Natural Heritage Register is to identify and list items of natural heritage that remain outside bushland reserves (which have already been extensively surveyed) and to promote their greater protection, as these items are increasingly under threat from the pressures of urban development and consolidation. Road verges, drainage easements, non-reserve public land and private land are being surveyed. There is extensive resident consultation and support has been overwhelming. This major ongoing project will enable the Council to develop strategies to monitor and protect the health of all of Willoughby's natural heritage, not just that contained in bushland reserves.

Objective	Target	Action	Measure
<b>12.1a Aim: To comply with relevant Legislation and Policies.</b>			
The statutory responsibilities and obligations of the Environmental Planning and Assessment Act 197), National Parks and Wildlife Act 1974 and the Heritage Act.  Objectives and provisions of WLEP 2012 and WDCP will be adhered to.	Compliance with all statutory responsibilities and obligations.	Maintain responsibilities under identified legislation.	All statutory responsibilities under identified legislation are enacted.  Council policies are adhered to.
<b>12.1b Aim: To protect cultural heritage items and places in bushland.</b>			
Heritage items and sites in bushland are protected.	Objects and sites in bushland that are assessed as being of heritage significance are identified.  Cultural heritage items and sites in bushland are recorded by the appropriate	When an object or site with possible heritage value is found, refer it to the relevant heritage officer for assessment and management decisions: Aboriginal – AHO; European – Council's Heritage Planner. Act on advice given.	Heritage sites in bushland are protected.  Increase in listings of Aboriginal objects in Willoughby's bushland.  Heritage objects and their surrounds do

Objective	Target	Action	Measure
	body.	<p>Staff, contractors and volunteers working in bushland to be given training and information on how to recognise Aboriginal sites and how to avoid damage to them.</p> <p>Interpret heritage items only after considering possible adverse effects on the heritage item and surrounding area.</p>	not deteriorate after interpretive material is introduced.
<b>12.1c Aim: To promote knowledge and understanding of cultural heritage in relation to Willoughby's bushland areas.</b>			
The bushland of Willoughby was the backdrop for human settlement in the area, both by the First Australians and by later settlers from Europe. Bushland will be presented as integral to the interpretation of that history.	Promote the heritage value of bushland as a link to the past and for its value as a repository of relics.	<p>Continue to promote understanding of Aboriginal heritage in Willoughby and conduct activities in co-operation with the Aboriginal Heritage Office such as workshops, walks and events.</p> <p>Promote the heritage of Willoughby through activities, brochures, workshops, events, etc.</p> <p>Co-operate with other bodies and agencies in promoting local heritage and its preservation.</p>	<p>Continued and increased activities relating to local Aboriginal heritage.</p> <p>Increase in community awareness of the Aboriginal heritage of Willoughby.</p> <p>Increase in community awareness of the heritage value of bushland.</p>

# INVENTORY OF BUSHLAND IN WILLOUGHBY CITY COUNCIL AREA

## Definitions

Ausgrid	Ausgrid
Chatswood GC	Chatswood Golf Club Ltd
Commonwealth	Commonwealth of Australia
Crown	Crown Land
DLWC	NSW Department of Land and Water Conservation
Education	NSW Department of Education and Communities
Lands	The Minister for Lands of The State of NSW
LGA s.50	Indicates land is vested Council by the Local Government Act 1993, Section 50
Minister	NSW Minister Administering the Environmental Planning and Assessment Act 1979
NPWS	NSW National Parks & Wildlife
NSW	The State of New South Wales
RailCorp	Rail Corporation New South Wales
Roads	Roads and Traffic Authority NSW
Water	Sydney Water Corporation
WCC	Willoughby City Council

Property	Location	Total Area	Lot	DP	Whole lot	Part Lot	Bushland area	Parcel area	Zoning	Owner	Proximate property	
		Hectares					m <sup>2</sup>	m <sup>2</sup>			Street	Number
Anglo Street Reserve	Chatswood		7C	4957	x		1776.82	1776.82	RE1	WCC		
Artarmon Park north of expressway including east road reserve	Parkes Road Artarmon	1.4011	100	1140538		x	9902.83		RE1	NSW		
			100	1140538			83.17		SP2	Roads		
			101	1140538	x		2498.70		RE1	Roads		
			101	1140538			143.30		SP2	Roads		
			Road reserve			x	1383.00					
Artarmon Reserve	Burra Rd Artarmon	9.9795	100	1030970		x	1500.00		SP2	RailCorp		

MANAGEMENT ISSUES, POLICIES, TARGETS, ACTIONS AND MEASURES – HERITAGE MANAGEMENT IN BUSHLAND

			1	325314	x		1530.22		RE1	WCC	
			15	174707	x		935.84		RE1	LGA s.50	
			7309	1158773	x		12141.00		RE1	Crown	
			7081	1167929		x	71524.00	71524.00	RE1	NSW	
			402	12317	x		7429.78	7429.78	RE1	WCC	
			3	856286	x		380.30	380.30	RE1	WCC	
			13	9518		x	160.00		RE1	WCC	
			34	1140476	x		314.20	314.20	RE1	Roads	
			35	1140476	x		3049.40	3049.40	RE1	Roads	
			Road reserve			x	515.00		RE1		Chelmsford Ave
			Road reserve			x	315.00		SP2	Roads	Freeway
<b>Beverley Blacklock Reserve</b>	Cheyne Walk Castlecrag	<b>1.9002</b>	92	650510	x		17440.00	17440.00	E2	WCC	
			75	23276	x		44.26	44.26	E2	WCC	
			76	23276	x		25.29	25.29	E2	WCC	
			81	23276	x		31.62	31.62	E2	WCC	
			88	23276	x		37.94	37.94	E2	WCC	
			87	23276	x		44.26	44.26	E2	WCC	
			86	23276	x		50.59	50.59	E2	WCC	
			85	23276	x		44.26	44.26	E2	WCC	
			84	23276	x		31.62	31.62	E2	WCC	
			83	23276	x		31.62	31.62	E2	WCC	
			82	23276	x		37.94	37.94	E2	WCC	
			80	23276	x		31.62	31.62	E2	Private	
			79	23276	x		31.62	31.62	E2	WCC	
			77	23276	x		31.62	31.62	E2	Private	
			78	23276	x		31.62	31.62	E2	Private	
			26	26117	x		50.59	50.59	E2	WCC	
			31	26117	x		44.26	44.26	E2	WCC	
			30	26117	x		44.26	44.26	E2	WCC	
			29	26117	x		37.94	37.94	E2	WCC	
			28	26117	x		63.23	63.23	E2	WCC	
			27	26117	x		75.88	75.88	E2	WCC	
			89	23276	x		208.67	208.67	E2	WCC	
			25	26117	x		82.20	82.20	E2	WCC	
			33	26117	x		31.62	31.62	E2	WCC	
			34	26117	x		37.94	37.94	E2	WCC	
			91	23276	x		44.26	44.26	E2	WCC	
			90	23276	x		37.94	37.94	E2	WCC	
			35	26117	x		25.29	25.29	E2	WCC	

