

# Part 2 Draft Implementation Plan

## Yellagonga Integrated Catchment Management Plan 2009 – 2014



2009 - 2014

Many groups and individuals have contributed valuable ideas, information and effort in the Yellagonga Integrated Catchment Management planning process and the Cities of Joondalup and Wanneroo would like to thank the following and gratefully acknowledge their contributions:

Project Management Group (PMG)  
Community Reference Group (CRG)  
Technical Working Group (TWG)  
Friends of Yellagonga (FoY)  
The former Yellagonga Catchment Group (YCG)  
Department of Environment and Conservation (DEC)  
DEC Yellagonga Regional Park Community Advisory Committee (DEC YRP CAC)

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## Acronyms

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CSIRO	Commonwealth Scientific and Industrial Research Organisation
CoJ	City of Joondalup
CoW	City of Wanneroo
DEC	Department of Environment and Conservation
DoW	Department of Water
ECU	Edith Cowan University
ICM	Integrated Catchment Management
CRG	Community Reference Group
TWG	Technical Working Group
CCW	Conservation Category Wetland
DPI	Department of Planning and Infrastructure
DEC	Department of Environment and Conservation
FoY	Friends of Yellagonga
WAPC	Western Australian Planning Commission
WSUD	Water Sensitive Urban Design

## Executive Summary

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Yellagonga Regional Park is one of eight regional parks within the Perth Metropolitan area and lies on the Swan Coastal Plain located approximately 20km north of Perth. Yellagonga Regional Park consists of a wetland chain including, from north to south, Lake Joondalup, Beenyup Swamp, Walluburnup Swamp and Lake Goollelal (Yellagonga Regional Park Management Plan, 2003-2013).

The Park's catchment includes a diverse range of land uses all of which can impact on the Park. The Cities of Joondalup and Wanneroo, the Department of Environment and Conservation and various community groups, recognise that land use practices in the surrounding catchment from both past and present activities can have detrimental impacts on the wetlands of the Yellagonga Regional Park. Impacts include water quality and quantity entering the wetlands and threats to the ecological integrity and biodiversity of the Park.

In order to maintain and enhance the amenity, recreational, educational, scientific, and conservation values of Yellagonga Regional Park, for present and future generations, the Yellagonga Integrated Catchment Management Plan (Yellagonga ICM Plan) has been developed to provide a comprehensive and integrated approach to managing the Park. The Plan has been developed following important consultation with and guidance from a Community Reference Group and Technical Working Group.

Part 1 of the Yellagonga ICM Plan document provides a community and technical report on the research and information collected during the two-year planning process. It provides a current state analysis assessment of both the Park and catchment, and to this end, provides an historical record for future generations. Part 2 provides an implementation plan and the projects to be implemented in the catchment to mitigate the key threatening processes and issues identified affecting Yellagonga Regional Park.

The Yellagonga integrated catchment management planning process represents a commitment by State and local governments, community and stakeholder groups to ensure the long-term management and health of Yellagonga Regional Park. This project was jointly funded by the adjoining cities of Joondalup and Wanneroo to provide an holistic, strategic and long term management of the Park. This has been achieved by understanding and identifying the key processes and activities occurring within the catchment that are, or have the potential to, impact detrimentally on the Park, and to develop projects across the catchment to mitigate key threatening processes.

Review of the literature identified a range of threats to the long-term viability of the Yellagonga Regional Park, including those from the wider catchment, and within the Park itself. Impacts from urbanisation and past land use within the catchment were identified as the key threats that underpinned a number of other threatening processes, and require immediate consideration.

Community consultation identified the key threats to address in the Yellagonga ICM Plan as being:

1. Contaminants
2. Inappropriate Infrastructure
3. Urbanisation
4. Climate Change and Hydrology
5. Weeds
6. Impact of Introduced Animals and Pets
7. Lack of Community Education and Awareness
8. Inappropriate Fire Regimes
9. Vandalism and Rubbish Dumping
10. Habitat Destruction and Fragmentation
11. Lack of understanding of Fauna Populations
12. Disease

To achieve significant gains across the catchment, and control the impacts of key external threats to the Yellagonga Regional Park, key projects were identified for implementation in the first five years of integrated catchment management for the Park. Projects were designed to encompass the full range of key focus areas to address priority community concerns for the Park.

Key catchment projects include retrofitting of the Wangara Sump, significant community education, stormwater management plans to guide improved urban water management, and strategic planning and policy development to ensure future urban development in the Yellagonga Catchment reflects and enhances the Park environment.

## 1.0 Introduction

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It has been estimated that more than 70 percent of wetlands on the Swan Coastal Plain have been destroyed in the last 100 years as a result of urban activities and primary production (Halse, 1988). For wetlands that remain, there is a great need and urgency to manage and protect these wetlands, for present and future generations, and for the flora and fauna that are a vital part of these ecosystems. Yellagonga Regional Park (henceforth referred to as “the Park”) is one of eight regional parks within the Perth Metropolitan area and lies on the Swan Coastal Plain located approximately 20km north of Perth. The Park consists of a wetland chain including, from north to south, Lake Joondalup, Beenyup Swamp, Walluburnup Swamp and Lake Goollelal (Yellagonga Regional Park Management Plan, 2003-2013).

The wetland chain within the Park (lakes and swamps), have been identified as Conservation Category Wetlands (CCW) (Hill *et al.*, 1996). This management category identifies these wetlands as high priority and most valuable wetlands that support a high level of ecological integrity (Waters and Rivers Commission, 2001). The wetlands are protected under the States *Environmental Protection (Swan Coastal Plains Lakes) Policy 1992* and the Park is recognised under the Western Australian Planning Commission’s (WAPC) Bush Forever program (Bush Forever Site 299).

The Park is predominantly managed by the Department of Environment and Conservation (DEC), and the Cities of Joondalup and Wanneroo (the boundary of which passes through these wetlands). Land tenure is also vested in the Conservation Commission of Western Australia and the Western Australian Planning Commission, however, the overall integrated management of the Park, is currently administered by the DEC (Figure 2). There is a small portion of land that remains privately owned within the Park with individual landholders responsible for the management of their own property (Yellagonga Regional Park Management Plan, 2003-2013). In addition, there are many community groups, including Aboriginal groups, who have input into the management of the Park.



**Figure 1.** The Park lies within the Perth Metropolitan area on the Swan Coastal Plain, and is located approximately 20km north of Perth (DEC, Yellagonga Regional Park Management Plan 2003-2010).



