



EASTERN CATCHMENT MANAGEMENT PLAN

2012 - 2022
JUNE 2012







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This Eastern Catchment Management Plan is based on the efforts of many individuals with contributions from all stakeholders, community groups, catchment groups and friends groups who are gratefully acknowledged for their ongoing support and dedication.

The future of catchment management and environmental projects in the eastern region will be based on the framework that is contained in this document. It stands as a testament to the volunteers and officers who have contributed invaluable feedback and many hours through the workshops and meetings. This has resulted in a plan that represents the aims and objectives of all stakeholders and provides a clear path forward.

The following people have supported this document and made the plan possible:

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ACRONYMS AND ABBREVIATIONS

The following acronyms and abbreviations have been used in this report:

BS4H's	Bush Skills for the Hills	LGA	Local Government Authority
BMP	Best Management Practice	LHA	Lower Helena Association
BWCG	Blackadder Woodbridge Catchment Group	LPS4	Local Planning Scheme No. 4
CAP	Catchment Action Plan	NHT	National Heritage Trust
CRC	Co-operative Research Centre	NRM	Natural Resource Management
COS	City of Swan	NRPG	Nature Reserve Preservation Group
CSAC	Community Sustainability Advisory Committee	PAP	Phosphorus Awareness Project
DAFWA	Department of Food and Agriculture of Western Australia	POS	Public Open Space
DCA	Development Control Area	PR	Public Relations
DFES	Department of Fire and Emergency Services'	PRNRM	Perth Region NRM
DIA	Department of Indigenous Affairs	REAG	Regional Environmental Advisory Group
DER	Department of Environment and Regulation	RES	Regional Environment Strategy
DOP	Department of Planning	RCCAAP	Regional Climate Change Adaption Action Plans
DOW	Department of Water	SALP	Swan River Trust and Alcoa Landcare Program
DPAW	Department of Parks and Wildlife	SBCG	Susannah Brook Catchment Group
DRRP	Darling Range Regional Park	SERCUL	South East Regional Centre of Urban Landcare
EAC	Environmental Advisory Committee	Shires	Shire of Mundaring, Shire of Kalamunda, City of Swan
ECM	Eastern Catchment Management	SMCCP	Swan Mundaring Community Catchment Project
ECMP	Eastern Catchment Management Plan	SOK	Shire of Kalamunda
ECU	Edith Cowan University	SOM	Shire of Mundaring
EHCMP	Eastern Hills Catchment Management Program	TCUP	Tree Canopy and Understorey Program
EMP	Environmental Management Plan	Trust	Swan River Trust
EMRC	Eastern Metropolitan Regional Council	WALGA	WA Local Government Association
EMS	Environmental Management Strategy	WSUD	Water Sensitive Urban Design
ERG	East Reference Group		
HRCG	Helena River Catchment Group		
ICM	Integrated Catchment Management		
ICMP	Integrated Catchment Management Plan		
JBCG	Jane Brook Catchment Group		
LCCAAP	Local Climate Change Adaption Action Plans		
LCDC	Land Conservation District Committee		



GLOSSARY

Catchment Area

Is the entire area that has runoff into a waterway.

Catchment Group

Community groups which manage natural resources within a given catchment area, on both public and private property. Many projects of catchment groups focus on wetlands and waterways with the aim of improving water quality. Catchment groups have their own incorporation and are linked to the Eastern Hills Catchment Management Program by their constitution and receive support from NRM Officers who are employed by the Eastern Metropolitan Regional Council.

Fire Support Officers

Encompasses the Rangers, the Volunteer Fire Brigades, and Fire Protection Offices.

Friends Group

Mostly unincorporated community groups formed with the aim of looking after particular reserves and bushland areas on public land. Most friends groups are registered with the local Shire, which support groups with funding for activities such as planting of native trees and shrubs, weeding and dieback treatment.

Development Control Area

The Swan River Trust Development Control Area (DCA) includes the waters of the Swan and Canning rivers and adjoining parks and recreation reservations. It extends upstream from the Fremantle Traffic Bridge to Moondyne Brook on the Avon River, to the Lower Diversion Dam on the Helena River, along Southern River to the Allen Road crossing and along the Canning River to its confluence with Stinton Creek. The process for development approvals in and around the rivers depends on the location of the proposed development with respect to the DCA







1. BACKGROUND

1.1 Introduction

The Eastern Hills Catchment Management Program (EHCMP) is an Eastern Metropolitan Regional Council (EMRC) partnership between the Swan River Trust (Trust), Shire of Mundaring, City of Swan, Shire of Kalamunda, and the Perth Region NRM (PRNRM).

The successful partnership supports a large, active and diverse community network across five catchments with over 130 friends groups, four catchment groups, and two sub catchment groups. All five main catchments of Jane Brook, Susannah Brook, Helena River, Blackadder Woodbridge and Wooroloo Brook cross shire boundaries, four of them cross the Darling Scarp, and all of them flow into the Swan River. In total there are over 1,700 volunteers contributing over 30,000 volunteer hours per annum towards environmental projects (Shire of Mundaring, EMP 2012). Land use in the catchments is diverse, ranging from agriculture in the eastern portion, to rural landholdings, residential and highly urbanised areas in the west. Each of these catchments except for Wooroloo Brook, has an active catchment group involved in planning and on-ground activities associated with the EHCMP. The Wooroloo Brook LCDC disbanded in 2009 but some members continue on-ground activities through the Wooroloo Town Site Project.

This report reviews and updates the Integrated Catchment Management Plan (ICMP) (Western, 2000) and highlights the past 13 years of successful environmental work, celebrating the achievements this partnership has created. This report has reviewed the framework and provides future strategic direction for catchment management in the Eastern region as well as ongoing commitment to strategic planning.