MANAGEMENT ISSUES, POLICIES, TARGETS, ACTIONS AND MEASURES – HERITAGE MANAGEMENT IN BUSHLAND

			32	26117	x		31.62	31.62	E2	WCC		
			Pathway		x		240.70	240.70	RE1		To Linden Way	
<b>Bicentennial Reserve</b>	Small Street Willoughby	<b>1.5647</b>	7	666241		x	2482	9105.40	RE1	WCC	Garland Rd	5-11
			1/4	977176	x		754.20	754.20	RE0	WCC	Garland Rd	is 2
			1	334861		x	2156.00	5768.25	RE1	WCC	Garland Rd	17-21B
			1	524253		x	239.80	2428.11	RE1	Minister	Garland Rd	23-25
			3	522788		x	1348.00	6689.96	RE1	Minister	Garland Rd	23-31A
			113	129029		x	518.90	1153.00	RE1	WCC	Garland Rd	33
			112	129029		x	1237.00	211500.00	RE1	WCC	Garland Rd	35-37
			111	129029		x	1225.00	1880.00	RE1	WCC	Garland Rd	39-41A
			3	506449		x	333.40	581.74	RE1	WCC	Garland Rd	43A
			7	524254		x	429.90	613.35	RE1	Minister	Garland Rd	45A
			C	316969		x	1234.00	19966.52	RE1	WCC	Garland Rd	1/47, 51-55
			2	115622		x	543.70	908.80	RE1	Private	Garland Rd	51-55
			1	115622		x	334.30	950.10	RE1	Private	Garland Rd	51-55
			1	125619		x	323.00	1236.00	RE1	Private	Gaza Rd	11
			1	725764		x	145.20	1080.00	RE1	Private	Gaza Rd	Rd, 11
			1	115636		x	214.10	309.80	RE1	WCC	Gaza Rd	10
			2	115624		x	79.45	170.75	RE1	WCC	Garland Rd	69
			702	778776		x	76.44	116.60	RE1	WCC	Garland Rd	71A
			1	115624		x	421.00	256.50	RE1	WCC	Garland Rd	73-79
			2	57586		x	257.60	54130.00	RE1	WCC	Garland Rd	Cnr. Willoughby
			1	1951433	x		164.40	164.40	RE1	WCC	Garland Rd	Cnr. Willoughby
			1	5889	x		354.10	354.10	RE1	WCC	Garland Rd	Cnr. Willoughby
			1	236353	x		19.00		RE1	WCC	Pendey St	1
			2	236353	x		38.00		RE1	WCC	Pendey St	3
			3	236353	x		31.50		RE1	WCC	Pendey St	5
			4	236353	x		19.00		RE1	WCC	Pendey St	7
			5	236353	x		6.30		RE1	WCC	Flat Rock Dr	39
			1	574101		x	662.00	4056.00	RE1	Crown	Flat Rock Dr	
<b>Blue Gum Park</b>	Dulwich Rd Chatswood West	<b>17.1277</b>	63	7099	x		1460.66	1460.66	E2	WCC		
			62	7099	x		1100.24	1100.24	E2	WCC		
			61	7099	x		999.07	999.07	E2	WCC		
			60	7099	x		1093.92	1093.92	E2	WCC		
			59	7099	x		961.13	961.13	E2	WCC		
			58	7099	x		1283.61	1283.61	E2	WCC		
			13	547449	x		695.55	695.55	E2	Minister		
			15	554496	x		689.23	689.23	E2	Minister		
			19	561493	x		803.05	803.05	E2	Minister		

MANAGEMENT ISSUES, POLICIES, TARGETS, ACTIONS AND MEASURES – HERITAGE MANAGEMENT IN BUSHLAND

			17	561495	x		714.52	714.52	E2	Minister		
			13	563597	x		638.64	638.64	E2	Minister		
			3	513669	x		961.13	961.13	E2	WCC		
			4	529756	x		809.37	809.37	E2	WCC		
			5	593987	x		588.40	588.40	E2	Minister		
			9	732414	x		590.20	590.20	E2	Minister		
			1	515686	x		524.83	524.83	E2	Minister		
			7	604410	x		590.20	590.20	E2	Minister		
			101	592679	x		658.30	658.30	E2	WCC		
			3	526450	x		524.83	524.83	E2	WCC		
			1	563595	x		1909.61	1909.61	E2	Minister		
			3	563596	x		1549.19	1549.19	E2	Minister		
			1	1082607	x		14250.00	14250.00	E2	WCC		
			14	17798	x		276.50	276.50	E2	Private		
			10	17798		x	1743.00	3623.20	E2	Private		
			A	379729	x		5286.21	5286.21	E2	WCC		
			15	17798	x		1510.00	1510.00	E2	Private		
			2	1082607	x		1630.00	1630.00	E2	WCC		
			3	1082607	x		970.00	970.00	E2	WCC		
			4	1082607	x		1510.00	1510.00	E2	WCC		
			5	1082607	x		130.00	130.00	E2	WCC		
			6	1082607	x		3650.00	3650.00	E2	WCC		
			7	1082607	x		3850.00	3850.00	E2	WCC		
			F	24207	x		537.47	537.47	E2	WCC		
			H	24207	x		505.86	505.86	E2	WCC		
			I'	24207	x		531.15	531.15	E2	WCC		
			G	24207	x		588.06	588.06	E2	WCC		
			J	24207	x		695.55	695.55	E2	WCC		
			D	24207	x		607.03	607.03	E2	WCC		
			E	24207	x		486.89	486.89	E2	WCC		
			C	24207	x		777.76	777.76	E2	WCC		
			A	24207	x		1176.12	1176.12	E2	WCC		
			B	24207	x		980.10	980.10	E2	WCC		
			2	1101939	x		718.60	718.60	E2	Minister		
			31	663025		x	604.20	1827.40	E2	Private		
			32	663432		x	508.40	1758.00	E2	Private		
			331	1059743		x	351.30	1059.00	E2	Private		
			3	871690	x		112.80	112.80	E2	WCC		
			25	663393		x	637.30	1865.00	E2	Private		
			26	663391		x	685.50	1928.60	E2	Private		
			27	663392		x	725.90	1966.50	E2	Private		