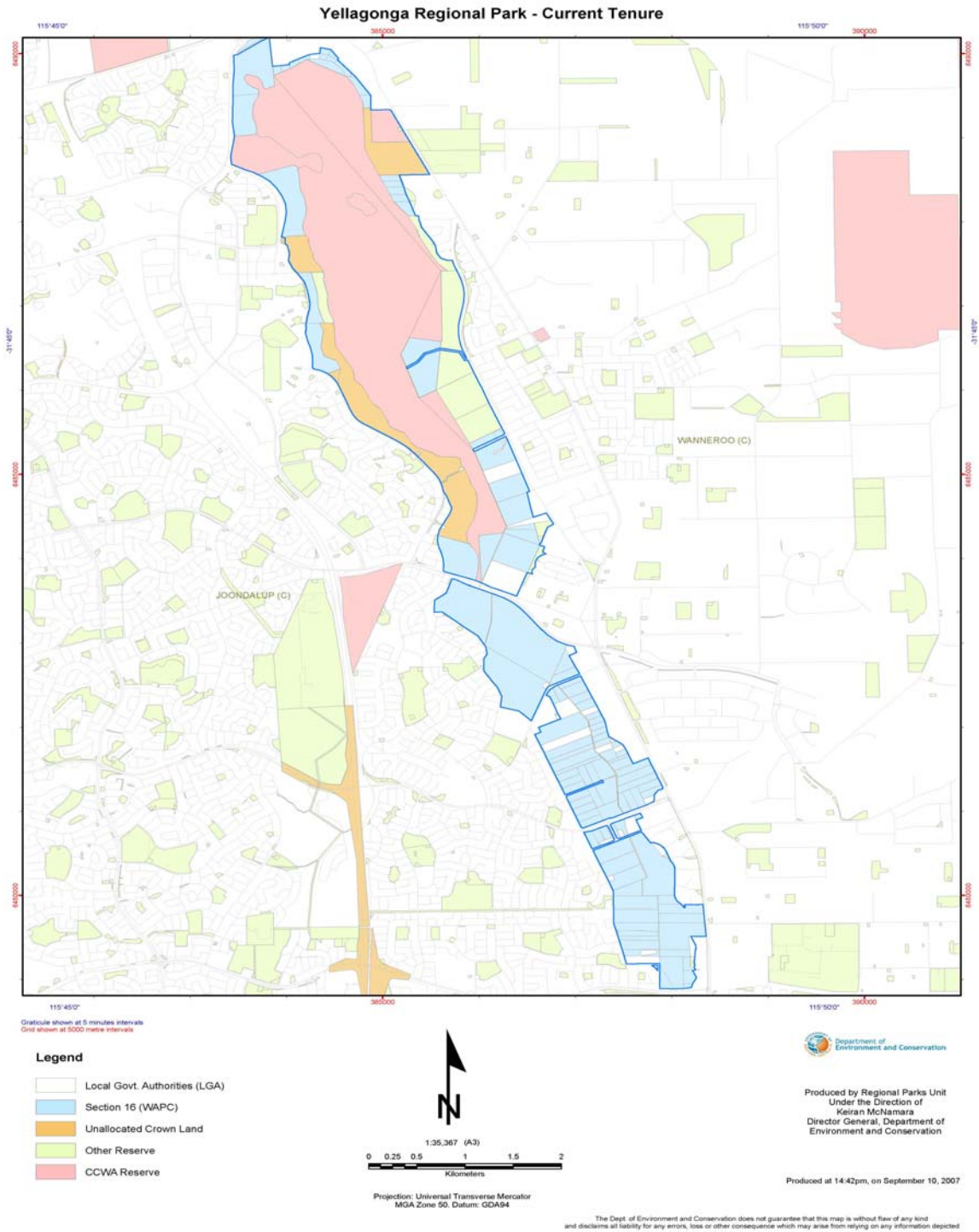


Figure 2. Land tenure in Yellagonga Regional Park.

The City of Wanneroo, in particular, is a rapidly growing urban area with the population in the northwest corridor expected to reach more than 429,000 by 2031 (WAPC, Appendix 5, 2001-2031). Urbanisation results in a highly modified natural landscape; with the catchment of Yellagonga Regional Park being no exception. The catchment has a diverse range of land uses comprised of residential developments, market gardens, aged care, grassland and playgrounds, orchards and poultry farms, horse agistment, pine tree lots and various commercial developments (car yards, service stations, shopping centres etc), all of which can impact on the Park.

The Cities of Joondalup and Wanneroo, the Department of Environment and Conservation and various community groups, recognise that past and present land use practices in the Yellagonga catchment can have detrimental impacts on water quality and quantity entering the wetlands of the Park, and threaten the ecological integrity and biodiversity of the Park. In order to maintain and enhance amenity, recreational, scientific, educational and conservation values of the Park for present and future generations, an Integrated Catchment Management Plan has been developed to provide a comprehensive and integrated approach to managing the Park.

## 2.0 Yellagonga Integrated Catchment Management Plan

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### 2.1 Background

The Department of Environment and Conservation (DEC) and the Cities of Joondalup (CoJ) and Wanneroo (CoW) share the management of the Park's wetlands. The overall health of these wetlands though, is dependent on the nature and state of the surrounding catchment. Due to previous and changing land use with rapid urbanisation, environmental problems are being experienced in the Park's wetlands and are impacting on local residents, causing algal blooms and midge swarms.

An urban catchment has diverse values associated with it - economic, natural, recreational, and cultural - with natural systems within the catchment having to absorb a number of uses associated with these values. Any land use will impact to some extent on the quality and quantity of water entering the Park's wetlands, as well as impacting on floristic and faunal communities within the Park. Integrated Catchment Management (ICM) is about balancing use of the land, water and biological resources within a catchment, in a sustainable manner, by encouraging co-operation and co-ordination at all levels of government, in collaboration with the whole community on management of these resources (Bunny and Mouritz, 1995).

The Yellagonga Regional Park Management Plan 2003-2010, developed by the Department of Environment and Conservation and the Cities of Joondalup and Wanneroo, was produced "*to provide broad direction for the protection and enhancement of the conservation, recreation and landscape values of Yellagonga Regional Park*". One of the 'High Priority' strategies proposed in the management plan, was the preparation of an integrated catchment management plan which was to be consistent with the overall direction of the Yellagonga Regional Park Management Plan 2003-2013 (YRPMP, p.1-2). The Yellagonga integrated catchment management plan addresses those activities in the catchment that affect the Park, whilst management of the Park itself is guided by the Yellagonga Regional Park Management plan 2003-2013.

In recognition of the need to approach wetland health through an integrated management process, the two Cities have supported the community's drive for 'a whole of catchment approach'. In 2001, the community-based Yellagonga Catchment Group was formed to facilitate an integrated catchment management process for the Yellagonga Wetlands. The two Cities jointly funded a Catchment Co-ordinator for Yellagonga who worked to support the Community Group. In 2004-2005, the two Cities established a partnership agreement to develop the Yellagonga Integrated Catchment Management Plan (Yellagonga ICM Plan).

The Yellagonga integrated catchment management Plan (Yellagonga ICM Plan) will not achieve integrated catchment management by itself; however it is an early but strong step, towards the process of integrated catchment management.

The Plan should be regarded as a tool to enable the development and implementation of improved land and water management for the Park and its associated catchment area. Implementation of the integrated catchment management plan lies primarily with the joint Cities of Wanneroo and Joondalup including the DEC. However, management of the Yellagonga Regional Park requires commitment from other government bodies, educational institutions and local community, to work together in strong partnerships, building on the following values and principles to achieve the desired outcomes and targets in this plan.

## 2.2 Aims and Objectives

The aim of the Yellagonga ICM Plan is to provide an holistic and long-term strategic plan to improve catchment health and protect the diverse values of the Park. Understanding and identifying the key processes and activities occurring within the catchment that are, or have the potential to, impact detrimentally on the Park has been the basis of developing the Yellagonga ICM Plan and the priority projects for implementation.

The objectives of the integrated catchment management plan were to:

1. Establish an Integrated Catchment Management structure for the catchment.
2. Provide a 'snap-shot' of the current state of Yellagonga Regional Park.
3. Engage community and stakeholder groups to promote a sense of stewardship with participation in the conservation and improvement of the Park.
4. Develop programs aimed at protecting and enhancing ecological values of the Park and maintaining functional integrity of the natural systems.
5. Protect and restore biodiversity.
6. Improve water quality entering the Park's wetlands.
7. Reduce pollution entering the Park from land use activities.
8. Ensure land use activities avoid environmental degradation without compromising the ability for economic activity.
9. Enable ICM to be incorporated into strategic and local planning.
10. Produce a Strategic Report and Integrated Catchment Management Implementation Plan for the Yellagonga catchment area.

### 2.2.1 Preparation of the Yellagonga Integrated Catchment Management Plan

The development of the Yellagonga ICM Plan and associated catchment management projects involved considerable input from the community and key stakeholders. The project was initiated through a Partnership Agreement between the Cities of Joondalup and Wanneroo, who jointly funded the project.

### 2.2.2 Stakeholder involvement and community participation

There are a diversity of interests associated with the Yellagonga catchment and Regional Park – from residential landowners to those with commercial enterprises and those who use this area for personal recreation, aesthetic enjoyment, historical and cultural heritage – both Aboriginal and European, and those who appreciate the Park for its intrinsic environmental values.

In developing the Yellagonga ICM Plan, community consultation was an important part of this process. As part of the initial scoping phase, a community workshop was held in September 2007, with more than a 100 participants attending. Participants identified the values of Yellagonga Regional Park and prioritised the land and water threats and issues facing the Park. The workshop described what Yellagonga Regional Park should look like and proposed strategies as to how it could be achieved, adding other measures needed to conserve the Park. Those interested participants were invited to join as members of the Community Reference Group (CRG) to assist in the development of the Yellagonga ICM Plan (Appendix.1). These values, threats and issues were used in the development of the Yellagonga ICM Plan.

