1999 Oxley Creek
Catchment Management Plan

Caring for our catchment
Oxley Creek Catchment Association Inc
The final editing of this Oxley Creek Catchment Management Plan was carried out by the Oxley Creek Catchment Coordinating Committee (OCCCC) under the leadership of Anne Clarke.

This report contains the major suggestions for editing of the draft plan made in response to consultation by the Catchment Coordinator and members of the OCCCC with community, industry and agencies from November 1998 to February 1999.

The OCCCC and its Working Groups intend to produce a later version of the Plan as a document for agency action in response to Environment Protection Policy (Water) requirements and other needs expressed by the agencies in the consultation. In addition, further studies on Cultural Heritage values will be undertaken in the catchment at a later date. This later report will contain material requested which involves more detailed research and planning work.

Cover photo:  
*Sugar Glider (Petaurus breviceps) (G.C.Suckling/Nature focus)*
ACKNOWLEDGMENTS

Many people have contributed to the production of the Oxley Creek Catchment Management Plan, too many to report individually. However, special thanks must go to the 1997-1998 Oxley Creek Catchment Coordinating Committee members who were so closely involved in the planning meetings and the community consultation process. Our appreciation to Chairman, Rowland Bendall (Industry), Secretary, Lyn Whitfield (Community), Treasurer, Diana Dawson, (Community), and members Noel Cooke (Extractive Industry), Glen Platt (Industry), George Deen, (Landfill), Cr Judy Richardson and Wayne Window from Beaudesert Shire Council, Michelle Hennessey (Logan City Council), Paul Mack (Brisbane City Council), David Kent (Department of Natural Resources), Bruce Harper (Community), Ray Ison (Community), Debra Manendis (Community), Amanda Fox (Greening Australia/Brisbane City Council), Michelle Peile (Community), Anne Clarke (Community), Mike Olsen (Community) and the previous Coordinator, Cathy Ellis.

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Further technical support was provided by Mary Maher and Associates, South East Queensland Regional Water Quality Management Strategy, Willing and Partners and Catchment & Creeks Pty Ltd.

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A   How to use the Plan Documents

This volume, Volume 1, the Catchment Management Plan (CMP) is in 5 parts:

1. Executive Summary
   Contains an overview of the Plan and its associated actions.

2. Introduction/Background (Chapters 1, 2, and 3)
   The aim of the plan is found in Chapter 1. Brief but vital details of the catchment are also included.
   The purpose and success factors for catchment management plans are in Chapters 2 and 3.

3. How Management Actions are determined from existing conditions
   Report cards on the current environment, planning and management of the catchment are in Chapters 4 and 5. From these evolve future management actions.

4. The Plan with its Management Actions (Chapters 6, 7 and 8)
   Chapter 6 describes Planning for Creek Sustainability and Chapter 7 gives priorities and schedules for implementation of the CMP. Institutional arrangements and local actions have been addressed in Chapter 8.

5. Oxley into the Future
   Recommendations are found in Chapter 8. These emphasise the need for critical integrated action in the catchment.

   The technical assessments on which this report is based with full physical descriptions and analysis of the catchment are in Volume 2.

   Volume 2 contains the following documents:
   - Creek stability
   - Water quality
   - Geology and soils
   - Soil erosion risk
   - Flooding
   - Aquatic survey

B   Where the CMP Fits In
About the Oxley Creek Catchment Association (OCCA)

Vision / Mission statement
To protect and enhance the natural resource values of the Oxley Creek Catchment.

Objectives of the Oxley Creek Catchment Association

- Foster coordination between landholders, individuals, community, industry and Government agencies in their land, water and vegetation management activities.
- Promote community and Government understanding of the interactions between land, water and related biological resources.
- Promote the value of a coordinated, catchment-wide approach for managing these resources.
- Identify and prioritise interrelated land and water resource issues in the catchment, identify solutions and agree on actions through public and Government participation.
- Provide a forum for community and Government discussions on catchment management issues for resolving conflicting demands on natural resources.
- Promote the planned and sustainable economic growth of Oxley Creek catchment in a constructive and balanced way.

Achievements to date

- Incorporation of the Oxley Creek Catchment Association as well as formal endorsement of the Catchment Coordinating Committee through the Department of Natural Resources Integrated Catchment Management Program (1996).
- Development of a financial membership network as well as an information network of over 600 people and organisations.
- Completion and publication of the 1996 State of the Oxley Creek Catchment and the Water and Land Use Impact and Management Analysis.
- Annual staging of two Oxley Creek Water Festivals, an initiative of Oxley Creek Environment Group, aimed at creating awareness of Oxley Creek and issues.
- Development of an educational awareness program including industry, school children.
- Initiation of integrated management and planning projects within Oxley Creek catchment eg CMP.
- Establishment of working groups with members from government, industry and community
- Strong partnerships with industry and environmental groups.

Membership of the Oxley Creek Catchment Coordinating Committee 1997/98
The Oxley Creek Catchment Coordinating Committee has been established under the Integrated Catchment Strategy for Queensland and is Queensland's only urban Integrated Catchment Management Committee. It is comprised of representatives from the following interest sectors:

**Extractive Industry**
Mr Rowland Bendall  
(Chairman  May 1997 to Oct 98)  
Land Tenure Manager  
CSR Construction Materials: Readymix Quarries. Northern Region