MANAGEMENT ISSUES, POLICIES, TARGETS, ACTIONS AND MEASURES – HERITAGE MANAGEMENT IN BUSHLAND

			1	119372		x	714.30	1962.00	E2	Private		
			29	10939		x	729.40	1960.20	E2	Private		
			1	539362	x		6177.78	6177.78	E2	Minister		
			1	532353	x		34354.02	34354.02	E2	Commonwealth		
			1	959445	x		429.98	429.98	E2	Minister		
			364	752031	x		22100.00	22100.00	E2	Minister		
			362	443076	x		15807.00	15807.00	E2	WCC		
			363	443076	x		17250.00	17250.00	E2	WCC		
			D	321158			1169.79	1169.79		WCC		
			Road reserve				1488.00				Blue Gum Ave	
			Road reserve				2585.00				Greville St	
			Road reserve				3289.90	3289.90	Creeks			
<b>Broomham Park</b>	Byora Cr Northbridge	<b>0.5387</b>	135	12633	x		5387.38		E2	WCC		
<b>Burns Park</b>	Lane Cove North (at River)	<b>2.7115</b>	14	234841	x		3477.77	3477.77	E2	WCC	Mowbray	
			7146	93670	x		607.00	607.00	E2	Crown	Mowbray	
			7087	1074186	x		7960.00	7960.00	E2	Crown	Mowbray	
			7120	93671	x		995.00	995.00	E2	Crown	Mowbray	
			4	909085	x		1010.00	1010.00	E2	Crown	Mowbray	
			7088	1123914		x	7370.00	17697.70	Part E2	Crown	Mowbray	
			Estuarine				5695.00					
<b>Buttress Reserve</b>	off The Bartizan Castlecrag	<b>0.0866</b>	472	19826	x		866.28	866.28	RE1	WCC	The Bartizan	6
<b>Casement Reserve</b>	The Redoubt Castlecrag	<b>0.2627</b>	5	431029	x		2459.73	2459.73	RE0	WCC	The Redoubt	11
			unknown	unknown	x		167.20	167.20	RE1	WCC	The Redoubt	11
<b>Castle Cove Golf Club</b>	Deepwater Rd Castle Cove	<b>0.9040</b>	184	200636	x		1201.41	1201.41	E4	WCC		
			183	200636	x		1378.46	1378.46	E5	WCC		
			250	1093055		x	6460.00	80620.00	RE1	WCC		
<b>Castle Cove Park</b>	Holly St Castle Cove	<b>4.0791</b>	A	26091		x	35181.87	56731.87	RE2	WCC		
			18	31393	x		5608.69	5608.69	RE3	WCC		
<b>Castlecrag Northern Escarpment</b>	Edinburgh Rd Castlecrag	<b>23.2861</b>	12	608931		x	238.40	1307.00	E2	Private	Edinburgh Rd	341
			2	446309	x		227.64	227.64	E2	WCC	Edinburgh Rd	341
			6	6689		x	247.80	1176.12	E2	Private	Edinburgh Rd	337
			5	6689		x	294.20	1220.38	E2	Private	Edinburgh Rd	335
			7	1053352	x		511.70	511.70	E2	Minister	Edinburgh Rd	333
			1138	752067	x		36.60	36.60	E2	Crown	Edinburgh Rd	331
			3	6689	x		1289.94	1289.94	E2	WCC	Edinburgh Rd	331
			2	6689		x	398.50	1334.20	E2	Private	Edinburgh Rd	329

MANAGEMENT ISSUES, POLICIES, TARGETS, ACTIONS AND MEASURES – HERITAGE MANAGEMENT IN BUSHLAND

			5	1053352	x		608.50	608.50	E2	Minister	Edinburgh Rd	327
			10	8997		x	400.00	1466.99	E2	WCC	Edinburgh Rd	325
			9	8997	x		1049.65	1049.65	E2	WCC	Edinburgh Rd	323
			8	8997	x		967.45	967.45	E2	WCC	Edinburgh Rd	321
			7	8997	x		891.57	891.57	E2	WCC	Edinburgh Rd	319
			6	8997	x		809.37	809.37	E2	WCC	Edinburgh Rd	317
			C	394155	x		632.32	632.32	E2	WCC	Edinburgh Rd	299
			B	394155	x		1410.08	1410.08	E2	WCC	Edinburgh Rd	299
			1	1086703	x		2077.00	2077.00	E2	Minister	Edinburgh Rd	297
			1	545369	x		8315.03	8315.03	E2	Minister	Edinburgh Rd	289-295
			3	234937	x		2111.95	2111.95	E2	Minister	Edinburgh Rd	287
			1	234935	x		2181.51	2181.51	E2	Minister	Edinburgh Rd	275
			B	395576	x		4299.78	4299.78	E2	WCC	Edinburgh Rd	273
			21	4233		x	2613.00	4274.49	E2	Private	Edinburgh Rd	269
			B	380698	x		3199.55	3199.55	E2	WCC	Edinburgh Rd	265
			1	1111353	x		2625.00	2625.00	E2	Minister	Edinburgh Rd	261
			A	402539	x		3294.39	3294.39	E2	WCC	Edinburgh Rd	257
			1	217303	x		3098.37	3098.37	E2	WCC	Edinburgh Rd	253
			1	226380	x		2845.45	2845.45	E2	Minister	Edinburgh Rd	249
			11	1053327	x		2502.00	2502.00	E2	Minister	Edinburgh Rd	245
			9	1053327	x		2288.00	2288.00	E2	Minister	Edinburgh Rd	241
			1	433035	x		379.39	379.39	E2	Private	Edinburgh Rd	233
			22	868610	x		4288.00	4288.00	E2	Private	Edinburgh Rd	233
			21	868610		x	196.90	2351.00	E2	Private	Edinburgh Rd	233
			101	575195	x		3314.00	3314.00	E2	WCC	Edinburgh Rd	225
			100	575195	x		7147.00	7147.00	E2	WCC	Edinburgh Rd	225
			91	527718	x		815.69	815.69	E2	Minister	Edinburgh Rd	225
			1	785296	x		2774.00	2774.00	E2	Minister	Edinburgh Rd	219
			1	803334	x		2735.00	2735.00	E2	WCC	Edinburgh Rd	217
			A	362191	x		6626.73	6626.73	E2	Minister	Edinburgh Rd	213
			1	1053353	x		2717.00	2717.00	E2	Minister	Edinburgh Rd	209
			3	4233		x	2540.00	3819.22	E2	Private	Edinburgh Rd	207
			51	544227	x		2858.09	2858.09	E2	Minister	Edinburgh Rd	205
			1	866898	x		2210.00	2210.00	E2	Minister	Edinburgh Rd	203
			6	1111837	x		28664.00	28664.00	E2	WCC	Edinburgh Rd	195
			B	345606	x		885.25	885.25	E2	Minister	Edinburgh Rd	195
			223	12497	x		967.45	967.45	E2	Minister	Edinburgh Rd	187-189
			218	12497	x		1277.29	1277.29	E2	Minister	Edinburgh Rd	183-185
			217	12497	x		1270.97	1270.97	E2	Minister	Edinburgh Rd	177
			230	12497	x		2093.00	2093.00	E2	WCC	Edinburgh Rd	169-171
			5	1111837	x		28354.40	28354.40	E2	WCC	Sunnyside Cr	99