In addition to community, a second group was formed to assist in the development of the Yellagonga ICM Plan and its associated planning and consultative processes. Experts in various fields from stakeholder groups were invited to join and form a Technical Working Group (TWG). Key stakeholders included Department of Environment and Conservation (DEC), Department of Water (DoW), Edith Cowan University (ECU), Perth Region NRM (formerly the Swan Catchment Council), and the two Cities (Appendix.1).

Regular correspondence and some working group meetings occurred between the CRG and the joint Cities project team, to explore the issues that needed to be managed within the Yellagonga catchment. Further the CRG identified key areas that required attention and focus from the Cities and key stakeholders. Key stakeholders included the Department of Environment and Conservation (DEC) and the Department of Water (DoW).

A second major workshop was held in July 2008, with members of the CRG and the TWG to develop targeted management strategies to mitigate the threats and issues facing the Park.

## 2.3 Project-based Implementation

Recognising that the Yellagonga ICM Plan represents the first of a number of revised plans to achieve integrated catchment management for the Yellagonga Regional Park, the implementation plan has been designed to achieve significant gains in the first five years.

To address the priority issues in the first five years, key projects have been identified and prioritised for implementation. Projects have been designed to encompass the full range of key focus areas identified by the community and implement the larger scale action required to address the more significant threats to the Park from within the Catchment.

The Yellagonga ICM Implementation Plan highlights the key issues and focus areas, and identifies the key projects for implementation to address them. Both existing and new projects to address threats to the Yellagonga Regional Park are included and detailed within the Yellagonga ICM Implementation Plan.

Future reviews of the Yellagonga ICM Plan will assess the achievements of projects, and identify additional projects and other areas of action.

## 2.4 Structure of the Plan

The Yellagonga ICM Plan has been presented in two discrete sections to facilitate its use by different audiences.

Part 1 of the Yellagonga ICM Plan presents an introduction to the integrated catchment management planning process, and provides a detailed literature review on the threats and condition of the Yellagonga Regional Park and its catchment.

Part 2 of the Yellagonga ICM Plan provides an implementation plan, based on key projects, to address the key issues arising from literature review, developed in consultation with the community.

The Implementation Plan (section 3) identifies the key projects and threats to be addressed. More detailed briefs are provided for each key project in section 4.

## 2.5 Reporting and Review

Biennial reviews of the Yellagonga ICM Plan will identify the progress and efficacy of projects, and have the ability to adapt to emergent issues, reconsidering the priority and scope of projects to ensure major benefits for the Yellagonga Catchment are achieved in the first five years of implementation.

A major five-year review of the Yellagonga ICM Plan will identify further action needed to address additional and emergent threats in the catchment. These additional action areas will inform the subsequent incarnation of the Plan.

The two Cities will have shared responsibility for undertaking the review processes.

## 3.0 Implementation Plan

### 3.1 Vision for the Yellagonga Regional Park Catchment

The vision for the Yellagonga ICM plan was developed by members of the Community Reference Group, who have provided strong local community support and intelligence to the Yellagonga ICM planning process.

#### Vision Statement

*That activities in the catchment will support and give rise to:  
“the conservation and rehabilitation of an endemically bio-diverse, quality, and sustainably managed Regional Park with the necessary infrastructure for the enjoyment and education of the whole community.”*

### 3.2 Key Threats

Key threats are broad concepts that have been derived from an analysis process of all the issues that impact upon catchment management and were identified in the community workshop (2007) for specific action for Yellagonga Regional Park.

1. Contaminants
2. Inappropriate / Infrastructure
3. Urbanisation (Development and Planning)
4. Climate Change and Hydrology
5. Weeds
6. Impacts of Introduced Animals and Pets
7. Lack of Community Education and Awareness
8. Incidences of Inappropriate Fire Regimes
9. Incidences of Vandalism and Rubbish Dumping
10. Habitat Destruction and Fragmentation
11. Lack of understanding of Fauna Populations
12. Disease

To achieve significant catchment gains within the five-year life of the Yellagonga Integrated Catchment Management Plan, projects to address the significant threats within the Yellagonga Catchment, are to be addressed as a priority to improve the health of the park.

### 3.1 Key Projects

The Yellagonga Integrated Catchment Management - Implementation Plan is comprised of 17 key projects, set out in the table below. The implementation of these projects will contribute to the alleviation of key threats identified by the community.

Key Threats		Key Threats												
		Contaminants	Inappropriate infrastructure	Urbanisation	Climate change and hydrology	Weeds	Impact of introduced animals and pets	Lack of community education and awareness	Inappropriate fire regimes	Vandalism and rubbish dumping	Habitat destruction and fragmentation	Lack of understanding of fauna populations	Disease	
Joint Projects	Management Framework and Memorandum of Understanding													
	Water Quality Mapping and Monitoring													
	Scientific Investigations													
	Yellagonga Community Awareness Program													
	Yellagonga Eco-Tourism and Events Plan													
	Yellagonga Environment Centre – Phase 2													
	Yellagonga Lobbying Strategy													
Individual Projects	Stormwater Management Plans													
	Green Frog Stencilling Program													
	Local Biodiversity Strategy													
	City of Wanneroo Local Planning Framework													
	City of Joondalup District Planning Scheme Review													
	Contaminated Sites													
	Yellagonga Eco-Tourism and Events Plan													
	Wangara Industrial Audit													
	Conservation Maintenance Schedule													
	City of Wanneroo Water Management Strategy													
	Wangara Catchment Study													
Water Conservation Plans														

- Immediate priority – project commencement in 2009-2010**
- High priority – project commencement in 2010-2011**
- Medium priority – project commencement in 2011-2012**
- Low priority – project commencement in 2012-2013 or 2013-2014**

A number of projects are to develop specific plans for further implementation, for example Stormwater Management Plans. However, it is understood that the benefit to the catchment is derived from the implementation of these specific plans. As the plans are expected to include high cost actions such as retrofitting of stormwater infrastructure; budgeting for the implementation of specific plans once developed, will be required in order to achieve catchment gains.



## 4.0 Project Details

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### 4.1 Joint Projects

Joint projects will be undertaken in partnership between the Cities of Joondalup and Wanneroo.

#### Management Framework and Memorandum of Understanding

##### Project Description

For the Yellagonga ICM Plan to be successfully implemented, a number of key success factors need to be in place which will provide an ongoing management framework to enable projects to be initiated. The Yellagonga Integrated Catchment Management Plan will need systems and processes developed that will form the management framework. Adequate resources will need to be committed to an ongoing program of works, to which both Cities will have ongoing, shared responsibility for providing adequate resources.

##### Project Objectives

- Commitment to the resourcing and implementation of the Yellagonga Integrated Catchment Management Plan

##### Scope

The project will develop:

- A suitable management framework
- A Memorandum of Understanding between the City of Joondalup and the City of Wanneroo

##### Approach

Project deliverables will be developed through consultation between the City of Joondalup and City of Wanneroo.

##### Timeframe for Implementation

To be completed in 2009-2010.

##### Estimated Costs

Project can be undertaken within existing operational resources.

##### Responsibility

Strategic and Organisation Development (CoJ)  
Smart Growth (CoW)

## Water Quality Mapping and Monitoring Program

### New Project

#### Project Description

There are a number of water quality issues arising from groundwater and surface water inputs. These include: nutrient enrichment resulting in eutrophication, algal blooms and midge outbreaks; and toxicants such as heavy metals, petroleum products, pesticides, herbicides and industrial / household chemicals. Monitoring and mapping of water quality entering into Yellagonga wetlands is vital to our understanding of the movements and concentrations of contaminants.

#### Project Objectives

- Increase our understanding of contaminant inputs into Yellagonga wetlands
- Provide data upon which sound management decisions can be made
- Reduce number of negative incidences associated with poor water quality

#### Scope

The project will:

- Develop robust scientific monitoring and investigations of groundwater and surface water in the Yellagonga catchment and Park.
- Support scientific and education programs aimed at identifying and mitigating sources of contaminants.
- Collate, analyse and share data between managing authorities.
- Review effectiveness of programs implementing water quality strategies (eg Green frog stencilling, community education).

#### Project Partners

Department of Environment and Conservation  
Edith Cowan University

#### Approach

Project to be developed and implemented in partnership between Local Governments, Department of Environment and Conservation, Department of Water and Edith Cowan University.

#### Timeframe for Implementation

Ongoing, with recommended commencement in 2010-11.