1.2 Vision

The Eastern Catchment Management Plan (ECMP) provides a current strategic framework that coordinates environmental initiatives and progresses catchment management planning for the Eastern region.

1.3 Objective

The ICMP in 2000 aimed to formulate catchment management strategies with community consultation that complemented the Swan-Avon ICM Strategies. The purpose of the Eastern Catchment Management Plan for 2012-2022 is to provide review and new direction for activities based on the initial ICMP in 2000. The ECMP consists of a main overarching document that includes an implementation plan for the key focus areas and individual catchment action plans for each active catchment group. Together these documents represent consolidated and new direction for activities of the catchment groups, community groups, friends groups and reference groups in the Eastern region.

The plan has reviewed existing work and has developed a strategic direction which aims to:

- Coordinate action along water courses and throughout the catchments and sub catchments;
- Strengthen communication links; and
- Provide a strategic vision for catchment management in the Eastern region to 2012 and beyond.

From the common issues identified for each of the catchments through the workshop and planning meetings, the key focus areas for the ECMP are identified as:

- Education
- Water
- Vegetation
- Biodiversity
- Land Management
- Community Capacity and Support
- Climate Change

In addition to key issues, actions have been assigned a category. This category will provide users with an additional tool to implement the action and allows the document to be viewed from a strategic perspective to support funding opportunities. The categories are:

- Advocacy
- Engagement and Education
- Governance
- Support Systems
- Opportunities
- Research and Development
- Monitor and Review



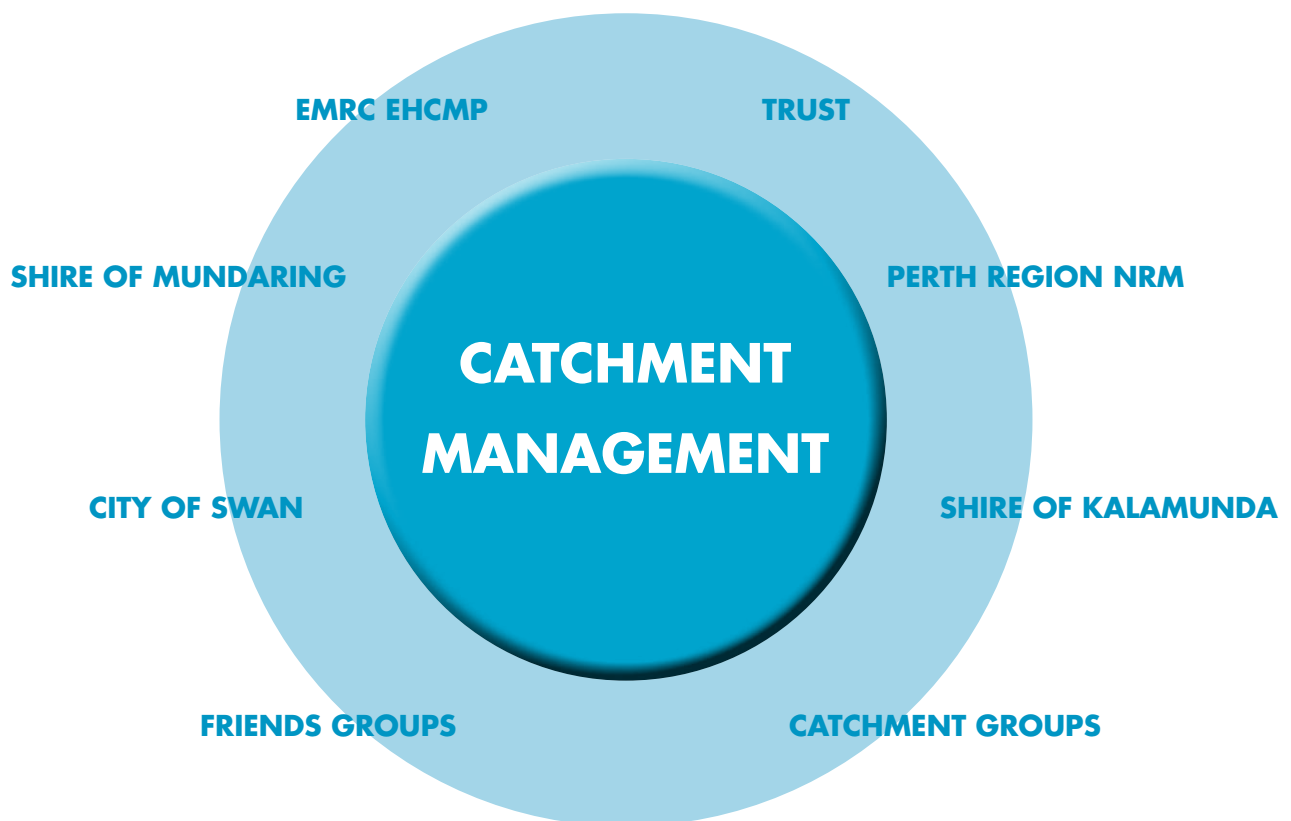


Diagram 1: The Catchment management partnerships

1.4 History

In 1989 there was growing community concern in the Perth Hills about development and the need to protect the hills environment. Community groups such as Wooroloo Brook Land Conservation District (LCDC) formed along with Bugle Tree Creek-Jane Brook Protection Society, Hovea-Parkerville Community Conservation Group and the Darling Range Forum Association. These groups formed to address community concerns over lack of protection for the environment and inappropriate development in the hills.