MANAGEMENT ISSUES, POLICIES, TARGETS, ACTIONS AND MEASURES – HERITAGE MANAGEMENT IN BUSHLAND

			19	19600	x		340.00	340.00	E2	WCC	Sunnyside Cr	95B
			4	1111837	x		23497.60	23497.60	E2	WCC	Sunnyside Cr	95
			18	986.42	x		986.42	986.42	E2	Minister	Sunnyside Cr	95A
			16	19600	x		733.49	733.49	E2	Minister	Sunnyside Cr	81-93
			15	19600	x		904.22	904.22	E2	Minister	Sunnyside Cr	81-93
			14	19600	x		777.76	777.76	E2	Minister	Sunnyside Cr	81-93
			13	19600	x		840.99	840.99	E2	Minister	Sunnyside Cr	81-93
			12	19600	x		891.57	891.57	E2	Minister	Sunnyside Cr	81-93
			11	19600	x		948.48	948.48	E2	Minister	Sunnyside Cr	81-93
			3	1111837	x		15039.80	15039.80	E2	WCC	Sunnyside Cr	73
			2	1111837	x		2326.00	2326.00	E2	WCC	Sunnyside Cr	45-59
			1	1111837	x		215.50	215.50	E2	WCC	Sunnyside Cr	29-43
			Creek west				31780.00		E2			
<b>Castlehaven Reserve</b>	Castlecrag	<b>2.9406</b>	1	1128276	x		20210.00	20210.00	E2	WCC		
			1	549140	x		999.07	999.07	E2	Minister		
			1	547703	x		2478.70	2478.70	E2	Minister		
			19	222258	x		2624.13	2624.13	E2	WCC		
			3	548440	x		1024.36	1024.36	E2	Minister		
			14	221534	x		1669.33	1669.33	E2	WCC		
			Pathway				164.20		E2		The Scarp	
			Pathway				162.00		E2		The Barricade	
			Pathway				73.77		E2		The Bulwark	
<b>Chatswood High School</b>	Centennial Ave Chatswood	<b>0.4995</b>	1	725204		x	4995.00	45300.00		Education	Centennial Ave	24
<b>Chatswood Rotary Memorial Athletic Field</b>	Mowbray Rd West Lane Cove North	<b>2.3282</b>	50	1140302		x	2798.00	16050.00	RE1	WCC		
			51	1140302		x	10780.00	22740.00	RE1	WCC		
			Road reserve			x	1460.00				Mowbray Rd West	
			Estuarine				8244.00					
<b>Cliff Avenue Reserve</b>	Northbridge	<b>1.0424</b>	Road reserve			x	10424.00		E2			
<b>Clive Park</b>	Sailors Bay Rd Northbridge	<b>5.3914</b>	7093	93909		x	7564.00	11300.00	E2	Crown		
			259	752067	x		21850.00	21850.00	E2	WCC		
			347	1130320	x		24500.00	24500.00	E2	WCC		
<b>Coolaroo Reserve</b>	Moola Parade Chatswood	<b>2.6859</b>	14213		x		13809.90	13809.90	E2	LGA s.50		
			27920		x		107.49	107.49	E2	WCC		
			25102		x		1770.50	1770.50	E2	WCC		
			25102		x		10660.94	10660.94	E2	WCC		
			Pathway		x		167.70		E2		Cramer Cr	13/15
			Pathway		x		178.20		E2		Coolaroo Rd	61/63
			Pathway		x		164.40		E2		Coolaroo Rd	15/17A

MANAGEMENT ISSUES, POLICIES, TARGETS, ACTIONS AND MEASURES – HERITAGE MANAGEMENT IN BUSHLAND

<b>Covelee Circuit</b>	Cnr. Cawarra Rd Middle Harbour	<b>0.0304</b>	168	29173	x		303.51		RE1	WCC		
<b>Deepwater Road reserve</b>	Castle Cove	<b>0.3111</b>	165	23848	x		3111.02			WCC	Deepwater Rd	Behind 25-39
<b>Edgar Street Reserve</b>	Chatswood	<b>0.0569</b>	3	21119	x		569.09		RE1	WCC	Edgar St	22
<b>Elizabeth Park</b>	Coolawin Rd Northbridge	<b>0.2279</b>					2279.00	2279.00	E2	Crown	Coolawin Rd	25/27
<b>Ella Street Reserve</b>	Naremburn	<b>0.0241</b>	1	115614	x		240.60	240.60	RE1	WCC		
		<b>0.0241</b>	Road reserve				450.00		RE1			
<b>Embrasure Reserve includes Gargoyle, Oriel and Tower Reserves</b>	off The Battlement Castlecrag	<b>1.0819</b>	6	431029	x		10819.00	10819.00	RE1	WCC		
<b>Explosives Reserve</b>	Cammaray Rd Castle Cove	<b>31.3500</b>	45	752067			74940.00		E2	Crown		
			1215	752067			23060.00		E2	Crown		
			7133	93841			215500.00		E2	Crown		
<b>Ferndale Park</b>	Dalrymple Ave Chatswood West	<b>9.8287</b>	31	18393	x		2851.77	2851.77	E2	WCC	Park Ave	
			1	1061589	x		897.00	897.00	E2	Minister	Greville St	
			7	236350	x		784.08	784.08	E2	WCC	Sylvia St	
			6	236350	x		2042.40	2042.40	E2	Minister	Sylvia St	
			3	372847	x		1397.43	1397.43	E2	WCC	Ferndale St	
			C	390149	x		1378.46	1378.46	E2	WCC	Ferndale St	
			2	702875	x		1132.00	1132.00	E2	Minister	Greville St	
			D	349365	x		1840.06	1840.06	E2	Private	Greville St	
			2	501254	x		271.90	271.90	E2	WCC	Ferndale St	
			4	565339	x		275.59	275.59	E2	WCC	Ferndale St	
			61	13790	x		26152.81	26152.81	E2	WCC	Ferndale St	
			42	9411	x		13531.68	13531.68	E2	WCC	Ferndale St	
			38	12713	x		13658.14	13658.14	E2	WCC	Ferndale St	
			8	576122	x		3922.00	3922.00	E2	WCC	Greville St	
			2	524454	x		3256.45	3256.45	E2	WCC	Greville St	
			41	9411	x		2586.19	2586.19	E2	Private	Greville St	
			56	456134	x		787.80	787.80	E2	WCC	Ferndale St	
			57	456134	x		692.90	692.90	E2	WCC	Ferndale St	
			58	456134	x		629.70	629.70	E2	WCC	Ferndale St	
			54	8794	x		822.00	822.00	E2	WCC	Ferndale St	
			1	1117755	x		866.30	866.30	E2	WCC	Ferndale St	
			52	15519	x		739.82	739.82	E2	WCC	Dalrymple Ave	
			53	15519	x		923.19	923.19	E2	WCC	Dalrymple Ave	
			54	15519	x		663.94	663.94	E2	WCC	Dalrymple Ave	
			55	15519	x		613.35	613.35	E2	WCC	Dalrymple Ave	
			56	15519	x		657.61	657.61	E2	WCC	Dalrymple Ave	
			57	15519	x		670.26	670.26	E2	WCC	Dalrymple Ave	