**Extractive Industry**
Mr Noel Cooke  
Paradise Hills Pty Ltd Mewlow Pty Ltd

**Industry**
Mr. Bruce Smith (Chairman, 1996)  
Mr Cameron Smeal  
Weston Bioproducts

**Industry**
Mr Glen Platt  
(Deputy Chairman Sep 97-Oct98)  
Dulux Australia

**Landfill**
Mr George Deen(Chairman Oct 1998)  
Gainscow Holdings

**Local Government Upper Catchment**
Councillor Judy Richardson (1997)  
Wayne Window  
Beaudesert Shire Council

**Local Government Middle Catchment**
Ms Michelle Hennessey  
Logan City Council

**Local Government Lower Catchment**
Mr Paul Mack (1996-98)  
Mr. Patrick Bourke (1999)  
Brisbane City Council

**State Government**
Mr Dave Kent  
Resource Management Officer  
Department of Natural Resources

**Residential Developer**
Position not filled

**Community**
Ms Diana Dawson (Treasurer to Oct 98)  
Ms Jocelyn Clarkson  
Oxley Creek Environment Group

**Community**
Mr Frank Dingle (Treasurer Oct 98)  
Pamphlett Sea Scouts Master

**Community**
Mr Bruce Harper  
Oxley - Sherwood Lions

**Community**
Mr Ray Ison, Environmental Planner  
Oxley Creek Environment Group

**Community**
Ms Debra Manendis  
West Logan Environment Group

**Community**
Ms Lynn Whitfield (Secretary)  
Oxley Creek Environment Group

**Community**
Ms Amanda Fox  
Greening Australia

**Community**
Ms Michelle Peile  
Benarrawa Community Development Ass.

**Community**
Dr Mike Olsen  
Griffith University

**Coordinator (1996-Feb 99)**
Cathy Ellis  
Brisbane River Management Group

**Assistant Temporary Coordinator(1998)**
Andrew Daniel
EXECUTIVE SUMMARY

The catchment of Oxley Creek, along with its tributary system of Blunder Creek, has been subjected to a range of negative environmental impacts culminating in the need for a program of protection and management work.

This catchment management plan (CMP) has examined the state of the catchment under the following headings:

- Water quality, in-stream conditions of the waterways of the catchment
- Waterway conditions of bed and banks, riparian vegetation including wetlands and flooding;
- Catchment conditions including erosion-risk soils and vegetation; and
- Access to and amenity of waterways.

Key findings about these aspects of the catchment, outlined in Chapters 4 (environmental report card) and 5 (legislation and planning report card) are summarised as follows.

Water quality

- Within the Creek system, water quality remains below standards in the lower urbanised part of the catchment, and other reaches upstream have also degraded. There is some evidence that the extremes of poor water quality conditions of 1988 – 90 have improved. However, exceedances above ‘acceptable’ water quality standards have continued across all water quality parameters (suspended solids, total nitrogen, total phosphorus, faecal coliforms).
- Primary causes of the existing degradation are point sources such as the Inala Sewage Treatment Plant, minor point sources (sewer overflows) and the non-point sources of sand extraction, stormwater run-off and land development, including areas using septic treatment systems.
- Brisbane River and Moreton Bay, the receiving waters of Oxley Creek, are experiencing problems of excess sediments, nutrients and faecal coliforms, giving rise to problems of sea grass loss and algal blooms.

Waterway conditions

- Bed and bank conditions are serious in the middle reaches and a full geomorphic analysis is needed.
- Flooding problems will be exacerbated if development in the upper catchment proceeds.
- Riparian vegetation including wetlands has some critical areas requiring management and buffering.
Catchment conditions

- High to very high erosion-risk soils line the watercourses and are found in parts of the catchment.
- Vegetation in the catchment has significant biodiversity and land protection values with several vegetated areas supporting endangered and threatened species, and several areas of large high value vegetation associations (Greenbank Military Training Area, Parkinson, and Beaudesert uplands).

Access and amenity

- Limited access and amenity planning in the lower catchment with opportunities to extend waterway corridor recreation spaces in the middle and upper catchments. Knowledge of the Cultural Heritage values of the catchment is limited.

The vision for Oxley Creek catchment is proposed as:

Using community action and multi-agency cooperation, revitalise the catchment and its waterways to support healthy ecosystems, and to ensure a resource that is available for the sustainable use and enjoyment of all.

The plan evaluated 3 scenarios for Creek sustainability:

- ‘Do Nothing’ scenario;
- ‘Slightly Better’ scenario with targeted improvements on 1998 catchment conditions; and

The ‘Slightly Better’ scenario is to form the basis of this Catchment Management Plan for the next 5 years.

Key components in achieving the vision of this catchment management plan are:

Community Creek Care
Facilitating community learning about the Creek to increase the levels of community ownership of what’s needed for its health and vitality.

Immediate remedial action
Using effective ‘quick fix’ solutions to some of the most urgent environmental problems and pressures.

Effective management & authority
Building the framework for long term coordination and co-management between stakeholders, and the planning and regulatory framework for Creek sustainability.

Adequate resourcing
Generating the foundation for public and private sector partnerships and building sustainability into existing programs and sector plans.
The aim is that the ‘Slightly Better’ scenario forms a foundation philosophy for this first catchment management plan, with planned progression to the ‘Improvements on 1998 Conditions’ scenario following the plan review in 2003.

The natural vegetation cover in the middle and upper catchment is a major water quality asset. It represents an area of natural rates of runoff as well as a means of soil protection. It is also a biodiversity asset, in terms of large core areas as well as riparian plant and animal life.

While opportunities to retain natural features in the lower catchment except on the golf courses and along tributaries may be limited, several smaller but still critical areas of native vegetation exist, for example, Parkinson Bushland and Heathwood. In addition to biodiversity values, their location in the lower catchment gives these areas a high level of significance for water quality protection.

In the more developed areas, riparian vegetation in good condition is also a natural feature contributing to water quality protection, biodiversity and amenity/ livability values. A large proportion of the catchment however, is either developed or committed to development. For these areas, controls over point source discharges and stormwater runoff are the major strategic measures to be applied.

The focus of point source discharge work should be on sewage treatment, sewer overflows, and sanitary landfills. The focus of stormwater management should be on new developments, extractive industry and infrastructure projects.

For established urban areas, waterway conditions will only be improved with an increase of awareness by the community and industries, and a generation of greater support for a cleaner stormwater run-off.
**High Priority Outcomes (ecological and economic)**

The following set of outcomes will drive the actions of the plan. These outcomes are to be revised when the policy base for catchment protection in Oxley Creek is revised and the next plan is prepared.