In 1996 the Shire of Mundaring included an Integrated Catchment Management Plan in its Environmental Management Strategy to address environmental issues through development. The integrated catchment management approach was developed with considerable community input and provided a framework for sound environmental planning within the Shire. From the ICMP the Swan Mundaring Community Catchment Project (SMCCP) was formed as a partnership between Shire of Mundaring, City of Swan, Department of Agriculture, Eastern Metropolitan Regional Council and the Wooroloo Brook LCDC. The project was based on State government policy of integrated catchment management introduced in 1989 in the **Working Together** document and the main aim was implementing ICM in the Shires as well as educating the community about catchment issues (Western, 2000).

ICM is sustainable planning, managing the land, water, vegetation, wildlife and biodiversity for the benefit of the whole catchment. The philosophy behind ICM includes taking a whole perspective to manage the environment on a catchment basis, and that process involves the landholders, land managers, the community and all levels of government working together, sharing a common purpose and understanding of how natural resources should be managed and protected. This is an important aspect, since no single group or authority will have responsibility for a whole catchment (Klemm and Switzer, 1994).

In 1996 Commonwealth funding through the Natural Heritage Trust (NHT) provided the opportunity to put the SMCCP into place, providing support with an initial funding grant. In 1997 the SMCCP was initiated as an opportunity to coordinate existing environmental initiatives and to progress catchment management. A Landcare Catchment Officer, Liz Western, was appointed to coordinate SMCCP and the formation of the Mundaring Landcare Working Party which was followed by catchment groups; Blackadder Woodbridge, Jane Brook, Rocky Gully and Helena River Catchment Group.

The management committee of SMCCP were successful in securing funding through NHT for on-ground activities and developed projects with catchment and friends groups, such as the Urban Hills Bushland Corridors Project and the Urban Hills Catchment Activities project.



In 1997/98 the Urban Hills Catchment Activities Project was initiated across twenty-two sites. The project received funding totalling \$288,000 from NHT, the community and local government. With financial assistance and support from the community and school groups, the project completed over 12 kilometres of fencing and planted over 65,000 seedlings, along with weed control and installation of contour banks (Western, 2000).

Following the success of the 1997/98 Urban Hills Catchment Activities Project, a three-year NHT project was developed with catchment and friends groups. The 1998/99 Urban Hill Bushland Corridors Project established wildlife corridors between key reserves and national parks in the region and enhanced both the quality and management of remnant bushland. The project worked to protect threatened and endangered flora and fauna and increase the levels of community awareness through training and supervision of activities. On ground activities included planting, fencing, weed management, preparation of management plans, botanical surveys of key reserves, preparation of a management plan for a seed orchard, and a desktop study of mechanisms for bushland protection on private property.

The Urban Hills Bushland Corridors project completed the aim of SMCCP to **'Formulate catchment management strategies with community consultation that complement the Swan-Avon ICM strategies'** which resulted in the ICM 2000 report. The plan raised awareness and promoted education in land care and encouraged social change towards sustainability. It was successful in developing strategic, yet adaptable catchment management plans to suit environmental and social conditions within each catchment. As a result of the plan Local Government developed new policy and guidelines ensuring appropriate environmental conditions are attached to development applications.

In 2000 the final stage of the SMCCP plan was put into place. This was the development of the Swan Mundaring ICM Strategy and its framework. The need for "community ownership" was recognised and the development process included community members, catchment groups and local government participating in a series of dedicated workshops and planning meetings over a period of eighteen months. Catchment goals and objectives were refined and strategies were developed to address the key management issues of each group. The Key environmental issues were identified as:

- Education, Promotion and Co-operation
- Water Quality and Stormwater Management
- Vegetation
- Biodiversity
- Waterways management
- Land Management
- Social Issues
- Monitoring and Evaluation

The plan included an implementation schedule along with key plans, policy and strategies for the state and region. The SMCCP linked many of these initiatives and played a role in the implementation of recommendations, particularly those related to community activities.

The Swan River Trust has supported the implementation, offering long term commitment and investment in funding the Coordinator position since 1999. Highlights of the plans achievements included (Bell and Huck, 2011):

- Secured funding from the Department of Agriculture for the preparation of **Caring For Your Land: A Guide for Small Landholders**. This provides a comprehensive information package for planning and managing small landholdings and natural resources.
- Development of a multi-media Local Government environmental awareness package, **Moving Forward with Vision: Local Government and Environmental Action** targeted at Councilors and decision-makers.
- 4km per annum of restoration work along priority tributaries achieved through EHCMP.
- Implementation of the Bush Skills for the Hills program which has educated the community with practical hands-on workshops.
- The Greenpage newsletter which provides updates and resource information for community volunteers.
- Ongoing substantial support to catchment groups to successfully rehabilitate and manage key natural resources.
- Facilitation of weed control and planting programs such as Watsonia Control and Eastern Tributaries Project.
- Mapping of priority areas for weed management and initiation of a Weed Control Strategy.
- Implementation of dieback management practices for proposed development works.
- Native fish surveys.

In 2010 The East Reference Group (ERG) of Perth Region NRM commenced a review of the ICM. While the existing plan is comprehensive and has an integrated catchment management focus it is now over ten years old. Today's plan still provides the same coordinated strategic focus but has been reviewed and incorporates new standards of best management practice.

Catchment groups along with friends of groups and community members have participated in the review, providing invaluable feedback. Individual Catchment Action Plans have been drafted in consultation with the active catchment groups and have reviewed and updated the goals, visions, and revised the catchment strategies and issues. As part of this review individual Catchment Action Plans have been drafted for:

- Blackadder / Woodbridge Catchment Group (BWCG)
- Helena River Catchment Group (HRCG)
- Jane Brook Catchment Group (JBCG)
- Susannah Brook Catchment Group (SBCG)
- Wooroloo Town Site Project

It is with these collaborated efforts that the key management issues have been refined. Strategies and actions now reflect the direction for activities for the catchment groups, community and reference groups in the eastern region.