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			58	15519	x		626.00	626.00	E2	WCC	Dalrymple Ave	
			1	18639	x		550.12	550.12	E2	WCC	Ferndale St	
			51	15519	x		896.00	896.00	E2	LGA s.50	Dalrymple Ave	
			1	113081	x		935.80	935.80	E2	WCC	Ferndale St	
			C	349365		x	370.00	2971.91	E2	Private	Greville St	83
			Road reserve				6737.00				Carvossa Ave	
			Road reserve				4127.00				Greville St	
<b>Fig Tree Point</b>	Hallstrom Close Northbridge	<b>0.3334</b>	9	245416	x		3334.00	3334.00	RE1	WCC		
<b>Flat Rock Gully</b>	Northbridge/Naremburn	<b>22.3349</b>	Road reserve				2798.00		E2		Small St	
			Road reserve				13.82		E2		Flat Rock Dr	
			Road reserve				1205.00		E2		Nulgarra St	
			1	574101		x	1509.00	4056.00	E2	WCC	Flat Rock Dr	
			1	958065	x		1555.51	1555.51	E2	WCC		
			34	14572	x		644.97	644.97	E2	WCC		
			33	14572	x		923.19	923.19	E2	WCC		
			C	360612	x		4084.80	4084.80	E2	WCC		
			1	963964	x		15580.00	15580.00	E2	WCC		
			1	81035		x	13021.00	28865.47	E2	WCC		
			7	666241		x	1340.00	9105.40	E2	WCC		
			19	977176	x		2883.39	2883.39	E2	WCC		
			20	977176	x		3667.46	3667.46	E2	WCC		
			21	977176		x	2087.00	2832.80	E2	WCC		
			22	977176		x	11870.00	11887.64	E2	WCC		
			1	399		x	174.00	181.50	E2	WCC		
			35	2233	x		1713.59	1713.59	E2	WCC		
			36	2233	x		1650.36	1650.36	E2	WCC		
			32	2233	x		1979.17	1979.17	E2	WCC		
			33	2233	x		1890.64	1890.64	E2	WCC		
			34	2233	x		1795.79	1795.79	E2	WCC		
			37	2233	x		1890.64	1890.64	E2	WCC		
			unknown	578	x		82.70	82.70	E2	WCC		
			23	856	x		1302.58	1302.58	E2	WCC		
			24	856	x		1081.27	1081.27	E2	WCC		
			25	856	x		967.45	967.45	E2	WCC		
			26	856	x		897.90	897.90	E2	WCC		
			27	856	x		1915.93	1915.93	E2	WCC		
			1	521275	x		1239.35	1239.35	E2	Minister		

MANAGEMENT ISSUES, POLICIES, TARGETS, ACTIONS AND MEASURES – HERITAGE MANAGEMENT IN BUSHLAND

			7	578027	x		1309.00	1309.00	E2	Minister		
			5	535768	x		638.64	638.64	E2	Minister		
			3	535612	x		632.32	632.32	E2	Minister		
			17	856	x		1612.42	1612.42	E2	WCC		
			22	856	x		1542.86	1542.86	E2	WCC		
			1	1159538	x		1991.81	1991.81	E2	WCC		
			2	1159538	x		2061.37	2061.37	E2	WCC		
			3	1159538	x		1612.42	1612.42	E2	WCC		
			4	1159538	x		1612.42	1612.42	E2	WCC		
			5	1159538	x		2858.09	2858.09	E2	WCC		
			Road reserve			x	1745.00		E2		West Street	
			Road reserve			x	1321.00		E2		Grafton Ave	
			Road reserve			x	476.30		RE1		Market St East	
			Creek			x	2122.00		E2			
			14	976960	x		1618.74	1618.74	E2	WCC		
			13	976960	x		1618.74	1618.74	E2	WCC		
			12	976960	x		1618.74	1618.74	E2	WCC		
			11	976960	x		2023.43	2023.43	E2	WCC		
			10	976960	x		2023.43	2023.43	E2	WCC		
			9	976960	x		2023.43	2023.43	E2	WCC		
			8	976960	x		2023.43	2023.43	E2	Private		
			7084	93724	x		5900.00	5900.00	E2	Crown		
			1	14572	x		80937.13	80937.13	E2	WCC		
			35	14572	x		1206.00	1206.00	E2	WCC		
			25	14572	x		461.59	461.59	E2	WCC		
			1	951908	x		682.91	682.91	E2	WCC		
			26	14572	x		1687.10	1687.10	E2	WCC		
			17	14572	x		980.10	980.10	E2	Minister		
			19	14572	x		954.81	954.81	E2	Minister		
			22	14572	x		784.08	784.08	E2	WCC		
			23	14572	x		840.99	840.99	E2	WCC		
			24	14572	x		777.76	777.76	E2	WCC		
			1	173495	x		2630.46	2630.46	E2	Water		
			1	119625	x		3016.00	3016.00	E2	WCC		
			1	119621	x		967.40	967.40	E2	WCC		
			1	119623	x		948.40	948.40	E2	WCC		
			1	119624	x		923.10	923.10	E2	WCC		
			1	119627	x		967.40	967.40	E2	WCC		
			1	119628	x		1043.00	1043.00	E2	WCC		

MANAGEMENT ISSUES, POLICIES, TARGETS, ACTIONS AND MEASURES – HERITAGE MANAGEMENT IN BUSHLAND

			1	119622	x		1391.00	1391.00	E2	WCC		
<b>Forsyth Park</b>	Widgiewa Rd Northbridge	<b>0.5681</b>	25	170771	x		806.00	806.00	RE1	WCC		
			26	170771	x		1063.00	1063.00	RE1	WCC		
			27	170771	x		931.00	931.00	RE1	WCC		
			28	170771	x		811.00	811.00	RE1	WCC		
			29	170771	x		923.00	923.00	RE1	WCC		
			30	170771	x		1147.00	1147.00	RE1	WCC		
<b>Fullers Road Reserve</b>	Chatswood	<b>0.8183</b>	2	449019	x		120.14	120.14	RE1	WCC		
			B	325180	x		1264.64	1264.64	RE1	WCC		
			B	393242	x		758.79	758.79	RE1	WCC		
			5	21119	x		929.51	929.51	RE1	WCC		
			1	128185		x	3135.00	5394.00	RE1	WCC		
			10	115609		x	1975.00	3281.00	RE1	WCC		
<b>Gargoyle Reserve</b>	See Embrasure Reserve											
<b>Glenaeon Rudolf Steiner School</b>	Glenroy Ave Middle Cove	<b>0.8669</b>	1	868851		x	8606.00	52270.00	E2	Private	Glenroy Ave	5A
			2	191852	x		63.20	63.20	E2	Water		
<b>Greenfield Avenue Reserve</b>	Heights Cr Middle Cove		70	20404	x		1542.80		RE1	WCC		
<b>Greville Street Reserve</b>	Chatswood West		A	418700		x	1838.00	7587.86	RE1	WCC		
<b>Harold Reid Reserve</b>	Rembrandt Dr Middle Cove	<b>42.7360</b>	165	28761			992.74	992.74	E2	LGA s.50		
			164	28761			670.26	670.26	E2	LGA s.50		
			163	28761			1606.10	1606.10	E2	LGA s.50		
			13	30934			10167.73	10167.73	E2	WCC		
			2	180804			278.22	278.22	E2	Water		
			1	107838			365734.00	365734.00	E2	WCC		
			344	13613			9880.00	9880.00	E2	WCC		
			121	28446			221.31	221.31	RE1	LGA s.50		
			342	13613			138.20	138.20	E2	WCC		
			343	13613			132.67	132.67	E2	WCC		
<b>HC Press Park</b>	Emerstan Drive Castle Cove	<b>3.7539</b>	12	573865	x		30440.00		E2	Minister		
			Road reserve				6163.00		E2			
			Creek				935.50		E3		Sugarloaf Cr	
<b>HD Robb</b>	Neerim Rd Castle Cove	<b>20.3721</b>	9	222503	x		2510.32	2510.32	E2	WCC		
			16	226284	x		1327.87	1327.87	E2	WCC		
			15	226284	x		5425.32	5425.32	E2	WCC		
			1	100956	x		1435.00	1435.00	E2	Minister		
			8	222503	x		14505.45	14505.45	E2	WCC		
			1	511451	x		2156.22	2156.22	E2	Minister		
			1	513860	x		1049.65	1049.65	E2	WCC		