#### Estimated Costs

The estimated cost of undertaking the project is \$50,000 per annum from each Local Government towards water quality research by Edith Cowan University from 2010-11 to 2013-14

Project commencement is subject to budget allocation by each Council in the applicable financial year.

**Responsibility**

Planning, Approvals and Environmental Health (CoJ)

Strategic and Organisational Development (CoJ)

Smart Growth (CoW)

Building and Health Services (CoW)

## Scientific Investigations

### Existing project

#### Project Description

##### *Midge and Water Quality in Yellagonga Wetlands*

Researchers from Edith Cowan University (Associate Professor Mark Lund and Doctor Clint McCullough) have commenced a number of studies to identify methods of:

- 1) Improving water quality within Lake Joondalup; and
- 2) Reducing dependence on short-term chemical treatments for the management of nuisance midge swarms.

Projects include:

- Identification of the source of nutrients into Beenyup Swamp (2007-2008)
- Monitoring of groundwater at monthly intervals over one year (2007-2008)
- Effectiveness of light traps to control summer midge populations (2007-2008)
- The role of *Chara sp.* as a midge control agent (2008-2009)
- Monitoring of Lake Joondalup water quality (2008-2009)
- Yellagonga Wetlands water quality monitoring study (2008-2009)
- Quantification of nutrients entering and leaving Beenyup Swamp over the periods of water flow (April 2009)

#### Project Objectives

- Undertake robust scientific investigations into ameliorating problems associated with poor water quality

#### Scope

The project will:

- Support scientific investigations into wetland ecology that relates to ameliorating nuisance midge swarms and algal blooms

#### Project Partners

Department of Environment and Conservation  
Edith Cowan University

#### Approach

Existing partnerships are in place between Local Government, Department of Environment and Conservation, and Edith Cowan University through the Midge Steering Group

#### Timeframe for Implementation

Ongoing, and in progress.

#### Budget

Existing operational budget through the Midge Steering Committee.

Project	Cost
Identification of the source of nutrients into Beenyup Swamp (2007-2008) (completed)	\$4,434
Monitoring of groundwater at monthly intervals over one year (2007-2008) (project unable to be undertaken at present due to disintegration of bores. New project scope being discussed)	\$28,759
Effectiveness of light traps to control summer midge populations (2008-2009)	\$13,792
The role of <i>Chara sp.</i> as a midge control agent (2008-2009)	\$1,902
Monitoring of Lake Joondalup water quality (2008-2009)	\$16,426
Yellagonga Wetlands water quality monitoring study (2008-2009)	\$11,788
Quantification of nutrients entering and leaving Beenyup Swamp over the periods of water flow (April 2009)	\$41,367

### Responsibility

Planning, Approvals and Environmental Health (CoJ)  
 Building and Health Services (CoW)

## Yellagonga Community Awareness Program

### New Project

#### Project Description

Environmental education across the community is vital to promote ownership and appreciation of the local environment. The Environmental Education Plan will develop discrete education initiatives, targeting schools, residents, and the broader community, to address key environmental issues and encourage greater environmental stewardship by the community.

#### Project Objectives

- Increase environmental awareness of the local community.
- Reduce impacts in Yellagonga Regional Park caused by misunderstanding in the community.

#### Scope

The project will develop:

- Schools program that provides local excursions and in-class activities for local schools, including the Green Frog Stencilling Program
- Business awareness program, that provides information and links to accreditation programs, for operators in the Yellagonga Catchment, including Keep Australia Beautiful “Clean Sites Program” for building projects, and “Green Stamp Approval”.
- Greener Gardens program, that utilises seminars, incentives, and printed information to encourage native landscaping and reduce fertiliser use in residential gardens
- Rain Gardens program, that encourages residents to modify their verges into Rain Gardens for enhanced water quality outcomes
- Marketing campaign, in conjunction with Water Corporation, to encourage decommissioning of septic tanks
- “Responsible pet ownership” marketing campaign
- “Yellagonga Regional Park” information brochure
- “Park Friends on Bikes” program
- Community “firewatch” program for Yellagonga Regional Park and Catchment
- Disease awareness program, particularly focusing on *Phytophthora*, encouraging residents to modify their behaviours to prevent its introduction into the park or spread throughout the catchment

#### Project Partners

Department of Environment and Conservation Regional Parks Branch

#### Approach

The project will be implemented within City of Joondalup by a dedicated 0.5FTE YICM Project Officer in partnership other key stakeholders. Within the City of

Wanneroo, implementation will be based on future staff resources being available.

**Timeframe for Implementation**

Ongoing. Project implementation to commence in City of Joondalup in 2009-10. Project is recommended to commence in City of Wanneroo in 2010-11.

**Estimated Cost**

The estimated cost of completing the project is appropriate staff resources to develop and implement YICM projects.

The materials budget will be determined by a Plan developed in the first year of implementation.

Project implementation is subject to budget allocation by each Council in the applicable financial years.

**Responsibility**

Strategic and Organisational Development (CoJ)

Community Development and Libraries (CoJ)

Smart Growth (CoW)

## Yellagonga EcoTourism and Events Plan

### New Project

#### Project Description

As part of increasing community appreciation of Yellagonga Regional Park, and highlighting catchment issues impacting on the Park, programs need to be developed which encourage community participation and education.

#### Project Objectives

- Increase community awareness and understanding of issues affecting Yellagonga Regional Park.
- Increase community appreciation and enjoyment of Yellagonga Regional Park.
- Hold key events in Yellagonga Regional Park.
- Engage Aboriginal Elders and youth in key cultural events.
- Seek funding.
- Produce positive changes in community behaviour and attitudes.

#### Scope

The project will:

- Identify key tourism features of Yellagonga Regional Park.
- Develop an Eco-Tourism Strategy.
- Develop a Marketing Strategy to promote Yellagonga Regional Park.
- Develop a program for holding key-events in Yellagonga Regional Park.
- Seek funding to promote and run events in Yellagonga Regional Park.
- Support Key Aboriginal events in the Park on an annual basis, such as “Sorry Day” and story-telling by elders.
- Work with the Northern Suburbs Reconciliation Group (NSRG) to develop ongoing guided tours promoting Aboriginal culture of Yellagong Regional Park.
- Develop catchment tours to highlight threats and issues.

City of Joondalup, through the ICLEI Local Action for Biodiversity project, is developing the Yellagonga Biodiversity and Cultural Heritage Research Project. The project aims to produce a catalogue of information about the Indigenous biodiversity of Yellagonga Regional Park. The project will focus on gaining a greater understanding of the lifestyle and heritage of the former Noongar people. The project will include an on-ground assessment including identification, mapping and interpretation of Indigenous sacred sites, significant indigenous plant species and provide a summary of what they mean to the Noongar people and how they were used.

#### Project Partners

Department of Environment and Conservation



**Approach**

The project will be implemented within City of Joondalup by a dedicated 0.5FTE YICM Project Officer. Within the City of Wanneroo, implementation will be based on future staff resources being available.

**Timeframe for Implementation**

Ongoing, with recommended commencement of the program in 2012-2013

**Estimated cost**

The estimated cost of completing the project is appropriate staff resources to develop and implement YICM projects.

Project commencement is subject to budget allocation by each Council in the applicable financial years.

**Responsibility**

Strategic and Organisation Development (CoJ)

Governance and Marketing(CoJ)

Marketing (CoW)

Smart Growth (CoW)

## Yellagonga Environment Centre – Phase 2

### Existing Project (New Phase)

#### Project Description

A feasibility study was undertaken in 2007, by the consultants Gresley Abas Architects and Evolve Solutions, for the Cities of Wanneroo and Joondalup, to assess the establishment of an Environment Centre within Yellagonga Regional Park. The purpose of the study was to assess the needs, benefits and support for an Environment Centre by the community; and to provide a concept masterplan.

Four sites were short-listed and included: Luisini Winery, Scenic Drive, Perry's Paddock and Lot 1(Joondalup). Lot 1 (Joondalup) and Scenic Drive (Wanneroo) are considered the most suitable locations. While costs at this stage are prohibitive for the building of the Environment Centre contributed solely by Local Government, external funding needs to be sought to develop this project into its second phase.

#### Project Objectives

- Seek funding for the development of the Yellagonga Environment Centre Phase 2.
- Confirm the location of the Environment Centre within Yellagonga Regional Park, by the two partner Local Governments.
- Establish working group to drive project, composed of Local Government and DEC representatives.