1.5 Volunteers

The successes of the past twelve years have been made possible through the continuing partnership of EHCMP and the dedication and hard work of community volunteers. External funding opportunities have made it possible to plan and implement on ground activities and continue the momentum that officers and volunteers have worked hard to maintain.

Statistics on volunteer hours and activities are recorded by individual friends groups and then reported back to local government officers, on an annual basis. With many friends and catchment groups working across local government boundaries, it is worth noting that collectively all hours and activities represent the outstanding work of volunteers within the eastern region. It is also worth considering that the numbers although accurate, will not account for the many hours that were not reported on and “in kind” contributions that catchment group members have made to external funding projects.

The Shire of Mundaring currently supports over 80 friends groups and the Helena River, Jane Brook and Susannah Brook catchment groups. Collectively the groups in the Shire have volunteered over 67,000 hours in the last 12 years and planted over 165,000 plants. Table 1 shows the outcomes over the past nine years for Shire of Mundaring volunteers.

The City of Swan has four catchment groups and one sub catchment group within their boundary that is, Blackadder Woodbridge, Helena River, Jane Brook, and Susannah Brook catchment groups, and Lower Helena Association. Currently the volunteer hours are not reported back to City of Swan.

The Shire of Kalamunda currently has 50 active friends groups and has a dedicated officer to support the friends groups, the Helena River Catchment Group and the Friends of Piesse Brook. Since the start of 2006 volunteers have contributed over 15,078 hours of their time and planted 13,124 seedlings. Table 2 details the outcomes since 2006.

1.6 Aboriginal Cultural Heritage

Aboriginal cultural heritage encompasses the physical and non-physical and the tangible and intangible aspects that link Aboriginal people over time. Cultural heritage includes customary and traditional ways of living, with a set of common understandings (lore, customs, ceremony); spiritual and physical connection to the land (country); the way land is used; language; identity; relationships; knowledge; songs and stories shared by members of a group or community.

Aboriginal heritage consists of places and objects that provide a physical or spiritual connection that link Aboriginal cultural tradition

to place, land and people over time. Aboriginal cultural heritage sites can be found all over Western Australia and are most common near rivers, lakes, swamps, hills and the coast (www.dia.wa.gov.au, 2013). The catchments in the eastern region have a number of links with heritage places many of which are registered as Aboriginal Sites by the Department of Indigenous Affairs (soon to be Department of Aboriginal Affairs). These include waterways, artefacts/scatter, mythological, quarry and ceremonial sites.

Noongar are the traditional owners of the south-west of Western Australia and Whadjuk is the name of the dialectical (language) group from the Perth area associated with the Swan Coastal Plain and Jarrah Forest which are defined by geographic area and ecological distinctions. An important part of managing and maintaining catchment management in the region is to include, recognise and support the traditional owners and Aboriginal peoples/communities in their desire to care for their country (EMRC, Regional aboriginal Consultation Guidelines 2013).

1.7 Funding

EHCMP in conjunction with the local governments provide technical expertise, plants, mentoring, equipment and training for volunteers. The Swan River Trust values the work that the sub regions accomplish and has invested in annual support by funding the Sub Regional Coordinator position at the EMRC. The EMRC contributes both

financially and in-kind to the program and funds an Administration Officer to provide support to the EHCMP. EHCMP officers continually seek out funding opportunities to deliver and enhance the program. The Shires administer a budget for friends groups although funding or other resource assistance is necessary for major tasks.

Activities undertaken by catchment and friend groups still largely require the support of external funding. External funding has provided important opportunities for catchment and friends groups. Funding contributes to support the groups planning and implementation of on-ground activities as well as promotional and administrative tasks. Resources and funding needed to achieve sustainable levels of natural resource management are beyond the capacity of any one particular body, funding is based on a partnership between the catchment stakeholders. External funds accessed have significantly enhanced the implementation of actions associated with the project.

In 1999, a range of groups attracted funding to the value of \$28,500. In 2000, 12 catchment and Friends groups attracted \$83,000 for on-ground work in the project area. Between 2003 and 2012 over \$1.2 million was received from the Swan River Trust and Alcoa Landcare Program (SALP) for on-ground revegetation and rehabilitation projects within the region. These on-ground activities all contribute to catchment management in the area, and represent the implementation of strategic plans that are an outcome of the ICMP.

Table 1: Shire of Mundaring, Friends Groups Activities 2000 - 2012

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2011	2012
Groups	43	46	49	58	68	74	76	76	79	80	88	79
Volunteers	428	406	488	583	496	338	346	284	315	243	322	211
Hours	4503	5756	7205	9010	7760	5681	4850	6415	4978	3776	4036	3575
Plants	16, 511	13,748	19,981	21,976	17,339	20,774	13,679	8634	8499	10,963	9096	4597

Note. From "Shire of Mundaring 2013: Friends Groups Activities Comparative Survey 2011-2012"

Table 2: Shire of Kalamunda, Friends Groups Activities 2006 - 2012

Year	2006	2007	2008	2009	2010	2011	2012
Groups	11	40	23	54	43	41	50
Volunteers	208	312	183	135	58	63	108
Hours	1955	3707.25	2767.25	1891.5	1571	1346.5	1840
Plants	975	2697	4706		1932	2814	2500



Table 3: East sub region SALP funding – as detailed in Swan River Trust Annual Reports

Round	Reference	Funding
2003	2002/2003 Annual report	\$32,359
2004	2003/2004 Annual report	\$34,287
2005	2004/2005 Annual report	\$155,906
2006	2005/2006 Annual report	\$161,634
2007	2006/2007 Annual report	\$142,542
2008	2007/2008 Annual report	\$216,788
2009	2008/2009 Annual report	\$214,407
2010	2009/2010 Annual report	\$146,204
2011	2010/2011 Annual report	\$70,684
2012	2011/2012 Annual report	\$55,849
	TOTAL	\$1,230,660