MANAGEMENT ISSUES, POLICIES, TARGETS, ACTIONS AND MEASURES – HERITAGE MANAGEMENT IN BUSHLAND

			1	514555	x		1466.99	1466.99	E2	WCC		
			1	545212	x		164.40	164.40	E2	Water		
			3	545212	x		44648.21	44648.21	E2	WCC		
			6	31393	x		4198.61	4198.61	E2	WCC		
			323	31059	x		24123.06	24123.06	E2	WCC		
			3	180804	x		486.89	486.89	E2	Water		
			2	612133	x		98160.00	98160.00	E2	WCC		
			5	200363	x		82.20	82.20	E2	WCC		
			4	200363	x		82.20	82.20	E2	WCC		
			3	200363	x		88.50	88.50	E2	WCC		
			2	200363	x		88.50	88.50	E2	WCC		
			1	200363	x		82.20	82.20	E2	WCC		
			1	434221	x		108.75	108.75	E2	Water		
			19	200363	x		63.23	63.23	E2	WCC		
			18	200363	x		56.91	56.91	E2	WCC		
			17	200363	x		50.59	50.59	E2	WCC		
			16	200363	x		44.26	44.26	E2	WCC		
			15	200363	x		44.26	44.26	E2	WCC		
			14	200363	x		44.26	44.26	E2	WCC		
			13	200363	x		44.26	44.26	E2	WCC		
			12	200363	x		50.59	50.59	E2	WCC		
			11	200363	x		63.23	63.23	E2	WCC		
			10	200363	x		56.91	56.91	E2	WCC		
			9	200363	x		50.59	50.59	E2	WCC		
			8	200363	x		69.56	69.56	E2	WCC		
			7	200363	x		94.85	94.85	E2	WCC		
			6	200363	x		88.50	88.50	E2	WCC		
			30	200363	x		75.87	75.87	E2	WCC		
			29	200363	x		75.87	75.87	E2	WCC		
			28	200363	x		63.23	63.23	E2	WCC		
			27	200363	x		56.91	56.91	E2	WCC		
			26	200363	x		50.59	50.59	E2	WCC		
			25	200363	x		50.59	50.59	E2	WCC		
			24	200363	x		63.23	63.23	E2	WCC		
			23	200363	x		63.23	63.23	E2	WCC		
			22	200363	x		63.23	63.23	E2	WCC		
			21	200363	x		69.56	69.56	E2	WCC		
			20	200363	x		75.87	75.87	E2	WCC		
<b>Headland Road Lookout</b>	Castle Cove	<b>0.0715</b>	79	30284	x		714.52	714.52	E3	WCC		
<b>Heights Crescent Reserve</b>	Middle Cove	<b>0.0173</b>	Pathway				173.40		RE1		Heights Cr	

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<b>Highland Ridge cnr. Cawarra Rd Road reserve</b>	Middle Cove	<b>0.0368</b>	Road reserve				368.00		RE1		Highland Ridge
<b>Keep Reserve</b>	The Rampart Castlecrag	<b>0.1505</b>	1	431029	x		1504.92		E2	WCC	
<b>Killingsworth Park</b>	Minimbah Road Northbridge	<b>1.3502</b>	1	433592	x		3376.80	3376.80	E2	WCC	
			1	579422	x		6897.00	6897.00	E2	WCC	
			Road reserve				3228.50				
<b>Linden Way Reserve</b>	Castlecrag	<b>0.4471</b>	22	23276	x		885.25	885.25	RE1	WCC	
			23	23276	x		2775.89	2775.89	RE1	WCC	
			25	23276	x		809.37	809.37	RE1	WCC	
<b>Lookout Reserve</b>	The Parapet Castlecrag	<b>0.2618</b>	4	431029	x		2617.81	2617.81	RE1	WCC	
<b>Market Garden Park</b>	Alpha Rd Northbridge	<b>1.2451</b>	17	21172	x		822.02	822.02	RE1	WCC	
			20	21172	x		663.94	663.94	RE1	WCC	
			21	21172	x		758.79	758.79	RE1	c/c WCC	
			102	1149869	x		2179.00	2,179.00	RE1	WCC	
			103	1149869	x		1930.00	1,930.00	RE1	WCC	
			22	21172	x		632.32	632.32	RE1	WCC	
			3	554171	x		322.48	322.48	RE1	WCC	
			Nmbr 268	Book 308	x		785.00	785	RE1	WCC	
			3	1134768	x		1279.00	1,279.00	RE1	WCC	
			19	21172		x	462.00	657.61	RE1	c/c WCC	
			2	955973		x	332.00	1,960.20	RE1	c/c WCC	
			200	1074678		x	434.00	4,394.00	RE1	c/c WCC	
			501	1074679		x	1466.00	2,117.00	RE1	c/c WCC	
			Creek				384.50		RE1		
<b>Marks Street Reserve</b>	Naremburn	<b>0.3804</b>	19	577	x		834.66	834.66	E2	WCC	
			20	577	x		771.43	771.43	E2	WCC	
			Road reserve				2198.00		E2		
<b>Marlow Road Reserve</b>	Artarmon	<b>0.6645</b>	153	12331	x		1675.65	1675.65	RE1	WCC	
			229	12331	x		822.02	822.02	RE1	WCC	
			230	12331	x		1201.41	1201.41	RE1	WCC	
			231	12331	x		765.11	765.11	RE1	WCC	
			Pathway				2181.00				
<b>Millwood Avenue Reserve</b>	Chatswood	<b>0.2156</b>	149	14799	x		2156.22	2156.22	E2	WCC	
<b>Minimbah Road Reserve</b>	Northbridge	<b>0.2068</b>	134	12633	x		1055.98	1055.98	E2	WCC	
			136	12633	x		1011.71	1011.71	E2	WCC	
<b>Mowbray Park</b>	Avian Cr Lane Cove North	<b>16.1493</b>	61	18166	x		872.60	872.60	E2	WCC	
			156	18166	x		41271.61	41271.61	E2	WCC	
			57	18166	x		746.14	746.14	E2	Crown	