#### Scope

The project will:

- Develop a sponsorship campaign for the development of the Yellagonga Environment Centre. Establish joint Local Government and DEC Working Group to obtain funding and sponsorship to develop timeframe for the development of the environment centre.
- Establish governance and management structure appropriate for the running of the environment centre.
- Develop a business plan for the Environment Centre.

The project will not build the Environment Centre. This will be captured in a later phase. Phase 3 will develop the final architectural plans, and will be subject to a successful sponsorship campaign.

#### Project Partners

Department of Environment and Conservation

#### Approach

The project will be implemented within City of Joondalup by a dedicated 0.5FTE YICM Project Officer. Within the City of Wanneroo, implementation will be based on future staff resources being available.

**Timeframe for Implementation**

Recommended project implementation to commence in 2011/2012.

**Estimated Cost**

The estimated cost of completing the project is appropriate staff resources to develop and implement YICM projects.

Project commencement is subject to budget allocation by each Council in the applicable financial year.

**Responsibility**

Strategic and Organisational Development (CoJ)  
Smart Growth (CoW)

## Yellagonga Lobbying Strategy

### New Project

#### Project Description

The Department of Environment and Conservation have a responsibility to manage areas of regional parks that are vested in the Conservation Commission of Western Australia. This includes overall responsibility to co-ordinate management of Yellagonga Regional Park (Yellagonga Regional Park Management Plan 2003-2013). However, lack of resources presents as a direct threat to undertake required programs necessary to ensure principal management directions, including realisation of the vision and goal for the Park, are achieved.

A key role at the local government level, is to strategically and effectively lobby the State Government to provide sufficient resources to the DEC to enable the Department to meet their vested responsibilities for the management of the Park.

#### Project Objectives

- Development of a Lobbying strategy directed at State Government, to resource the DEC to enable effective management of Yellagonga Regional Park for its environmental and recreational values.
- Strategically lobby the State Government to achieve improved management of Yellagonga Regional Park.

#### Scope

The project will develop a strategy that will lobby the State Government to provide sufficient resources for DEC to:

- Develop and implement a Fauna Management Plan
- Develop and implement a soil, flora and fauna survey regime
- Implement Regional Parks Pest and Problem Animal Control Plan
- Develop strategies to minimise road mortality / injury of Park fauna
- Installation of more observation platforms and signage to enhance appreciation of the Parks natural values
- Review gazetted dog exercise areas
- Reduce unauthorized vehicle access
- Review and implement Weed Control and Revegetation Plan
- Reduce incidences of vandalism and rubbish dumping
- Reduce incidences of inappropriate fire regimes
- Develop a management plan for flora and fauna disease prevention and control in the Park.
- Develop an Acid Sulfate Soil Management Plan for Yellagonga Regional Park.

**Approach**

The project will be implemented within City of Joondalup by a dedicated 0.5FTE YICM Project Officer. Within the City of Wanneroo, implementation will be based on future staff resources being available.

**Timeframe for Implementation**

Recommended commencement in 2009-2010.

**Estimated cost**

The estimated cost of completing the project is appropriate staff resources to develop and implement YICM projects.

Project commencement is subject to budget allocation by each Council in the applicable financial year.

**Responsibility**

Strategic and Organisational Development (CoJ)  
Smart Growth (CoW)

## 4.1 Individual Projects

Individual projects may not be relevant to both Local Governments, or the nature of the project lends itself to specific implementation by individual municipalities, therefore shall be undertaken individually as required.

Project briefs identify which City is responsible for the implementation of projects.

### Stormwater Management Plans

#### City of Wanneroo

New project

To be implemented for all stormwater catchments within Yellagonga Catchment located within the City of Wanneroo.

#### City of Joondalup

New project

To be implemented for any stormwater catchments located within the City of Joondalup within Yellagonga Catchment where retrofitting has not occurred or stormwater may be affecting the wetland system; there are no direct outflows from Joondalup to wetlands, however there may be potential for groundwater input via sumps in some areas of the catchment, which must be discounted.

#### Project Description

Urbanisation has resulted in many impervious surfaces, with traditional piped drainage networks and altered topography, which has significantly changed the natural hydrological regime in Yellagonga Wetlands. The direct discharge of stormwater into wetlands via piped outfalls is considered to be an on-going source of pollution into these systems. Some drainage sub catchments consist of potentially greater polluting land uses than others, such as industry, poultry farming and horticultural practices.

Producing a Stormwater Management Plan is primarily a City of Wanneroo imperative. The City of Joondalup has recently completed an upgrade of all its outfalls in Lake Joondalup. Although the City of Joondalup sumps are not being targeted as a priority for upgrading, as they are installed upstream in the high embankments and collect water away from the lake, their upgrading is proposed in the future to improve biofiltration.

The Yellagonga ICM Plan has detailed many of the early elements required in the development of a Stormwater Management Plan for the Yellagonga catchment. These include:

- a) Stakeholder involvement and analysis of sub-catchments.
- b) Identification of catchment characteristics, condition and practises.

- c) Identification of the values of the receiving environment -Yellagonga Regional Park.
- d) Identification of the stormwater threats.
- e) Identification of priority sub-catchments for upgrade.

A formal and detailed document is now required to complete this process and the remaining steps are outlined below.

#### **Project Objectives**

- Manage quality and quantity of stormwater in the Yellagonga catchment, prior to reaching Yellagonga wetlands.
- Protect Yellagonga wetlands from contaminants.
- Upgrade all appropriate infrastructure in the catchment to effectively manage water quality and quantity.

#### **Scope**

The project will produce a Stormwater Management Plan for each sub-catchment within the Yellagonga catchment following the process outlined in the Stormwater Management Manual for Western Australia, (*Department of Water, 2004-2007*). Each Stormwater Management Plan will:

- Identify management objectives
- Review current stormwater management operations in Australia and overseas
- Prepare a priority issues paper
- Identify the management options
- Develop management actions
- Prepare an Implementation Plan

#### **Approach**

Stormwater Management Plans will be developed by external consultants.

#### **Timeframe for Implementation**

Project implementation is recommended to commence in 2010-11.

#### **Estimated cost**

The estimated cost of undertaking the project is \$40,000 to develop a specific Stormwater Management Plan for a single sub-catchment.

Capital works costs for retrofitting required would be identified in the development of Stormwater Management Plans.

Project commencement is subject to budget allocation by each Council in the applicable financial year.

#### **Responsibility**

Infrastructure Management Services (CoJ)  
Infrastructure Projects (CoW)

## Green Frog Stencilling Program

### City of Joondalup

Existing project

### City of Wanneroo

New project

### Project Description

The Green Frog-Stencilling Project is a joint community project between the City of Joondalup and the Friends of Yellagonga Community Group. The City of Wanneroo is currently investigating the take-up of this project. The project is a pilot project and for the City of Joondalup, has been linked to upgrade of outfalls undertaken by the City of Joondalup around Lake Goollelal in 2008/09.

The project involves the stencilling of three 'green frogs' on the kerb at every drainage inlet point on roads where stormwater directly drains into Yellagonga Regional Park & is accompanied by an information brochure that is distributed to all homes in the near vicinity of the drainage point. The road network boundaries for the project will involve all roads in the surface water catchment of Yellagonga Regional Park. At present, only roads on the City of Joondalup side are being targeted, and include the western margin of the surface water catchment from Burns Beach Road in the north to Hepburn Avenue in the south.

Within the City of Wanneroo, opportunities to engage community groups in implementation of the Green Frog project in local schools is to be explored.

### Project Objectives

- Increase community awareness about the issues faced by the Yellagonga wetlands and its connection to stormwater drainage and runoff.
- Highlight how the road network is connected to the stormwater network, through innovative education and signage.
- Encourage responsibility by community to ensure local wetlands are conserved.

### Scope

The project will:

- Involve the local community and in particular the youth of Wanneroo and Joondalup in actively participating in an on-ground project to support both cities with their overall stormwater management strategy for the Yellagonga Regional Park.
- Provide community information and education to the local community to broaden their knowledge about how their local behaviours can impact on the health of local wetlands.
- Develop a strategic approach and model for other Local Authorities to implement.