Table 4: EHCMP Grant funding (excludes member council contributions)

Year	Amount (ex GST)
2006/07	\$156,267
2007/08	\$147,500
2008/09	\$190,000
2009/10	\$158,181
2010/11	\$224,834
2011/12	\$275,670
2012/13	\$206,605* (as of 16 January 2013)

Table 5: Awards and Finalist

Year	Group	Award Received
1998	JBCG	Certificate of Appreciation from Minister for Water Resources as part of the Swan ICMP
1999	Hovea-Parkerville Community Conservation Group	Award for Living Streams for restoration projects along Jane Brook
1999	Mundaring Shire Council	WA Telstra Landcare Local Government Award for environmental programs and strategies at the State Landcare conference
2001	EMRC EHCMP	Premiers Award for Excellence in Public Sector management – Sustainable Environment Category
2007	EMRC EHCMP	National Award for Innovation for the Eastern Hills Volunteer Engagement Model
2008	EMRC EHCMP	Department of Transport and Regional Services National Local Government Award for Excellence (Natural Resource Management Category) and the overall National Local Government Award for Innovation
2010	BWCG	Nomination for the Kookaburra Award for innovative approach to weed management
2010	EMRC EHCMP	Perth Region NRM Award for exemplary support of community groups through its support of the Eastern Hills Catchment Management Program
2010	HRCG	WA Environment Award, Bush Land and Waterways, for the Helena River Rehabilitation project (Pipehead Dam to Scott Street)
2010	HRCG	Perth Region NRM Award for outstanding achievement of a community group
2011	EMRC EHCMP	2011 WA Landcare Award winners in the category of "Local Government Landcare Partnership Award"
2011	JBCG	Finalist in the Toshiba Community Group Award in WA Landcare Awards
2012	EMRC EHCMP	Finalist in the 2012 National Landcare awards



1.8 Project Area

Geographically the project area encompassed by the ECMP is complex. The project area entails the whole of the Shire of Mundaring, the southeast portion of the City of Swan and the northwest portion of the Shire of Kalamunda. The area has three distinct physical environments: the valleys and plateau of the Darling Range, the Darling Scarp, and the Swan Coastal Plain including riverine areas of the Swan and Helena Rivers. The total project area is over 120,000 ha. Land use in the catchments is diverse, ranging from agricultural in the eastern portion, to rural landholdings, residential and highly urbanised areas in the west. The major catchments identified for the ECMP area include:

- Blackadder Woodbridge
- Helena River
- Jane Brook
- Susannah Brook
- Wooroloo Brook

The Helena River Catchment is treated as three separate catchments, mainly due to the size and impacts of the major dams on the catchment and waterways. It is divided into the Upper, Middle and Lower Helena with seventeen sub-catchments. Jane Brook has fifteen sub catchments, five within Susannah Brook and fifteen sub-catchments for the main Wooroloo Brook catchment based on the major tributaries of the brook.

A main overarching map has been prepared for the project area, detailing land use categories, and local government and catchment boundaries. In addition individual catchment maps have been prepared for each of the active catchment groups. The maps show the project area as it has been set for ECMP. Opportunities exist to expand the project area in the future further into the Shire of Kalamunda and the City of Swan. These maps are located in Appendix 9.

1.9 The Catchment Groups

The catchment groups that have been participating in the strategic catchment planning process for the ECMP 2012 are:

- Blackadder Woodbridge Catchment Group
- Helena River Catchment Group
- Jane Brook Catchment Group
- Susannah Brook Catchment Group

1.9.1 Blackadder Woodbridge Catchment Group

The Blackadder Woodbridge Catchment consists of two major seasonal tributaries, Blackadder Creek and Woodbridge Creek. Both creeks begin in Swan View with Woodbridge Creek beginning in the Darling Scarp in the Shire of Mundaring and Blackadder Creek starting east of Natham Square within the City of Swan boundary. The creeks converge in Middle Swan, before Blackadder Creek meanders through Midland and converges with permanent freshwater streams fed by springs underneath the towns of Midland and suburb of Midvale. Blackadder Creek then flows into a large wetland before entering the Swan River via an artificial drainage channel next to Ray Marshall Park, in Woodbridge. The extent of the sub-catchment covers an area of over 2,000 ha (Blackadder/Woodbridge Catchment Group, 2010).

The friends groups associated with the catchment include, Midland FROGS (Friends Restoring Our Green Spaces), Friends of Talbot Road Bushland Reserve, Friends of Woodbridge Creek, Friends of Peace Park, Friends of May Brook and Friends of Rhine Park.

Since 2000 the BWCG has worked to restore the biodiversity of Blackadder Creek by replacing invasive weeds (utilising non chemical weed management techniques) with seedlings sourced from local provenance. The ultimate goal is for a thriving wildlife



corridor to be re-established from Talbot Road Reserve to the Swan River (Blackadder/Woodbridge Catchment Group, 2010).

The Blackadder Woodbridge Catchment Group have developed minimal harm non-chemical weed control techniques in consideration of human health and well-being as well as reducing the multiple chemical stressors already impacting on the remnant native flora and fauna of the catchment.

Talbot Road bushland is an important component of a potential wildlife corridor link along the Blackadder Creek, between the Darling Scarp and the Swan River. The confluence of Blackadder Creek and the Swan River includes the Blackadder wetlands, a significant feature of the waterways system on the Swan River floodplain. Large sections of the Blackadder Creek are in public ownership, providing the opportunity for ongoing rehabilitation projects.

1.9.2 Helena River Catchment Group

The HRCG was founded in 1997 with the aims of promoting and facilitating biodiversity conservation within the Helena River catchment area. This includes the management of land as well as matters related to water quality within the river.