<table>
<thead>
<tr>
<th>Water Quality</th>
<th>Catchment Economic Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>• No net increase in suspended solids / sediments from 1998 levels.</td>
<td>• No change to local or downstream flood levels for the 1:2 and 1:100 year ARI events.</td>
</tr>
<tr>
<td>• Nutrient capping at 1998 levels and achievement of ‘desirable’ levels by 2005</td>
<td>• Due recognition of development limitations for very high and high erosion risk soils in planning schemes and approvals conditions.</td>
</tr>
<tr>
<td>Waterway Conditions.</td>
<td>• Security of access to sand and soil resources deemed appropriate for development by environmental and social assessments.</td>
</tr>
<tr>
<td>• Any actions taken to rehabilitate instabilities in the middle catchment are to be cost-effective. Costs are to be shared between contributors, and the actions are to deliver the desired results.</td>
<td>• Adequate and accessible infrastructure for resource use, industrial production, and urban development.</td>
</tr>
<tr>
<td>• No change to local or downstream flood levels for the 1:2 and 1:100 year ARI events.</td>
<td>• Security of construction and operation of rigorously assessed and appropriately planned urban development - in the context of catchment requirements.</td>
</tr>
<tr>
<td>• Nil loss of riparian vegetation.</td>
<td>• Remediation and appropriate end uses of contaminated sites.</td>
</tr>
<tr>
<td>• 100% increase in joint Council – community riparian projects.</td>
<td>• Operation of appropriate urban and industrial services.</td>
</tr>
<tr>
<td>• Due recognition of development limitations for very high and high erosion risk soils in planning schemes and approvals conditions.</td>
<td>• Access to a skilled labour force living in surrounding areas.</td>
</tr>
<tr>
<td>Catchment conditions</td>
<td>• Agricultural and grazing activities compatible with catchment and waterway protection.</td>
</tr>
<tr>
<td>• No further loss of catchment vegetation (1998) levels, retention of highly significant associations and improved recovery levels for threatened species, and fostering of local amenity value vegetation in lower catchment.</td>
<td></td>
</tr>
<tr>
<td>Access and amenity</td>
<td></td>
</tr>
<tr>
<td>• Increase in linkages between public open space in middle and upper reaches.</td>
<td></td>
</tr>
<tr>
<td>• Increased number of public access points in lower catchment.</td>
<td></td>
</tr>
</tbody>
</table>
High priority outcomes (administrative and community)

The Plan’s administrative arrangements should:

- Promote the Creek system’s identity and build awareness about its protection.
- Ensure the Creek’s contribution to achievement of the overall goals for the River and the Bay.
- Have adequate power and authority to intervene in matters which put the achievement of these goals and those for the Creek itself at risk.
- Ensure establishment and maintenance of strong and effective cross-agency and cross-sector linkages at all levels.
- Build on existing programs, projects and initiatives.
- Attract the resourcing and community support needed.
- Give due recognition to catchment-wide objectives and build capacity through effective management structures.
- Enable all cost factors to be taken into account and allow lowest net cost for achievement of the desired outcomes.
- Provide direction and clarity about legislative reforms and enforcement needed.
- Facilitate systematic management, monitoring and performance reporting.

Recommended actions for catchment protection and management are prioritised across eight Catchment Management Units (CMU) for the catchment. These CMUs, discussed in Chapter 7, are as follows:

CMU1 Northern Oxley Tributaries
CMU2 Blunder Western Tributaries
CMU3 Oxley-Blnder Plain
CMU4 Sheep Station Gully
CMU5 Greenbank-Karawatha Linkage
CMU6 Logan Conservation and Urban
CMU7 Lagoon and Rural Residential
CMU8 Forested Rural Uplands

Major opportunities exist for incorporating catchment protection into the planning schemes to be prepared under the new Integrated Planning Act (IPA) and for setting the targets for the urban stormwater quality management plans required under the Water Environmental Protection Policy.
Effective implementation of the Catchment Management Plan will mean establishment of formal coordination and reporting mechanisms as well as a review of government powers and plans, particularly those of Local Governments.

The Creek system’s future health will rely on improved measurement of all aspects of the Creek’s condition; greater coordination across responsibility areas in government and the private sector and, greater accountability for decisions and plans which impact on the Creek system. New ways will have to be found to facilitate the desired improvements in the catchment.
1.0 WHY MANAGE CATCHMENTS?

“For the last three weeks we have been learning about our environment and the creek. The creek water is brown but I would like it to look clearer in the future.”
Scott, primary school student in Oxley Catchment

“I went for a walk to Oxley Creek and the creek was all dirty and there was a lot of rubbish around. So to make the creek look as good as it was before without all the rubbish and junk we could pick up all the rubbish. We have to get all the trees and whatever is in the creek out of the creek so it looks nice and clean. This means that people or kids who walk or ride past at least stop and look at the creek.”
Abby, year 7 student in Oxley Catchment

1.1 State of the waterways

Waterways in Australia, especially on the eastern seaboard, are experiencing significant environmental impacts due to land-use change within their catchments. The following sections outline the problems associated with environmental impacts on waterways, and the legislation and policy developments supporting the greater effort being directed at the condition of waterways.

1.1.1 Australia - State of Waterways

Australian rivers are naturally distinctive in physical, chemical and biological characteristics (State of Environment Advisory Committee, 1996). This is largely due to Australia being the driest inhabited continent, with the most variable rainfall and stream flow in the world. It follows that individual Australian streams vary greatly in characteristics, more so than other countries, and have generally higher natural turbidity and salinity levels (State of Environment Advisory Committee, 1996).

The general condition of rivers in Australia is now a product of both natural conditions and human pressures within the river catchment. Human activity pressures are relatively new, occurring mostly within the last 200 years.