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			58	18166	x		784.08	784.08	E2	Crown		
			59	18166	x		929.51	929.51	E2	Crown		
			60	18166	x		954.81	954.81	E2	Crown		
			62	18166	x		872.60	872.60	E2	Crown		
			63	18166	x		689.23	689.23	E2	Crown		
			A	26079	x		20797.05	20797.05	E2	WCC		
			7369	1165322	x		2530.00	2530.00	E2	Crown		
			1	909073	x		4500.00	4500.00	E2	Crown		
			49		x		935.84	935.84	E2	Crown		
			50	18166	x		790.40	790.40	E2	Crown		
			51	18166	x		701.88	701.88	E2	Crown		
			52	18166	x		727.17	727.17	E2	Crown		
			53	18166	x		644.97	644.97	E2	Crown		
			54	18166	x		626.00	626.00	E2	Crown		
			55	18166	x		644.97	644.97	E2	Crown		
			56	18166	x		695.55	695.55	E2	Crown		
			64	18166	x		714.52	714.52	E2	Crown		
			65	18166	x		619.67	619.67	E2	Crown		
			69	18166	x		632.32	632.32	E2	WCC		
			68	18166	x		619.67	619.67	E2	WCC		
			67	18166	x		619.67	619.67	E2	WCC		
			66	18166	x		619.67	619.67	E2	WCC		
			42	18166	x		632.32	632.32	E2	Lands		
			43	18166	x		581.74	581.74	E2	Lands		
			44	18166	x		588.06	588.06	E2	Crown		
			45	18166	x		588.06	588.06	E2	Lands		
			46	18166	x		588.06	588.06	E2	Lands		
			47	18166	x		708.20	708.20	E2	Crown		
			48	18166	x		803.05	803.05	E2	Crown		
			35	18166	x		556.44	556.44	E2	WCC		
			36	18166	x		556.44	556.44	E2	WCC		
			37	18166	x		556.44	556.44	E2	WCC		
			38	18166	x		562.77	562.77	E2	WCC		
			39	18166	x		562.77	562.77	E2	WCC		
			40	18166	x		562.77	562.77	E2	WCC		
			41	18166	x		562.77	562.77	E2	WCC		
			14	234841	x		3477.77	3477.77	E2	WCC		
			7095	1068980	x		44670.00	44670.00	E2	Crown		
			155	9985	x		2219.45	2219.45	E2	DLWC		
			156	9985	x		2105.63	2105.63	E2	DLWC		
			157	9985	x		1833.73	1833.73	E2	DLWC		



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			5	909085	x		630.00	630.00	E2	Crown	
			Road reserve				2374.00		E4		Mooney St
			Road reserve				4057.00		E2		Mooney/Hatfield Sts
			Road reserve				5112.00		E2		Willandra St
			Estuarine				2064.00				
<b>Noonbinna Crescent Reserve</b>	Northbridge	<b>0.1613</b>	23	7615	x		575.41	575.41	E2	WCC	
			22	7615	x		493.21	493.21	E2	WCC	
			Road reserve			x	544.40		RE1		Noonbinna Close
<b>North Arm Reserve</b>	Deepwater Rd Castle Cove	<b>45.8964</b>	43	215978	x		6993.47	6993.47	E2	WCC	
			44	215978	x		26879.98	26879.98	E2	Minister	
			81	236241	x		1049.65	1049.65	E2	WCC	
			80	236241	x		948.48	948.48	E2	WCC	
			79	236241	x		929.51	929.51	E2	WCC	
			322	31059	x		54815.93	54815.93	E2	WCC	
			323	31068	x		117618.09	117618.09	E2	WCC	
			1	528847	x		7223.76	7223.76	E2	WCC	
			2	1037996	x		66150.00	66150.00	E2	WCC	
			2	609442	x		62130.00	62130.00	E2	Minister	
			2	551901	x		45944.47	45944.47	E2	Minister	
			1	1037996	x		2298.00	2298.00	E2	Water	
			1	609442	x		314.10	314.10	E2	Water	
			278	31059	x		803.05	803.05	E2	WCC	
			1	227073	x		164.40	164.40	E2	Water	
			1	191852	x		132.79	132.79	E2	Water	
			Creek				64568.00				
<b>Northbridge Park and Memorial Reserve</b>	Sailors Bay Rd Northbridge	<b>22.6920</b>	687	752067		x	40390.00	76800.00	RE1	Crown	
			688	752067		x	186530.00	377146.30	RE1	Crown	
<b>OH Reid Reserve</b>	Reid Dr Chatswood	<b>9.3076</b>	52	14799	x		556.44	556.44	E2	Crown	
			53	14799	x		588.06	588.06	E2	Crown	
			54	14799	x		588.06	588.06	E2	Crown	
			55	14799	x		619.67	619.67	E2	Crown	
			56	14799	x		689.23	689.23	E2	Crown	
			1	1149435	x		645.49	645.49	E2	Crown	
			2	1149435	x		582.78	582.78	E2	Crown	
			3	1149435	x		654.63	654.63	E2	Crown	
			4	1149435	x		818.39	818.39	E2	Crown	
			5	1149435	x		650.34	650.34	E2	Crown	

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			6	1149435	x		427.11	427.11	E2	Crown			
			7	1149435	x		703.14	703.14	E2	Crown			
			7333	1157827	x		2956.00	2956.00	E2	Crown			
			51	14799			632.32	632.32	E2	Crown			
			1	1171023		x	5584.00	43168.58	E2	WCC			
			1	1171023		x	13576.00	43168.58	RE1	WCC			
			29	25864	x		5020.63	5020.63	E2	WCC			
			7334	1157827		x	7231.00	28094.00	E2	Crown			
			7334	1157827		x	4123.00	28094.00	RE1	Crown			
			40	216646	x		10117.14	10117.14	RE1	WCC			
			89	243827	x		259.25	259.25	RE1	WCC			
			22	626634		x	28008.00	51350.00	RE2	Chatswood GC			
			Estuarine					8045.00					
<b>Oriel Reserve</b>	See Embrasure Reserve												
<b>Parkes Road Reserve</b>	Artarmon	<b>0.6544</b>	1	532736	x		227.64	227.64	R3	Crown			
			91	1126778	x		2856.00	2856.00	RE1	WCC			
			93	1126778		x	131.00	216.00	RE1	Roads			
			93	1126778		x	85.00	216.00	SP2	Roads			
			90	1126778	x		419.40	419.40	RE1	WCC			
			95	1126778	x		39.80	39.80	RE1	Roads			
			94	1126778		x	1620.00	11460.00	RE1	Roads			
			94	1126778		x	400.00	11460.00	SP2	Roads			
			Unknown		x		765.00	765.00					
<b>Rembrandt Drive Reserve</b>	Middle Cove	<b>0.1606</b>	154	28763	x		1606.10	1606.10	RE1	LGA s.50			
<b>Retreat Reserve</b>	The Bulwark Castlecrag	<b>0.4926</b>	7	431029	x		4925.78	4925.78	R2	WCC			
<b>Richmond Avenue Reserve</b>	Artarmon	<b>1.2046</b>	54	1148263		x	1944.00	8,830.00	SP2	Roads			
			38	1140476	x		1116.00	1,116.00	SP2	Roads			
			39	1140476		x	105.20	6,602.00	RE1	Roads			
			39	1140476		x	414.00	6,602.00	SP2	Roads			
			33	1140476		x	4592.00	7,357.00	RE1	WCC			
			33	1140476		x	1144.00	7,357.00	SP2	WCC			
			32	1140476		x	1160.00	4,148.00	RE1	WCC			
			32	1140476		x	1103.00	4,148.00	SP2	WCC			
			40	1140476		x	467.70	3,413.00	SP2	Roads			
<b>Sailors Bay Park</b>	Rockley St Castlecrag	<b>2.1680</b>	258	752067	x		21680.00	21680.00	E2	Crown			
<b>Scotts Creek Reserve</b>	Roseville	<b>0.4057</b>	C	163173	x		227.64	227.64	IN2	WCC			
			12	813046			1572.00	1,572.00	IN2	WCC			
			6	217498	x		714.52	714.52	IN2	WCC			
			102	616876	x		476.90	476.9	IN2	WCC			
			101	616876	x		380.50	380.5	IN2	WCC			