The group has also played an important role in nature reserve management and amalgamation in the Middle Helena Catchment. Through these processes, the HRCG has sought to encourage a more coordinated and effective approach to land management in the catchment area.

The HRCG has been responsible for a number of revegetation projects along the Helena River, and as part of these projects the group has developed effective weed control techniques, and novel riverine restoration designs that combine effective bushfire management strategies with biodiversity conservation.

The Helena River Catchment is treated as three separate sub-catchments, the Upper, Middle and Lower, mainly because of the large variation in landuse across the catchment, but also because of the implications and impacts of the major dams on the catchment and waterways.

There are two sub-catchment groups in the Helena River catchment; the Lower Helena Association (LHA) and the Friends of Piesse Brook. The HRCG have an advisory role to the LHA. The group formed in March 2011 to work in collaboration with the Department of Planning in the revegetation and management of the Lower Helena River. The LHA works on projects planned for a 6km section of the river from Military Road in Midland through to the suburbs of Hazelmere, Woodbridge, Guildford and South Guildford.

Piesse Brook is a major tributary of the Helena River, flowing into the Helena River upstream of the Pipehead Dam. It has the largest sub-catchment within the Middle Helena Catchment, encompassing the suburbs of Pickering Brook, Bickley, Piesse Brook, Gooseberry Hill and Hacketts Gully. The Friends of Piesse Brook are an incorporated group that have done a great deal of restoration work along the brook since their inception in 2000. The group's main project area is downstream of Hummerston Road through Kalamunda National Park to the confluence with the Helena River. They also work with private landholders to reduce the risk of weeds reinfesting the restored sections and have facilitated the installation of interpretive signage along the walk trail adjacent to the brook.





1.9.3 Jane Brook Catchment Group

In 1989 a group of volunteers formed the "Bugle Tree Creek - Jane Brook Protection Society". The aims of the group were to prevent pollution and further degradation of the waterways, raise the level of awareness, encourage the retention and replanting of riparian vegetation, and to protect bushland areas. These aims are still relevant today.

In 1997 a number of groups working in the catchment became the Jane Brook Catchment Group as part of SMCCP. The group is involved in a number of revegetation projects and has been very successful in receiving grant funding and awards. There are currently 23 Friends groups working in the catchment.

1.9.4 Susannah Brook Catchment Group

Susannah Brook catchment has its headwaters in the Shire of Mundaring; however the greater portion of the catchment is in the City of Swan. The catchment includes the suburbs of Stoneville, Gidgegannup, Millendon, Herne Hill and Baskerville. The main tributaries of Susannah Brook make up five sub-catchments, which are Lower Susannah Brook, Thirteen Mile Flat, Upper Susannah Brook, Burgess Road and Bush Creek. The SBCG has been operating since February 2002 and has a membership of approximately 60

people. The management committee is made up of 7 community volunteers and the group has support from EHCMP and supports Friends Groups including the Friends of Blue Wren Reserve and the Friends of Timbertop Reserve.

The catchment area is approximately 6,000 hectares and has one third remnant vegetation cover, which is generally of good to very good condition. Areas of significant bushland are Wandoo Heights in Herne Hill and the operational areas of Pioneer Quarry and Midland Brick in Red Hill.

Since its inception in 2002, revegetation has been undertaken from the headwaters of Susannah Brook at Blue Wren Reserve to the eastern and western public open space areas off Strawberry Hill Drive. An average of 6,000 seedlings and 2,000 rushes have been planted annually revegetating the public open space areas.

1.9.5 Wooroloo Brook Land Conservation District Committee

Wooroloo Brook LCDC was an active catchment group that was involved in the catchment planning and on-ground activities associated with the SMCCP. The group was proactive in implementing projects for 20 years, from 1989 to 2009 within the catchment and including private property. The group obtained

more than \$1.2 million for land care in the Eastern region with in excess of 550,000 seedlings planted. The support the group obtained from funding sources such as Alcoa, SALP and community development grants created opportunities to implement many land care initiatives including fencing off creek lines to protect them from stock, planting native seedlings to rehabilitate and protect the natural waterways, and planting in upland and water logged areas to reduce the impact of salinity. Funding contributed to the development of 40 projects with 150 ha of rehabilitation in place (Dugand, 2007).

The Wooroloo Brook catchment is a major catchment covering 36,000 ha within the Shires of Mundaring and the City of Swan. The upper catchment to the east is located outside the ECMP project area, in the Shire of Northam. Wooroloo Brook is a major tributary of the Swan Avon River, the town sites of Wooroloo, Chidlow, Wundowie and Gidgegannup are all within the catchment.

Currently on ground activities continue in the catchment with an active friends group, the Wooroloo Town Site Project. The group has continued planning environmental activities in the area and is actively engaging the community to become more involved.

2. PLANS, POLICY AND STRATEGIES

2.1 Key Partners

The Shire of Mundaring, Shire of Kalamunda and City of Swan all participate in the EHCMP. The Local Government Authorities contribute to the EHCMP through the EMRC's Environmental Services. This contribution assists in funding the EHCMP which is resourced by a Natural Resource Management Coordinator and two Natural Resource Management (NRM) Officers. NRM Officers work in partnership to support community groups with the level of participation for landcare activities among the highest in Australia.

The Trust supports the program and works together with the EMRC to provide technical advice to local government and local community groups. The Trust has provided a long term commitment and investment into the sub regions through the annual support of the sub regional coordinator position. The support has been included in the draft River Protection Strategy which states in strategy 3.2:

continue its [the Trust's] financial support for maintaining community capacity across the NRM sub regions, consistent with the Healthy Rivers Action Plan. This investment highlights the value that the Trust places on the work that the sub regions carry out.