All of the 22 coastal rivers between Fraser Island (Queensland) and Lakes Entrance (Victoria) have been impounded (State of Environment Advisory Committee, 1996). This radical change of regulating flows in natural waterways combined with associated land use intensification has greatly affected the natural environment of Australian rivers. Across Australia, there have been substantial changes in river geomorphology and a general decrease in water quality.
The world’s largest toxic algal bloom occurred in the Darling River, Victoria (State of Environment Advisory Committee, 1996). This can be seen as the single most important factor in generating and accelerating government and community action, and has focused world attention on Australia’s management of its river systems.

Salinisation is now a major problem within agricultural areas of Australia. Exotic species have invaded the riparian zone and floodplains, and there is an overall loss in biodiversity. In the state of Victoria, the water quality and aquatic animal and plant life for most rivers is seriously degraded with less than half of their stream length in good or excellent condition (State of Environment Advisory Committee, 1996).

In response to these changes, strategic management plans for catchments are in preparation, primarily through State initiatives and funding from Landcare and the Natural Heritage Trust. A Catchment Management Plan can incorporate all responses to form a futuristic large-scale improvement plan integrating all relevant issues. It can incorporate all aspects of the catchment ensuring future planning and development will maintain, and where possible improve, the natural environment leading the catchment to sustainability.

1.1.2 Queensland - State of Waterways

Some 2.623 million people, or 80% of Queensland’s population, live in the coastal zone. This zone is the most fertile and productive region of the state. A prominent feature of this zone is estuaries and their associated wetlands, the wetlands supporting the most diverse freshwater fish fauna of any state.

Resource development, associated with a relatively high and growing population, is placing considerable pressure on the coastal area. From preliminary investigations, key environmental issues associated with waterways and the coastal zone are:

- Land use change and associated habitat loss including wetlands; exotic and displaced species.
- Sediment and nutrient inflow; for example, current sediment lost from the Brisbane River Catchment is ~728 tonnes whilst the natural amount has been calculated as 208 tonnes. The rate of increase is 3.5 times the natural level.
- The need for protected areas. In 1993, legislation to protect the coastal environment eg the Moreton Bay Marine Park Act was introduced. This legislation is in the process of implementation in South-East Queensland.

The Queensland government has developed several natural resource management programs. The initiatives aimed at improving catchment management for Queensland began in 1991 by the state government through the Integrated Catchment Management Strategy. By 1996, 26 local...
Catchment Coordinating Committees were operating, covering 89% of the State. There is no catchment management legislation for the state of Queensland as yet.

### 1.1.3 Moreton Bay Basin & Brisbane River- State of Waterways

Results of scientific investigations by the Brisbane River and Moreton Bay Wastewater Management Study (BRMBWMS) in association with work by the Brisbane River Management Group reveal the following conditions for these waters. These form the ‘receiving waters’ for flows from Oxley Creek catchment, as well as providing tidal inflows to the Creek.

<table>
<thead>
<tr>
<th>Marine waters</th>
<th>Nitrogen enrichment from wastewater discharges and sediment build-up in western Moreton Bay; algal blooms during calm warm conditions; reduced light for seagrass affecting fisheries, dugong and green turtles.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tidal estuaries</td>
<td>Altered flow regime as a result of dams, water extraction, dredging for resources and navigation. Increased turbidity and nitrogen levels. High sediment loads from urban and rural stormwater during high flows. Wastewater discharges contribute nitrogen, sediment during low flow times. Results in reduced oxygen levels, sections unsuitable for swimming because of high turbidity and pathogens.</td>
</tr>
<tr>
<td>Freshwater streams</td>
<td>Riparian vegetation loss, weed invasion. Modifications for flood mitigation. Increased levels of turbidity and nutrients from land clearing (urban, rural), and agriculture. Erosion and bank instability. Results in blue-green algae blooms in major storages.</td>
</tr>
</tbody>
</table>

(Moreton Bay Catchment Water Quality Management Strategy, Sept 1998, Appendix A4)

Existing environmental values (aquatic ecosystem, water supply, wildlife, food and habitat, primary and secondary recreation) of Moreton Bay and tidal sections of the River are seriously threatened by impacts of land and water uses to date. The trend is also one of continued pressures through population increase and changes to vegetation cover and land uses.

The Study (BRMBWMS) has concluded that:

*Improvement in water quality is needed to protect existing environmental values. The main improvements needed are to:*

- Reduce sediment, nutrient and pathogen loads;
• Improve degraded habitats; and
• Restore habitat in areas where they have disappeared.

Freshwater streams and catchment planning, and dynamic modeling of the River is the focus of the next stage of the Brisbane River and Moreton Bay Wastewater Management Study.

The Study’s Stage 2 Report concludes that this lower part of the Brisbane River system displays the symptoms of ecosystem stress in terms of both the aquatic ecosystems and the quality of the overall stream surroundings.

Trends in population growth and land and water uses indicate that without management intervention the state of this section of waterway will continue to degrade and operate at unacceptable levels in terms of the environmental values people hold for it. The study’s recommendations will be an Environmental Protection Policy or a State Planning Policy and standards will be set to protect the Bay (refer to Section 5.1).
2.0 CRITICAL SUCCESS FACTORS FOR CMPs

‘For the last few weeks the year 7 students from Greenbank State School have been working on a project with an artist named Sneja. We are lucky enough to live in an environment such as this. Oxley Creek is a home to many endangered species of animals and plants. In the future I would like to come back and see Oxley Creek clean and healthy once again’

Leilani, year 7 student in Oxley Catchment

2.1 Catchment Management Plans (CMPs)

Catchment management plans have been employed throughout Australia for several decades, with varying degrees of success.

The purpose and focus of catchment management plans vary. They may depend on their geographic context, for example whether they are for predominantly rural or urban areas, or on the seriousness of the catchment and waterways issues. The following table is an overview of selected catchment management plans (from various states) that have varied geographical contexts, significant issues and budgets (for both development and implementation of the CMP).