- Result in the stencilling of Green Frogs on all drains throughout the catchment

### **Approach**

#### *City of Joondalup*

Implementation of the project has been undertaken by local schools within the City of Joondalup through the “Give 20 Program.” The program is where all school students are now required to complete 20 hours of volunteer work within their community before they can graduate (usually undertaken from years 10-12). The City of Wanneroo is planning to commence this project using a similar approach to that of the City of Joondalup. The project will continue until all the drains in the catchment are stencilled.

#### *City of Wanneroo*

Opportunities are to be explored through the Environmental Advisory Committee to involve community representatives and groups in implementing the project within local schools.

### **Timeframe for Implementation**

#### *City of Joondalup*

The project has commenced.

#### *City of Wanneroo*

The project is recommended to commence in 2010-11.

### **Estimated cost**

The estimated cost of implementing the project is \$10,000 for project materials.

Project commencement is subject to budget allocation by each Council in the applicable financial year.

### **Responsibility**

Community Development and Libraries (CoJ)

Conservation Maintenance (CoW)

## Local Biodiversity

### City of Wanneroo

Existing project

### City of Joondalup

Existing project

### Project Description

#### *City of Wanneroo*

The City of Wanneroo's Local Biodiversity Strategy will aim to integrate biodiversity protection into local planning processes. The draft strategy has identified biodiversity planning precincts based on land use and specific mechanisms to improve biodiversity protection within those precincts.

The Yellagonga Catchment largely urbanised, however, a number of mechanisms are proposed which will also improve biodiversity in Yellagonga Regional Park, including:

- Effective management of existing POS for conservation of biodiversity value, and
- Development of an urban nature corridor program to improve and maintain biodiversity links to and from Yellagonga Regional Park from other local conservation reserves and regional open spaces.

The development of a nature corridor program will also help produce a network of links across Wanneroo and ensure that ecological linkage and function is maintained between the various sections of Yellagonga Regional Park.

#### *City of Joondalup*

The City of Joondalup is participating in the ICLEI Local Action for Biodiversity program, under which they have produced a Biodiversity Action Plan (BAP) 2009-2019. The BAP includes several on-the-ground projects, one of which is: Creating Native Gardens to Build Biodiversity.

The City of Joondalup has developed a concept design that will be applied to the City's seven major arterial roads that connect the coastline in the west to the wetlands in the east. The concept design will incorporate water sensitive urban design and will replicate the progression of indigenous flora that exists within the different west-east biodiversity zones of the City.

### Project objectives

- To reduce water consumption through the creation of natural gardens from local native species.
- To introduce local endemic species so as to showcase the original species of the Swan Coastal Plain.
- To provide the community with a highly visible reference point for raising the awareness of local biodiversity and water wise garden design.
- To create biodiversity linkages between the western coastline and the eastern wetlands.

**Approach**

Project will be implemented by internal officers at the respective Cities.

**Timeframe for Implementation**

Ongoing, and in progress at both Cities.

**Estimated cost**

Project can be undertaken within existing operational resources.

**Responsibility**

Strategic and Organisational Development (CoJ)

Smart Growth (CoW)

## Local Planning Framework

### City of Wanneroo

New project

### Project Description

A Local Planning Framework is required to ensure development is suited to the local environment. The Local Planning Framework will develop a suite of local planning policies that will integrate key environmental policy statements to guide development and land use.

### Project Objectives

- Achieve sustainable development and use of land across the City of Wanneroo
- Formalise policy statements and positions to guide land use planning and provide certainty to developers and users of land

### Scope

The Local Planning Framework will develop:

- Zone specific policies (including Environmental Management on Special Rural Lots Policy).
- Use specific local planning policies (including Cleaner Production and Pollution Prevention Policy and Animal Based Industries Policy)
- Strategic growth management policies (including Tree Retention Policy, Wetland Policy, Water Management Planning Framework)
- General planning policies
- Place specific policies

### Approach

A Local Planning Framework shall be developed in house by the City's strategic planners

### Timeframe for Implementation

In progress.

### Estimated Cost

The estimated cost of undertaking the project would be incorporated within existing operational budgets.

### Responsibility

Smart Growth

## District Planning Scheme Review

### City of Joondalup

Existing project

### Project Description

The *Planning and Development Act 2005* requires local governments to review their Town Planning Schemes once every five years. The City of Joondalup is currently undertaking a complete review of the District Planning Scheme. The review will consider any environmental and conservation issues associated with the interface with the Yellagonga Regional Park, and will reflect contemporary planning issues and trends.

### Project Objectives

- To develop and implement a new planning scheme for the City which sets a high standard of quality for future development.

### Project Scope

The development of a new Scheme and a Local Planning Strategy has the following requirements:

- A requirement to be consistent with the Metropolitan Region Scheme which is adopted by the State Government;
- A need to comply with Statements of Planning Policy and other State Government planning initiatives including Bush Forever; and
- The need to obtain support from the Minister for Planning before an LPS can be implemented and a new Scheme adopted.

The Project will deliver:

- A Local Planning Strategy
- A new District Planning Scheme No. 3 scheme and maps
- A Local Housing Strategy

### Approach

Local Planning Strategy and District Planning Scheme shall be developed for each local government by internal Strategic Planning teams.

### Timeframe for Implementation

July 2010

### Estimated Cost

The estimated cost of undertaking the project would be incorporated within existing operational budgets

### Responsibility

Planning, Approvals and Environmental Services (CoJ)

## Contaminated Sites

### City of Wanneroo

New project

*(No potentially contaminated sites owned by the City of Joondalup are listed within the Yellagonga Catchment).*

### Project Description

Some previous and existing landuses may result in contamination of soils throughout the Yellagonga catchment. For example, the previous use of persistent pesticides, or inappropriate disposal of industrial compounds. Potential exists for contaminants to migrate through soils, entering groundwater. To date, one site owned by the City of Wanneroo has been classified as “*Possibly contaminated, investigation required*” in the Yellagonga catchment, and is the site of an old landfill in Motivation Drive, Wangara. Other suspected sites in the Yellagonga catchment on the Wanneroo side are yet to be classified by the DEC.

Site investigations are required for those properties owned or managed by the City of Wanneroo that have been classified as possibly contaminated.

### Project Objectives

- Identify any contaminated sites owned or managed by local government in the Yellagonga catchment
- Remediate City-owned or managed contaminated sites in the Yellagonga Catchment

### Scope

- Collate classification of City owned or managed potentially contaminated sites in the Yellagonga catchment
- Engage consultants to conduct sampling and analysis of contaminated sites classified by the DEC requiring further investigation.
- Develop plans for remediation works if necessary

### Approach

Consultants will be engaged as required to undertake site investigations of potentially contaminated sites.

### Timeframe for Implementation

Recommended commencement in 2011-12.

### Estimated cost

Costs are dependant on the extent and nature of any contaminated sites. Remediation of contaminated sites is a legislative requirement of the *Contaminated Sites Act 2006*.

Project commencement is subject to budget allocation by the CoW in the applicable financial year.

### Responsibility

Contracts and Property (CoW)

## Acid Sulphate Soils

### City of Wanneroo

New project

### City of Joondalup

New project

#### Project Description

Some previous and existing land uses may result in contamination of soils throughout the Yellagonga catchment. For example, the previous use of persistent pesticides, or inappropriate disposal of industrial compounds. Potential exists for contaminants to migrate through soils, entering groundwater. To date, one site owned by the City of Wanneroo has been classified as “*Possibly contaminated, investigation required*” in the Yellagonga catchment, and is the site of an old landfill in Motivation Drive, Wangara. Other suspected sites in the Yellagonga catchment on the Wanneroo side are yet to be classified by the DEC.

Site investigations are required for those properties owned or managed by the City of Wanneroo that have been classified as possibly contaminated.

#### Project Objectives

- Identify any extent of disturbed acid sulphate soils in the Yellagonga Catchment
- Develop management strategies to manage impact of any disturbed acid sulphate soils on Yellagonga Regional Park

#### Scope

The project will:

- Undertake reconnaissance to identify any likely areas of acid sulphate soil disturbance in the Yellagonga Catchment
- Assess the extent of acid sulphate soil disturbance to development management strategies
- Develop rehabilitation plans for City-managed areas where acid sulphate soils are impacting upon Yellagonga Regional Park

#### Approach

##### **City of Joondalup**

The project will be implemented within City of Joondalup by a dedicated 0.5FTE YICM Project Officer.