Perth Region NRM supports the EHCMP through provision of grant funding, letters of support, officer assistance with projects and program delivery, and community engagement.

There is a large number and range of policies and strategies that exist for the region that influence planning and activities in the catchments. The ECMP links many of these initiatives and plays a role in the implementation of recommendations, particularly those related to community activities. The plans, policies, strategies and guidelines relevant to the ECMP have been listed in the appendix, sections two to seven.

2.1.1 The Shire of Mundaring

The Shire of Mundaring (SOM), with considerable input through community expertise and the Environment Advisory Committee (EAC) developed the Environmental Management Strategy

(EMS) in 1996. This strategy provided a comprehensive overview of environmental issues and a detailed action plan, with sixteen key strategies, including the ICMP. The EMS has now been largely implemented but no longer adequately addresses all the environmental issues the Shire is currently facing. The Shire is committed to the environment and as part of this has developed a new Environmental Management Plan (EMP) which builds upon the Shire's previous achievements in the EMS and the State of Environment Report released in 2008 that provided a snapshot of the health of the environment (Shire of Mundaring, EMP 2012).

The vision for the EMP is to establish a sustainable Shire that demonstrates corporate and community commitment to the environment and reflects our responsibility to its natural assets for future generations. The Shire strives to be a leader in local government sustainability and environmental management. The aim of EMP 2012 – 2022 is to guide the Shire's environmental management activities over the next ten years in order to protect and enhance the local environment. The plan identifies six key focus areas which are based on the themes identified in the State of the Environment Report released in 2008. The focus areas are as follows:

- Atmosphere and Climate Change
- Biodiversity
- Heritage
- Human Impact
- Land
- Water

Over the last 15 years the Shire has developed a number of environmental policies and strategies that originated from the Shire's EMS (1996). They have now been successfully implemented and the new EMP will provide an opportunity for review and to further build upon the existing framework.

The SOM continues to support the ECMP and is committed to the protecting the environment and the lifestyle that

the shire values. The Shire, through its strategic plan, has committed to **'protect, manage and enhance the community's environment'**.

The Shire's EAC is a formalised committee of Council consisting mostly of community members and a representative from Council. The EAC has played a significant role in key environmental projects such as supporting the ICMP. Established in 1993 they meet regularly to:

- Advise Council on community opinion and attitude on environmental issues within the Shire of Mundaring;
- Work within the community to encourage an environmental ethic;
- Consider and provide recommendations to Council on any matter referred to it by Council; and
- Subject to Council direction, conduct functions and activities involving the community to create environmental awareness, canvas issues and/or gain community opinion it deems necessary (Shire of Mundaring, EAC Terms of Reference).

One of the Shire's great strengths is the extensive and dedicated network of environmental volunteers that undertake bushland conservation and environmental management activities within the Shire's natural areas. The Shire has over 80 Friends groups, who are groups of volunteers that undertake bushcare activities in reserves and on private property.

The Shire's central strategic planning document, **Strategic Directions: A Plan for the Future 2008 – 2012**, guides the activities of councillors and staff in addressing strategic initiatives and influences the way the Shire does business, ensuring that it focuses on the matters of importance to the community. The Plan has a strong focus on sustainability as the Shire continues to work towards environmental, social and financial sustainability.

The Shire has recently drafted Local Planning Scheme No. 4 (LPS4) which



when adopted will replace the existing Town Planning Scheme No.3. LPS4 will guide future development in the Shire and sets out how land can be used and what controls relate to development, use and subdivision of land. LPS4 will aim to preserve the Shire's biodiversity and environmental values through appropriate protection of areas of significant native vegetation, valuable habitat areas and other areas of environmental value. The Scheme also aims to assist in effective management of water sources, rivers and other water bodies to promote a more energy-efficient form of development. LPS4 links environmental aims that are linked to each of the key focus areas in the EMP.

2.1.2 The City of Swan

The City of Swan (COS) has developed a Sustainable Environmental Strategy which was adopted by council in March 2012. In developing the strategy the COS reviewed its environmental approach and committed to improving its environmental performance. The COS resolved to develop an Environmental Management System, as a tool to coordinate the wide range of environmental activity, with a cohesive approach that achieves the environmental objectives derived from the COS Strategic Plan (2008 – 2012) and the Sustainable Environment Policy.

The purpose of the COS Sustainable Environment Strategy is to provide a framework to progress the COS and towards a more sustainable future. The proposed environmental actions that the COS will undertake are divided into seven core strategy areas. The focus areas are as follows:

- Biodiversity Retention
- Water Quality
- Water Efficiency
- Waste Minimisation
- Carbon Reduction
- Adaptation for the future
- Corporate Capacity Building

The City of Swan's Strategic plan (2008-2012) aims to build sustainable local communities to improve quality of life within our city. The plan includes the following high level strategies that relate to Environmental Management:

- Protect and maintain our natural environment
- Create and promote community awareness to encourage responsible environmental behavior
- Effectively manage resource consumption, including water and energy, in order to reduce waste and greenhouse gas production and improve air quality
- Build partnerships with organisations which will advance the City's environmental objectives

The seven focus areas in the Sustainable Environment Strategy relate and link to the high level strategies contained in the City of Swan's Strategic Plan and flow from the objectives of the City of Swan's Sustainable Environmental Policy.

The strategy has identified the importance of key stakeholders and partnerships, including integrated catchment groups, friends of groups and the EHCMP. The City of Swan continues to support the ECMP.

2.1.3 The Shire of Kalamunda

The Shire of Kalamunda (SOK) is dedicated to protecting the environment and has developed the Local Biodiversity Strategy (2008) to strategically plan for future development and ensure the retention and protection of natural areas. The strategy provides a strong position for the Shire when assessing development applications and is supported by Kalamunda's Advancing Strategic Community Plan to 2023.