It must be understood that CMPs are tailored to meet the needs required for effective management within a specific catchment, as well as to incorporate community and government values and issues. As legislative powers, and catchment concerns differ, so too will the purpose and focus of CMPs. The following table outlines the content of several recent CMPs.
### Catchment Management Plan

<table>
<thead>
<tr>
<th>Catchment</th>
<th>Pumicestone</th>
<th>Torrens River</th>
<th>Bremer River</th>
<th>Glenelg Regional</th>
<th>Patawalonga</th>
<th>Mary River</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DESCRIPTION</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Area</td>
<td>663 km²</td>
<td>500 km²</td>
<td>2,030 km²</td>
<td>25,000 km²</td>
<td>235 km²</td>
<td>9595 km²</td>
</tr>
<tr>
<td>Number of sub-catchments (SC)</td>
<td>5</td>
<td>3</td>
<td>13</td>
<td></td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Land Use (Rural or Urban or both)</td>
<td>Pine Forest / Native Vegetation, rural</td>
<td>Rural + urban</td>
<td>Rural</td>
<td>Rural</td>
<td>Urban</td>
<td>Rural</td>
</tr>
<tr>
<td><strong>VISION</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To protect all values in Passage under conditions of development</td>
<td>To revitalise the catchment, its waterways to a state of clean water and healthy ecosystems, and to ensure a resource that is available for the sustainable use and enjoyment of all</td>
<td>To facilitate better strategic management of the natural resources of the Catchment, and to encourage open and objective decision making, in accordance with community values</td>
<td>To create a blueprint for the whole community to heal, protect and use the natural assets of the area</td>
<td>To ensure the water and riverine environments within the Patawalonga catchment and their areas of impact are able to support healthy ecosystems and provide amenity to the public</td>
<td>To set community goals to achieve a productive and sustainable Mary River catchment</td>
<td></td>
</tr>
<tr>
<td><strong>TECHNICAL AND KEY INVESTIGATIONS AND STRATEGIES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Water</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water Quality</td>
<td>H**</td>
<td>L</td>
<td>M</td>
<td>M</td>
<td>L</td>
<td>M</td>
</tr>
<tr>
<td>Water Quantity/Flooding</td>
<td>M</td>
<td>M</td>
<td>L</td>
<td>M</td>
<td>L</td>
<td>M</td>
</tr>
<tr>
<td>Stormwater</td>
<td>L</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td><strong>Soil</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>M</td>
<td>L</td>
<td>L</td>
<td>L</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>Creek Stability</td>
<td>M</td>
<td>L</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>Erosion/Sedimentation</td>
<td>M</td>
<td>L</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td><strong>Flora &amp; Fauna</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fauna/wildlife</td>
<td>M</td>
<td>L</td>
<td>M</td>
<td>L</td>
<td>H</td>
<td>H</td>
</tr>
<tr>
<td>Vegetation</td>
<td>M</td>
<td>L</td>
<td>M</td>
<td>L</td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>Native Vegetation</td>
<td>M</td>
<td>L</td>
<td>M</td>
<td>L</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td><strong>Management</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land management/planning</td>
<td>M</td>
<td>L</td>
<td>M</td>
<td>L</td>
<td>H</td>
<td>H</td>
</tr>
<tr>
<td>Functions/role of catchment manager (ie the catchment board)</td>
<td>L</td>
<td>L</td>
<td>M</td>
<td>L</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td><strong>Community</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consultation (values and issues)</td>
<td>M</td>
<td>M</td>
<td>L</td>
<td>L</td>
<td>H</td>
<td>H</td>
</tr>
<tr>
<td>Education</td>
<td>M</td>
<td>M</td>
<td>L</td>
<td>L</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td><strong>DOES THE PLAN PROVIDE ...</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A Master Plan</td>
<td>M</td>
<td>H</td>
<td>M</td>
<td>H</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>Detailed Site Plans (site specific)</td>
<td>L</td>
<td>H</td>
<td>H</td>
<td>L</td>
<td>H</td>
<td>L</td>
</tr>
<tr>
<td>Target based strategies/actions</td>
<td>H</td>
<td>H</td>
<td>M</td>
<td>M</td>
<td>H</td>
<td>H</td>
</tr>
<tr>
<td>Statement of policies</td>
<td>L</td>
<td>L</td>
<td>L</td>
<td>L</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td><strong>DOCUMENTATION</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technical Complexity</td>
<td>H</td>
<td>H</td>
<td>L</td>
<td>L</td>
<td>M</td>
<td>L</td>
</tr>
<tr>
<td>Easy reading</td>
<td>L</td>
<td>H</td>
<td>L</td>
<td>L</td>
<td>M</td>
<td>M</td>
</tr>
</tbody>
</table>

H = high degree of assessment  
M = medium degree of assessment  
L = low degree of assessment  
H** = these water quality studies modelled pollutant exports from land uses to predict future water quality
Examination of several recent plans for catchments in both Queensland and other States reveals that there are a number of factors influencing the preparation of workable and effective catchment management plans.

Plans prepared primarily as technical exercises, though they produce valuable findings for managing catchments, are often perceived as government projects, awaiting government implementation.

Where catchment management plans are driven by representatives from key sectors and interest groups, and where it is obvious that multi-sectoral solutions are required, the planning process is likely to be more targeted and the resulting plan more enduring.

Community groups are a sector within the key stakeholders group for a catchment. Their ownership of the aims and recommendations is a key driver of actions of the catchment management plan. They are also the key environmental education and awareness personnel, further enhancing and sustaining the CMP.

### 2.2 Critical Success Factors for CMPs

Below is an outline of the critical success factors for a CMP.

<table>
<thead>
<tr>
<th>Essential Characteristics of CMPs</th>
<th>Comments</th>
</tr>
</thead>
</table>
| A documented plan for change management – not a static document. | • Catchment management is a process, plans must change with priorities, achievements, losses. The process of the plan’s preparation should reflect this dynamic characteristic.  
• Plan must specify objectives and outcomes, and ways of measuring protection and management.  
• Specific targets for that protection will change, standards will change, and management priorities will change over time. |
| Vision-based, awareness focused, Community-driven | • People’s livelihoods and lifestyles occur in catchments; their views together with those of government providers of services form the basis of the vision.  
• The vision should be water cycle based - Catchment and creek protection is part of the overall health of the river, its waterways and the marine system; the vision should be inclusive of all key stakeholders. |
Critical Success Factors for CMPs

Sound technical studies

- Data is essential for establishing priorities for catchment problem solving, and for setting targets for protection through management.