##### **City of Wanneroo,**

Implementation will be based on future staff resources being available.

Consultants will be engaged as required to develop rehabilitation plans.

#### Timeframe for Implementation

Recommended commencement in 2013-2014.

**Estimated cost**

Costs are dependant on the extent and nature of any contaminated sites. Remediation of contaminated sites is a legislative requirement of the *Contaminated Sites Act 2006*.

Project commencement is subject to budget allocation by each Council in the applicable financial year.

**Responsibility**

Infrastructure Maintenance (CoW)

Strategic and Organisational Development (CoJ)



## Wangara Industrial Audit

### City of Wanneroo

#### Existing Project

#### Project Description

Both the Wangara Industrial Estate Survey Report (Gumina and North Metro Catchment Group, 2005) and the water quality monitoring data from the Wangara Sump (North Metro Conservation Group and DoW, 2006), highlight the need for proactive inspections and further development of intervention strategies to manage and monitor the storage and waste practices of the Wangara Industrial Area.

The former Swan Catchment Council (SCC), now known as the Perth Region NRM Inc, offered the opportunity to be involved in their industry audit program. The program commenced in July 2008 and is proposed to run through to the end of June 2009.

During the audit, a booklet was developed by the City of Wanneroo and the Perth Region NRM Inc, listing licensed waste contractors and recycling businesses. The booklet was presented in an easily accessed format where a waste type was highlighted and was followed by a list of contractors and their contact details. In addition, a brief note section followed, indicating whether the waste would be collected, or if bins were provided and if a contract was required with the waste contractor or not. This booklet was offered to all businesses approached by the auditor in the Wangara industrial area.

A personalised approach has been adopted, where the auditor has face-to-face contact with the business owner in a non-confrontational manner. Accepting an audit is optional for the business owner.

#### Project Objectives

- Raise levels of awareness of industry operators regarding the issue of contaminants in stormwater.
- To encourage business operators to adopt Best Management Practice in their business activities.
- Reduce the level of contaminants detected in the Wangara Sump and groundwater monitoring programs.

#### Scope

The project will:

- Advise businesses in the Wangara Industrial Area of best management practices.
- Undertake audits of the environmental practices for each business.
- Report breaches of the *Environmental Protection (unauthorized Discharges) Regulations 2004* to the City of Wanneroo.

**Approach**

A partnership agreement is in place between the City of Wanneroo and Perth NRM Region to implement the project.

The Project Officer is funded by Perth Region NRM, and hosted by the City of Wanneroo on a part-time basis.

**Timeframe for Implementation**

This project commenced in July 2008 and is due for completion in June 2009.

**Budget**

Project implementation is incorporated within the current City of Wanneroo operational budget.

**Responsibility**

Building and Health Services  
Smart Growth

## Conservation Maintenance Schedule

### City of Wanneroo

Existing project

### City of Joondalup

Existing project

#### Project Description

The City of Wanneroo has over 100 conservation reserves under its control including 32 kilometres of Coastal reserves, numerous Wetland reserves and Bushland reserves. In all approximately 2,500 hectares of land are under management. In 2003, a Biodiversity Assessment was carried out to 94 conservation reserves in the City of Wanneroo, which highlighted the management needs of these reserves to maintain or improve biodiversity values.

It was recognised that in order to manage the City of Wanneroo's conservation areas in an environmentally responsible manner that staffing numbers needed to increase and formalized procedures be developed to reflect these environmental responsibilities.

Similarly, the City of Joondalup has management responsibility for over 500 hectares of natural bushland contained within 97 reserves. The bushland is comprised of coastal vegetation, remnant bushland fragments in urban areas, and some small areas of wetland vegetation. In 2003, the City of Joondalup also undertook extensive detailed surveys of their bushland as part of the Perth Biodiversity Project. The bushland was prioritised for management according to condition. The survey's resulted in 32 Bushland reserves being protected under schedule 5 of the City's District Planning Scheme 2 (DPS2).

#### Project Objectives

- Ensure that natural areas are maintained in the face of urban expansion.
- Maintain habitat for local wild life.
- Protect unique and diverse flora for future generations.

#### Scope

The project will:

- Develop capacity and processes that **maintain** biodiversity values of high quality conservation reserves.
- Develop capacity and processes that **improve** the biodiversity value of medium and low quality conservation reserves.
- Develop staff infrastructure that meets the above objectives.
- Develop procedures that clearly define the range of tasks and responsibilities required to maintain the sites in an environmentally responsible manner.
- Develop maintenance schedules that ensure regular programmed visits to all sites.

## Approach

### **City of Wanneroo**

Several administrative and practical tools have been developed, including:

- Annual Maintenance Schedule that takes into account seasonal variations for the control of different weed types, firebreak maintenance, track side clearance and rehabilitation. It defines the frequency of routine maintenance visits to all sites.
- Monthly Maintenance Schedule that indicates the frequency of visit, best route to travel from site to site, time to be spent at each site. It also allows for additional works such as emergency fence repairs. The schedules are adjusted at the end of each month to reflect seasonal variations.
- Work Procedures Manual that describes all tasks, extent of staff responsibility (field and office staff), communication, and supporting appendices of contact numbers, detail weed control descriptions and copies of maintenance schedules.

### **City of Joondalup**

The City of Joondalup has a Five Year Capital Works Program, which focuses on fencing, formalising access paths and control of weeds.

N.B. Whilst the project addresses areas of conservation broadly across the Cities, the Yellagonga catchment will also benefit from this project.

## Timeframe for Implementation

Ongoing, and in progress.

## Budget

Existing annual operating budget of approximately \$1,000,000 across the City of Wanneroo, incorporating City managed bushland within the Yellagonga Catchment.

The City of Joondalup 2008/09 budget for natural areas is \$779k for maintenance, and \$569k for capital works.

## Responsibility

Infrastructure Management Services (CoJ)  
Infrastructure Maintenance (CoW)

## City of Wanneroo Water Management Strategy

### City of Wanneroo

Existing project

### Project Description

The strategy will provide direction and practical guidance for the City of Wanneroo and developers to achieve Water Sensitive Urban Design (WSUD).

The Strategy will provide water information, design objectives and standards, with guidance on how these should be achieved through local planning processes.

Information and design objectives will allow incorporation of water resource management into the City's Local Planning Strategy associated with the District Planning Scheme. The project will also provide updated standards for urban water management and open space.

### Project Objectives

- Create a dialogue between the City of Wanneroo, State Agencies, developers and other stakeholders regarding water issues and water management in the City of Wanneroo;
- Formalise integration of WSUD in local planning processes;
- Develop engineering guidelines that translate state and local water management policy into subdivision design; and
- Increase the capacity of City of Wanneroo staff to successfully achieve WSUD.

### Scope

The project will:

- Collate and analyse relevant environmental characteristics of Wanneroo.
- Review requirements for water resource protection and management
- Set design objectives for water management and urban development
- Identify water planning precincts, key issues, and implications
- Determine water management strategies for each water planning precinct
- Develop best management practice drainage options for an engineering toolbox to replace current City of Wanneroo standards
- Develop best management practice guidelines for landscaping and irrigation
- Develop an implementation framework
- Develop water management provisions and supporting documentation for inclusion within the City's Local Planning Strategy
- Enhance capacity of City of Wanneroo staff with regard to WSUD through a series of workshops

### Approach

Consultants have been engaged to develop a City Water Management Strategy and water chapter of the Local Planning Strategy.

**Timeframe for Implementation**

September 2008 – June 2009

**Budget**

City of Wanneroo - \$85,000 cash and in-kind in current 2008-2009 budget

LG Partnership Program (DPI) - \$66,200 (cash)

Other Contribution \$24,000 (in kind)

Total- \$175,200

**Responsibility**

Smart Growth

Planning Services

## Wangara Catchment Study

### City of Wanneroo

Existing project

### Project Description

The Wangara Sump is a large compensating basin in Woodvale receiving untreated stormwater and industrial runoff from the Wangara Industrial Area. The Wangara Industrial Area forms a 98 hectare catchment, of which the majority of surfaces are impermeable with limited on site drainage facilities, which results in untreated stormwater discharging directly to the sump.