MANAGEMENT ISSUES, POLICIES, TARGETS, ACTIONS AND MEASURES – HERITAGE MANAGEMENT IN BUSHLAND

			7	217498	x		15.05	15.05	IN2	Ausgrid		
			5	217498	x		259.25	259.25	IN2	WCC		
			Road reserve			x	224.50		IN2		Lower Gibbes St	
			Various			x	54.51		IN2	Private	Eastern Valley Way	380
			11	1100154		x	24.68		IN2	Private	Eastern Valley Way	382
			Various			x	14.15		IN2	Private	Lower Gibbes St	175
			unknown			x	70.31		IN2			
			Various			x	22.62		IN2	Private	Lower Gibbes St	72-74
<b>Talus Street Reserve</b>	Naremburn	<b>0.8338</b>	23	819565	x		4001.00	4,001.00	RE1	WCC		
			7304	1142941		x	4337.00	15,300.00	RE1	Crown		
<b>The Quarterdeck</b>	Middle Cove	<b>0.0947</b>	89	27625	x		417.33	417.33	RE1	WCC		
			Road reserve				530.00					
<b>Torquay Estate Reserves (Sugarloaf Point)</b>	Edinburgh Rd Castlecrag	<b>0.5327</b>										
			Unknown	8856	x		66.90	66.9	E2	WCC	Edinburgh Rd	361
			6	8856	x		600.71	600.71	E2	WCC	Edinburgh Rd	365
			3	8856	x		562.77	562.77	E2	WCC	Edinburgh Rd	345
			40	6689	x		1074.95	1074.95	E2	c/c WCC (Roads)	The Tor Walk	1A
			39	6689	x		1112.89	1112.89	E2	c/c WCC (Roads)	The Tor Walk	1A
			Road reserve				1909.00		E2		Edinburgh Rd	308
<b>Tower Reserve</b>	<i>See Embrasure Reserve</i>											
<b>Turrett Reserve</b>	The Rampart Castlecrag	<b>0.1853</b>	2	431029	x		1852.70	1852.70	RE1	WCC	The Rampart	33
<b>Twemlow Lane Reserve (Coolawin Road Reserve)</b>	Coolawin Rd Northbridge	<b>0.0643</b>	Road reserve			x	642.90	642.90	E2		Coolawin Rd	55/57
<b>Warners Park</b>	The Outpost Northbridge	<b>3.0580</b>	92	20195		x	13170.00	21,663.33	RE1	WCC		
			241	17102	x		632.32	632.32	RE1	WCC		
			242	17102	x		619.67	619.67	RE1	WCC		
			243	17102	x		486.89	486.89	RE1	WCC		
			B	382703		x	751.60	1,024.36	RE1	WCC		
			202	17102	x		796.72		E2	WCC		
			198	17102	x		746.14		E2	WCC		
			244	17102	x		777.76		E2	WCC		
			199	17102	x		758.79		E2	WCC		
			200	17102	x		708.20		E2	WCC		
			201	17102	x		784.08		E2	WCC		
			205	17102	x		859.96		E2	WCC		
			1	383723	x		8150.62		E2	WCC		
			1	437641		x	702.00	1062.3	RE1	WCC		

MANAGEMENT ISSUES, POLICIES, TARGETS, ACTIONS AND MEASURES – HERITAGE MANAGEMENT IN BUSHLAND

			1	1148039	x		130.50		E2	LGA s.50		
			2	1148039	x		136.40		E2	LGA s.50		
			Pathway		x		138.80		RE1		Moratai Cr	
			Creek				230.00		RE2			
<b>Watergate Reserve</b>	The Outpost Northbridge	<b>8.1762</b>	7	19761		x	457.00	1,808.44	E2	Private	Rockley St	2
			6	19761		x	474.00	2,004.46	E2	Private	Rockley St	4
			5	19761		x	470.00	2,238.42	E2	Private	Rockley St	6
			43	717679	x		499.60	499.6	E2	Minister	Rockley St	8A
			3	19761		x	437.00	2,744.27	E2	Private	Rockley St	10
			2	19761		x	500.00	2,839.12	E2	Private	Rockley St	14
			A	403621	x		64750.00	64,750.00	E2	WCC		
			1	1120440	x		727.20	727.2	E2	LGA s.50		
			1	811167	x		1602.00	1,602.00	E2	Minister		
			111	597058		x	450.00	1,165.00	E2	Private	Noonbinna Cr	35
			3	633432	x		935.00	935	E2	WCC		
			1	7615	x		910.54	910.54	E2	Water		
			2	7615	x		556.44	556.44	E2	WCC		
			3	7615	x		556.44	556.44	E2	WCC		
			4	7615	x		556.44	556.44	E2	WCC		
			21	7615		x	288.00	505.86	E2	Private	Noonbinna Cr	45
			20	7615		x	228.00	537.47	E2	Private	Noonbinna Cr	45
			19	7615		x	243.00	588.06	E2	Private	Noonbinna Cr	43
			18	7615		x	307.00	682.91	E2	Private	Noonbinna Cr	43
			16	7615		x	364.00	859.96	E2	Private	Noonbinna Cr	41
			17	7615		x	295.00	765.11	E2	Private	Noonbinna Cr	41
			1	811167	x		1602.00	1,602.00	E2	Minister		
			Road reserve				1368.00		E2		Parker St	
			Road reserve				280.00		E2		The Palisade	
			Road reserve				115.00					
			Estuarine				1106.00					
			Creek				1684.00		E2			
<b>Warrane Place Road Closure</b>	Castle Cove	<b>0.0715</b>	Road reserve				715.20		RE1			
<b>Willis Park</b>	Eastern Valley Way Middle Cove	<b>6.8360</b>	2	832661	x		40410.00	40,410.00	E2			
			28	1130491		x	23900.00	43,890.00	E2			
			Creek				4050.00		E2			
<b>Lane Cove River National Park in Willoughby LGA</b>	Millwood Ave Chatswood West	<b>8.7956</b>	139	14799	x		967.45	967.45	E1	NPWS		
			140	14799	x		872.60	872.6	E1	NPWS		

MANAGEMENT ISSUES, POLICIES, TARGETS, ACTIONS AND MEASURES – HERITAGE MANAGEMENT IN BUSHLAND

			144	1185884	x		736.10	736.1	E1	NPWS		
			145	1185884	x		205.41	205.41	E1	NPWS		
			146	1185884	x		30.01	30.01	E1	NPWS		
			147	1185884	x		167.15	167.15	E1	NPWS		
			148	1185884	x		333.34	333.34	E1	NPWS		
			7301	1157272	x		27466.00	27,466.00	E1	Crown		
			2	32292	x		36220.00	36,220.00	E1	NPWS		
			1	71067	x		14669.85	14,669.85	E1	NPWS		
			River edge				6288.30		E1	NPWS		
<b>Total incl. National Park</b>		<b>343.0416</b>										