Strategic matters for ecological sustainability of any catchment can be defined as:

- **Protection of water quality** – of both the waters into which the river flows (termed 'the receiving waters'), and the water in the actual river or waterway.
- **Protection of the stream or creek quality** including its bed and banks, aquatic environment, flood plain, and riparian vegetation. Planning for this protection means planning for low flow times as well as for bankfull and flood events.
- **Protection of land and water processes** within the catchment itself including the condition of the land, soils and vegetation cover, and the habitats for flora and fauna across the catchment.

People are part of the protection process as well. While all of the strategic matters above relate to people, one aspect in particular needs to be dealt with as part of the catchment plan – **protection of access and amenity uses of the waterways**.

Providing a master plan focused on outcomes

- Options for the levels of protection desired and potentially achievable have to be evaluated. A master plan based on outcomes for overall catchment protection is then prepared.
- Multiple plans and projects proceeding in a catchment at any one point in time need to refer to catchment / waterways protection.
- Details for site specific or sub-catchment specific work is important for more local activities and projects.

Target-based planning

- A plan of action means a commitment to measurement.
- A Plan should set specific aims and tight targets and timeframes for their achievement. The catchment management plan is a form of environmental management system – proceeding with set targets and steps for achieving specific aims or outcomes.

Strengthening coordination - institutional arrangements

- Queensland has no formal catchment legislation. To ensure implementation of key actions requires the plan’s emphasis to be placed on strengthening the channels and structures (and requirements) for agency coordination.
- Catchment management plans are an opportunity for agency agreement to the sustainability planning of an area. It is also a means of assessing decisions made by private and public sector agencies.

Informative and accessible documents

- The Plan is to be a communication and community learning tool, as well as a technical master plan.

Addressing the main points of this outline will provide Oxley Creek with an achievable, sustainable and balanced use of the land, water and related biological resources within Oxley Creek catchment.
3.0 PREPARING THE OXLEY CREEK CATCHMENT MANAGEMENT PLAN

‘I think the Oxley creek is really quiet when you sit down and look at the trees. I also think the we should clean it up so we can have more birds and wildlife.’

Jessica, primary school student in Oxley Catchment

‘Oxley Creek is important because it creates homes for man and animals. In the future I’d like to see it full of water.’

Philip, primary school student in Oxley Catchment

3.1 Introducing the Oxley Creek Catchment

The study area is the whole catchment of Oxley Creek and its associated tributaries, covering a catchment area of approximately 260km². Oxley Creek is a major tributary of the Brisbane River, Queensland, and is approximately 70 kilometres in length. The creek drains from the northern slope of Mount Perry in the Flinders Peak region, some 33 km south west of Brisbane, to the suburbs of Tennyson and Graceville on the Brisbane River. The catchment includes all or part of 30 suburbs and is contained within the Local Government areas of Brisbane, Logan and Beaudesert. A small area of Ipswich City is also within the catchment perimeter.

The catchment can be viewed as consisting of three main sections – upper, middle and lower sections. These sections correspond with the local government boundaries of Beaudesert, Logan and Brisbane Councils respectively. Map 3.1 provides the strategic location of Oxley Creek catchment.

Physical Statistics

The statistics below outline the vital physical components of the catchment required for development of the CMP. Further technical analysis is found in Volume 2 of this study and the State of Oxley Creek Report (1996).

Geomorphology

- Oxley Creek has 4 major tributaries of Blunder, Moolabin, Stable Swamp and Crewes Creeks
- 7 sub-catchments
Geology

- Upper and middle catchment underlain by Woogaroo Group (upper Ipswich Coal Measures) and Marburg Formation (sandstone, siltstone and mudstone). The creek tends to follow the geological interface between the two formations
- Creek bank levee deposits underlain by thick deposits of very soft estuarine clays are found in the lower section

Soils

- Highly erodible podsols soils dominate the soil type of the catchment

Flora and Fauna

- The upper and middle catchments are dominated by bushland which has regional conservation significance
- Greenbank Military Training Area and the Parkinson land in the middle section of the catchment are part of an important natural core area and linkage
- Significant vegetation communities (wetlands, *Eucalyptus tereticornis*, *Melaleuca nodosa*) and species (*Austromyrtus gonoclada*) occur along the creek

Cultural Heritage

*Benarrawa (Oxley Creek), the river. It has been here always. Once the river sustained the people. The river was respected and people lived well. Others came. The original people suffered. The river suffered too. In reclaiming Benarrawa, the name of the river, we recognise the past. From this recognition we aim to learn and understand, to listen to the river and the people who were first here first.*

(‘Know Your Creek’, Benarrawa Community Development Association, 1998).

Prior to white settlement, natural resources of the original environment within the catchment were abundant. The Yerongpan or Yeeroompan clan lived in the area and named Oxley creek ‘Benarrawal’. The swampy land at Willawong provided an important hunting area (Kinhill, 1996). Remnants of stone tools have been found beside the creek at Acacia Ridge and near the catchment at the Camira bora ring (Kinhill, 1996). Waterholes in the area of the Rocklea Markets, named the Rocky Water Holes, were apparently a favourite camping area for Aboriginals (Kinhill, 1996).

By the 1840’s, Aboriginal numbers had dropped considerably. Aboriginal people were disassociated from their traditional land by non-indigenous settlement and farming practices as well as being forced into reserves (Kinhill, 1996). Other causes of Aboriginal decline were diseases such as influenza, cholera, venereal disease, small pox, leprosy and the influence of alcohol and opium. Despite these devastating effects, links still exist between Aboriginal people and areas within the catchment particularly the less disturbed areas in the upper catchment and the Greenbank Military Training Area (GMTA).
Map 3.1 Location of Oxley Creek Catchment (source: Kinhill, 1995)
Social Statistics

Oxley Creek catchment includes the largest concentration of residential, commercial and industrial activity areas in Queensland (BRMG, 1996). The upper section of the catchment supports expanses of forest dominated by rural areas. The middle section contains rural residential areas.