The Wangara sump drains into Walluburnup Swamp, within Yellagonga Regional Park. The retention volume of the sump is insufficient in relation to the Wangara catchment size, causing the sump to overflow directly into the wetlands in some storm events.

The Wangara Catchment Study will detail the best management practices, methods, structures and devices required to mitigate the detrimental effects of stormwater runoff discharged to the wetlands of Yellagonga Regional Park via the Wangara Sump for both the sump and its catchment. The intent of the final design will be to reduce the function of the sump to minimise its role in a greater treatment train approach in the Wangara catchment.

### Project Objectives

- Improve the efficacy of urban water management in the Wangara Catchment
- Improve the quality of water entering Yellagonga Regional Park via the Wangara Sump

### Scope

The Wangara Catchment Study will:

- Provide, for all catchment upstream of the Wangara Sump:
  - Details of methods, structures, and devices designed to mitigate the effects of target contaminants
  - Recommend and detail the structures and devices required to provide a retrofitting program to reduce the quantity of discharge to the sump
  - Provide quantity controls to return runoff discharge to pre-development flows as close as practicable
- Provide, for the Wangara Sump:
  - Details of modifications to the existing sump infrastructure necessary to improve the quality of water discharged to the wetlands

### Approach

Consultants will be engaged to undertake the Wangara Catchment Study. Recommendations for retrofitting of the Wangara catchment will be incorporated into the City of Wanneroo's capital works program.

**Timeframe for Implementation**

Wangara Catchment Study to be completed in 2009. Capital works to commence by 2011-2012.

**Budget**

The estimated costs of the Wangara Catchment Study and implementation have been incorporated into the City of Wanneroo five year financial plan.

\$300,000 is available within the 08-09 budget to undertake the study and commence some remediation, with \$130,000 identified in the 09-10 budget to continue remediation works.

Project completion is subject to budget allocation in the applicable financial year.

**Responsibility**

Infrastructure Planning



## Water Conservation Plan

### City of Wanneroo

Existing Project

### City of Joondalup

Existing Project

### Project Description

As of October 2007 Local Government Authorities in the Perth metropolitan area are required to complete water conservation plans. These plans will help Local Governments conserve groundwater and improve water use efficiency so that public open space can be managed under the drier and warmer conditions that are being experienced.

The Cities of Wanneroo and Joondalup have developed individual Water Conservation Plans, that aim to maintain the usefulness and attractions of public open space, while using groundwater in a more efficient manner. The plan identifies and outlines a number of objectives and allocates strategies that will be implemented over the next five years to achieve the objectives.

### Project Objectives

The main objectives of the plan are:

- To ensure the Cities of Wanneroo and Joondalup are operating within the allocation limits and license conditions of the groundwater extractions licences issued by the Department of Water;
- To optimize irrigation efficiency across both Cities, by improving irrigation system performance and irrigation scheduling;
- To implement water saving practices and technologies that will result in a reduction in groundwater use;
- Develop and implement a groundwater-monitoring program;
- Development of a communication strategy to inform Elected Members and the community on the progress of the Water Conservation Plan; and
- Liaise with the Department of Water to better plan for groundwater use in expanding areas within both Cities.

### Scope

The Plans cover all groundwater licenses held by the Cities. The City of Wanneroo has 19 licenses, comprising of 17 sub-licenses and 2 golf course licenses. The City of Joondalup has 3 licenses, 188 bores and is irrigating 226 parks. The plans will recommend measures to improve the collation, validation and collation of groundwater use and efficiency data. The plans also recommend key strategies that will lead to increased efficiency in order to meet the Cities groundwater conservation objectives.

**Approach**

The Water Conservation Plan for each City will be implemented by internal City staff. The CoW WCP will be guided by the Technical Working Group (TWG). The membership of TWG will be made up of relevant Officers from various Service Units within the organization. The CoJ WCP will be implemented by internal City staff from Strategic Development, Infrastructure Services and Operations Services.

**Timeframe for Implementation**

October 2008 - June 2014

**Estimated Costs**

Estimated costs will be developed through the endorsement of the Water Conservation Plan for each local government.

**Responsibility**

Operations Services (CoJ)  
Infrastructure Maintenance (CoW)

## Estimated Implementation Costs

Project	City	Required allocation
<b>Jointly Implemented Projects</b>		
Management Framework and MOU	CoJ CoW	Current resources
Water Quality Mapping and Monitoring	CoJ CoW	\$50,000 per annum (proposed) \$50,000 per annum (proposed)
Scientific Investigations	CoJ CoW	Existing budget Existing budget
Yellagonga Community Awareness Program	CoJ CoW	0.5FTE Project Officer Future staff resource
Yellagonga Eco-Tourism and Events Plan	CoJ CoW	Included within FTE above Future staff resource
Yellagonga Environment Centre	CoJ CoW	Included within FTE above Future staff resource
Yellagonga Lobbying Strategy	CoJ CoW	Included within FTE above Future staff resource
<b>Individually Implemented Projects</b>		
Stormwater Management Plans	CoJ CoW	\$40,000 per plan per Council according to identified need
Green Frog Stencilling Program	CoJ CoW	\$10,000 (existing budget) \$10,000 (proposed budget)
Local Biodiversity Strategy	CoJ CoW	Existing operational budget
Local Planning Framework	CoW	Existing operational budget
District Planning Scheme Review	CoJ	Existing operational budget
Contaminated Sites	CoW	Costs according to extent of issue on land within CoW.
Acid Sulphate Soils	CoJ CoW	Included within FTE above Future staff resource
Wangara Industrial Audit	CoW	Existing operational budget
Conservation Maintenance Schedule	CoJ CoW	Existing operational budget
City of Wanneroo Water Management Strategy	CoW	\$85,000 (existing budget)
Wangara Catchment Study	CoW	\$430,000 (existing budget)
Water Conservation Plans	CoJ CoW	Budget determination according to final Plans

## 5.0 References

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Hill, A.L., Semeniuk, C.A., Semenuik, V and Del Marco, A. 1996, *Wetlands of the Swan Coastal Plain (vol 2B)*, Water and Rivers Commission, Department of Environmental Protection, Perth.

Western Australian Planning Commission, Bush Forever site 299, accessed online 11/04/2008 at: <http://www.wapc.wa.gov.au/Publications/251-299.pdf?id=1117>

Western Australian Planning Commission, Western Australia tomorrow 2001-2031,' Accessed on 02/04/08 at: <http://www.wapc.wa.gov.au/Publications/57.aspx> Appendix 5

*Yellagonga Regional Park Management Plan 2003-2013*, Cities of Joondalup and Wanneroo, the Conservation Commission of Western Australia and the Department of Conservation and Land Management, Perth Western Australia.

## Appendix 1

Members of the Community Reference Group (past and present)

Name	Representing
Barry Fitzsimmons	City of Joondalup Conservation Advisory Committee DEC Yellagonga Regional Park Community Advisory Committee Friends of Periwinkle Bushland
John Chester	DEC Yellagonga Regional Park Community Advisory Committee City of Wanneroo Environmental Advisory Committee Friends of Yellagonga
Peter Bombak	Community member
Oriel Green	Northern Suburbs Reconciliation Group
Andy Ayling	Community member
Charles Biddle	Community member
Will Carstairs	Friends of Yellagonga DEC Yellagonga Regional Park Community Advisory Committee Wanneroo Volunteer Fire Brigade
Ted Johnson	Community member
Brian Lynn	Community member
Kaye McCoy	Community member
Alan Notley	Western Australian Naturalists Club (Inc)
Sandra Toose	Community member
Susan Ujma	Member of the Historical Society
Gary Tate	Friends of Yellagonga City of Joondalup Conservation Advisory Committee
Peter Van de Wyngaard	Distant member of Friends of Yellagonga

Members of the Technical Working Group (past and present)

Organisation	Members
City of Wanneroo	Colleen Murphy, Nicola Hoey, Phil Johnson, Renee Bell, Sharon Rose, Marie Pudelek, Ian Barker, Suha Ali, Vicky Hartill, Tanja Lambe
City of Joondalup	Mark Tucek, Charles Slavich, Keith Armstrong, Helen Griffiths, Lucy Sheehy
Edith Cowan University	Assoc Prof Pierre Horwitz
DEC	Jayson Puls, Sophie Bishop, Renee Evans, Jacinta Overman
DoW	Sarah Bourke
TAFE	John Robertson



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