The lower or northern section of the catchment is more populated and urbanised. It contains established industrial areas around Coopers Plains and Acacia Ridge. The Willawong remediation site and recycling node, landfill and liquid waste treatment plant, Inala and Oxley Sewage Treatment Plants, Archerfield airport and extractive industry are also within the lower section.

Land Use within Oxley Creek Catchment

<table>
<thead>
<tr>
<th>Land Use Category</th>
<th>%</th>
<th>Location of dominant land use in catchment sections</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban (including low, medium and dense)</td>
<td>14</td>
<td>Lower</td>
</tr>
<tr>
<td>Industrial/Commercial</td>
<td>6</td>
<td>Lower</td>
</tr>
<tr>
<td>Extractive</td>
<td>1</td>
<td>Lower</td>
</tr>
<tr>
<td>Rural residential</td>
<td>7</td>
<td>Middle, Upper</td>
</tr>
<tr>
<td>Bushland</td>
<td>41</td>
<td>Middle, Upper</td>
</tr>
<tr>
<td>Partially cleared bushland</td>
<td>9</td>
<td>Middle</td>
</tr>
<tr>
<td>Grassland/Parks/Schools/Golf Course</td>
<td>15</td>
<td>Lower</td>
</tr>
<tr>
<td>Unidentified</td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

Source: Kinhill, 1996

The population of Oxley Creek Catchment is shown in Table 3.1.

Table 3.1 Oxley Creek catchment population growth 1986-1991

<table>
<thead>
<tr>
<th></th>
<th>1986</th>
<th>Growth per annum (%)</th>
<th>1991</th>
<th>Growth per annum (%)</th>
<th>June 1996 predicted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>93,278</td>
<td>1.21</td>
<td>99,056</td>
<td>3.42</td>
<td>113,300</td>
</tr>
</tbody>
</table>

Source: Kinhill, 1996

The population forecast for the catchment is shown in Table 3.2.
Table 3.2 Oxley Creek catchment forecasted population

<table>
<thead>
<tr>
<th></th>
<th>1991 estimated resident population</th>
<th>2011</th>
<th>2031</th>
<th>2051</th>
<th>2071</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>95,549</td>
<td>163,700</td>
<td>199,791</td>
<td>227,487</td>
<td>249,921</td>
</tr>
<tr>
<td>Medium (most likely)</td>
<td>95,549</td>
<td>152,181</td>
<td>171,394</td>
<td>188,903</td>
<td>209,216</td>
</tr>
<tr>
<td>Low</td>
<td>95,549</td>
<td>140,420</td>
<td>155,806</td>
<td>169,678</td>
<td>181,470</td>
</tr>
</tbody>
</table>

Source: Department of Housing, Local Government and Planning, 1996

Future Pressures

Over the past 150 years, the broad floodplains of the catchment have become densely populated and permanently changed. The upper and middle catchment are becoming more urbanised with many areas allocated for future residential development namely Spring Mountain, Teviot Downs and the creation of the Spring Mountain Urban Centre (Kinhill, 1996).

Population growth is increasing and will continue to expand as the catchment is part of the South-East Queensland regional economy which is part of the Pacific-Rim trading zone. It is estimated that by 2011, the number of jobs within Brisbane will exceed 650,000 with up to 200,000 workers per day from outside the city, many from the Beaudesert and Logan area (Brisbane City Council, 1994).

The Brisbane 2011 – Livable City for the Future, provides a guide to future development for the City of Brisbane. It strives to direct urban development to environmentally benign areas (Brisbane City Council, 1994). This philosophy should not only be relevant to the area within the Brisbane City boundary, but also extend throughout the catchment.

3.2 Purpose of the Catchment Management Plan

Local Governments, State Departments, industries and community groups have, in recent years, expressed concerns about the state of Oxley Creek and its tributaries. The Oxley Creek CMP is viewed by a range of concerned stakeholders as a significant vehicle for protection and management of the land, water and related biological resources within Oxley Creek catchment.

In November 1997, the Brisbane River Management Group (BRMG) and the Oxley Creek Catchment Association (OCCA) commissioned a comprehensive planning exercise to produce a catchment management plan for the catchment.
The plan was to encompass the necessary initiatives for coordinated future management and rehabilitation practices within the catchment. It was intended to address actions to be taken to safeguard the creek and catchment from current pressures.

The Regional Picture

The BRMG has the responsibility for integrating catchment management plans into the overall management plan for the Brisbane River and Moreton Bay.

As part of the Brisbane River Moreton Bay Waste Water Management Study (BRMBWMS) project, a Water Quality Management Study is still in progress for Moreton Bay and its waterways and when completed will provide the overall strategy for water quality of the Bay. All management plans for catchments and sub-catchments of the Brisbane River including Oxley Creek must respond to requirements in this master plan for Bay waters and the Brisbane River.

Protection of the region’s natural assets is a firm commitment made in the Regional Framework for Growth Management project documents (Department of Housing, Local Government & Planning 1996-8). It stipulates that priority actions for water quality include completion of the regional water quality strategy. Catchment strategies need to be consistent with these two master plans.

The State Picture

Under the Integrated Catchment Management Strategy (ICM), the State Government’s primary statement concerning catchment management and released in 1991, a catchment management plan is an effective strategy if it:

- Demonstrates interactions between the land and water resources and does not treat them as separate entities
- Is based on river catchments
- Takes account of the continuously changing nature of river catchments
- Demonstrates coordinated management of land and water resources in the catchment
- Uses the best available information
- Is based on the informed action of individual land and water users and managers
- Maintains a balance between economic development and conservation of land and water

Figure 3.1 outlines integrated catchment management in Oxley Creek.

Figure 3.1 Integrated Catchment Management in Oxley Creek Catchment
3.3 The Plan as a Community Initiative

The community groups in the catchment have provided the impetus for strategic catchment planning work for protecting and improving the natural values of Oxley Creek. In parallel with catchment wide planning for the Brisbane River, groups have organised and directed their efforts at issues of the Creek system.

Community views concerning a range of issues and priorities for the catchment were gathered in a number of forums. For this catchment management plan, ‘community’ includes residents of the catchment, local groups, industries, business or commercial enterprises within the catchment.

The forums utilised for consultation included:

- A community meeting at the commencement of the project;
- A series of surveys across the catchment in popular local parks and shopping centres which yielded over 240 responses;
- A series of 6 workshops held during the evenings and on weekends to identify catchment directions and priorities;
• Use of research within South East Queensland assessing community value of waterways;
• Liaison with the Oxley Creek Catchment Association (OCCA); and
• Schools' Mad about the Creek project initiated by the Oxley Creek Environment Group.

In 1996, the OCCA was endorsed as an official ICM group with the aim of coordinating resource usage in the catchment. In addition to their involvement in the more formal tasks associated with the OCCCC, the guiding body of OCCA, members of community groups have continued work on a program of events aimed at community learning and numerous fact-finding projects.

Community learning activities to date include Waterwatch, catchment tours, the annual Water Festival, surveys of community awareness and attitudes about the Creek, several consultation workshops conducted about the plan in sub-catchments of the Creek and a schools environmental arts “visioning project” (Mad About the Creek).

Numerous fact-finding sessions have also been conducted with officers in Councils and government departments, to research Creek-related issues and to present strategies and options for Creek protection to decision-makers.

This catchment-wide plan for the Creek is the most strategic community project to date, the result of community-led negotiations for funding and recognition with interested key agencies. Dedicated and talented participants in OCCA have conducted the community consultation exercises for the Plan.

Through their advocacy of a catchment management plan, community groups are intent upon improved coordination for planning and development decisions as well as environmental management services.
3.4 CMP Process

Figure 3.2 Overview of the CMP process

PREPARATORY WORK

• State of Oxley Creek Catchment Report (Kinhill)
• Work of OCCC
• Community projects / events
• Preparation of CMP brief with consultation (specific studies)

TECHNICAL

Technical Studies
• water quality + AQUALM modelling*
• creek stability*
• flooding*
• vegetation*
• planning
• aquatic habitat*
• soil erosion risk*
* Refer Volume 2

PLAN DEVELOPMENT

MANAGEMENT PLAN
(this volume)
• key findings
• desired outcomes and vision
• future sustainability scenarios
  - water quality
  - creek condition
  - catchment condition
  - access and amenity
• integrated catchment plan
• review of legislation, existing projects, agency plans
• institutional arrangements for co-ordination and progress review

CONSULTATION

Wider Stakeholder Consultation
• surveys
• workshops on issues
• workshops on scenarios
• review of draft CMP

Agency Consultation
• Local Governments
• BRMG/BRMBWMS
• DNR
• EPA

FUTURE ACTION PLAN
(in catchment management plan)
• priorities
• responsibilities
• funding
• reporting
• research
3.4.1 Technical studies and integrated assessment of catchment issues

The extensive data collection for the State of Oxley Creek Catchment Report gave broad indications of key technical matters to be studied further for the catchment management plan. Topics for further investigation were identified as:

- Water quality
- Flooding
- Creek stability
- Land Use
- Vegetation cover and habitat
- Access and amenity considerations in relation to the creek and its tributaries
- Aquatic habitat.

The technical studies were kept small and targeted at critical issues facing the catchment. The findings of the technical studies are presented in Volume 2.

3.4.2 Consultation about issues and options for management

Community input and awareness raising activities occurred through a number of initiatives by OCCCA and member groups. Use was also made of results from a 1997 South-East Queensland survey by Brisbane River Management Group on community views about waterways, the values people associate with them and those issues which the community sees as priority ones to be addressed.

The catchment management plan was developed in close association with and under the directions of the OCCCC. Results of the numerous community consultation activities are presented in this report in the summary of community issues given in the Environmental Report Card (Chapter 4) and in the sections on sustainability scenarios and implementation priorities (Chapters 6 and 7).

3.4.3 Liaison with agency representatives and other stakeholders

The catchment management plan could not have been prepared without consistent and targeted input from people in the following areas:

- Key industry, environment, community and non-government agency representatives.
- Key State Government departments with responsibilities in Oxley Creek catchment including Natural Resources and Environment & Heritage.
- The Local Governments of Beaudesert, Logan and Brisbane Councils together with Ipswich to a lesser extent.
Throughout the project, liaison has occurred with several consultancy groups working on stormwater plans for subdivision developments in the catchment. Consultants for Ridgewood, Lakewood and Delfin / Forest Lake have sought direction from the catchment management plan about stormwater management requirements.

3.4.4 Steps in Plan development

Following completion of the supporting technical studies of water quality, flooding, creek stability, landuse and vegetation (Volume 2), the planning for catchment management involved several key steps.

1. Defining the desired outcomes for water quality, stream condition and overall catchment management, along with access and amenity.

2. Reporting on key issues based on the technical assessments of selected study aspects including:
   - Water quality
   - Receiving waters of the Brisbane River and Moreton Bay
   - Creek and tributaries condition
   - Flooding and drainage
   - Bed and banks
   - Riparian vegetation including wetlands
   - Catchment conditions
   - Erosion-risk areas
   - Vegetation cover and habitat protection
   - Access and amenity to/of the Creek.

3. Construction and evaluation of scenarios for ecological sustainability and specification of a master plan for the catchment based on the preferred scenario.

4. Setting of priorities and key actions for implementation, and specification of preferred institutional arrangements for their conduct and review of progress.

5. Preparation of protection and improvement strategies including operational plans by specific sectors in compliance with this catchment plan eg plans by Local Governments, extractive industry.