The Shire's Local Planning Scheme No. 3 contains provisions in respect to removal of vegetation. The Shire uses its Planning Scheme and any of the relevant state legislation or guidelines to address applications and assess any removal of native vegetation. An action plan and targets have been set out to give clear direction on conserving the environment.



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The Shire of Kalamunda is currently reviewing all policies and strategies, with an aim to provide cohesiveness between the environmental and sustainability plans. The Wildlife Corridor Strategy will be reviewed as part of this process and will ensure criteria for local linkages are updated. The Shire recently had its Local Planning Strategy endorsed which has further provisions for further biodiversity conservation. The Shire supports a variety of active local environmental community groups and the community based umbrella group, Nature Reserves Preservation Group (NRPG). The NRPG focuses on community enjoyment of bush reserves and the group:

- Facilitates friends groups for bush reserves in the shire
- Administers conservation grants awarded to friends groups and
- Actively lobby for the management and preservation of local bushland through local government, state and federal bodies

The Shire's Community Sustainability Advisory Committee (CSAC) is a group of 10 members who aim to advise council on sustainable practice. The group make recommendations to Council on a range of sustainability and environmental matters impacting on the community. They provide a forum for community representatives and Councillors to

focus upon sustainability issues. The committee members are from a range of backgrounds, have a diversity in their professional responsibilities and have come together to assist the progression of creating a sustainable community within the Shire.

2.1.4 Eastern Metropolitan Regional Council

The EMRC is a local government entity established under the Local Government Act 1995. EMRC works in partnership with its six local Councils located in Perth's Eastern Region. The EMRC Environmental Services delivers a number of regionally based environmental and sustainability projects in collaboration with its 6 member Councils, being the; Town of Bassendean, City of Bayswater, City of Belmont, Shire of Kalamunda, Shire of Mundaring and City of Swan.

In 2011 the Council of the EMRC approved the Regional Environment Strategy 2011-2016 (RES). The RES provides an overarching framework for the delivery of the EMRC's environmental services to ensure the environment of Perth's Eastern Region is protected and maintained. The RES links to the EMRC's 2022 – 10 Year Strategic Plan and provides the framework for reporting under the objectives; "to contribute towards improved regional air, water and

land quality and regional biodiversity conservation" and "to address climate change issues within the region".

The vision for the RES is:

A region supporting healthy ecosystems and habitat for flora and fauna, where the air, land and waterways are clean, there is green space, highly efficient buildings and transport systems, renewable energy and minimal waste and emissions.

In February 2010 the Council of the EMRC approved the development of the RES and the formation of a Regional Environmental Advisory Group (REAG). The REAG is made up of Environmental and Sustainability Officers from each of the 6 member Councils and EMRC Environmental Services staff. The group meets on a regular basis to provide guidance to the projects and services delivered by the EMRC Environmental Services business unit.

The vision of the REAG is to **"Work together to strengthen the environmental values of the region for our communities."**

The EHCMP is coordinated through the Environmental Services business unit at the EMRC. The EMRC provides funding support to deliver the program including human resources such as administrative support and financial services such as annual financial auditing of the program.



2.1.5 The Swan River Trust

Established in 1989, the Trust is a state government agency responsible for protecting and managing the Riverpark. In the role as caretaker of one of Perth's most iconic treasures, the Trust works with community, industry, local government and other state government agencies. The main objective of the Trust is to maintain and improve the environmental and social health of the Riverpark, ensuring that the community can enjoy it now and in the future. Legislation relevant to the Riverpark includes **Swan and Canning Rivers Management Act 2006 and associated regulations (Swan and Canning Rivers Management Regulations 2007)**.

The Trust:

- manages and protects the Riverpark;
- works with state and local government and other bodies to provide Riverpark facilities;
- advises the Minister for Environment on development proposals in the DCA;
- controls and prevents pollution of the rivers and keeps them clear of rubbish;

- advises on and controls erosion of riverbanks;
- provides advice to local government and the Western Australian Planning Commission on town planning issues affecting the rivers; and
- promotes community awareness of issues affecting the health of the river system and increases community involvement in river protection and restoration.

2.1.6 Perth Region NRM

Perth Region NRM, an independent, not-for-profit organisation, is a key player in the protection and sustainable management of Perth's natural resources. Its sound understanding of the region's issues and its strong community relationships has helped it deliver a successful track record in facilitating natural resource management projects across biodiversity, water, land and heritage. Perth Region NRM has a strong commitment to the Eastern region and to the delivery of the Eastern Catchment Management Plan.

3. METHODOLOGY

The methodology used in the preparation of the ECMP is a result of:

- A review process involving extensive community consultation.
- Surveys and workshops with all key stakeholder groups to refine catchment goals, objectives and strategies to address the key management issues.

An independent consultant documented a review process for the ECMP and over a

period of 18 months, though the delivery of Perth Region NRM, meetings and workshops were held reviewing key management issues. Meetings involved on average 6 people, with representatives from the community and each of the key stakeholder groups. Overall the total hours of officer time to review the plan amounted to 382.5 hours.

Coordination was later transferred to the EMRC and stakeholders provided funding for

the completion of the plan. The total hours spent actually preparing ECMP, including consulting with relevant stakeholders, workshop meetings to review the actions within each key focus area, and community engagement amounted to 255 hours of officer time. The funding contribution for the plan totalled \$37,000 and sources are detailed in the table below.

Table 6: Funding sources for the preparation of the Eastern Catchment Management Plan

Partner	Contribution
Shire of Mundaring	\$20,000
Swan River Trust	\$5000
City of Swan	\$3000
Eastern Metropolitan Regional Council	In kind
Shire of Kalamunda	\$1000
Perth Region NRM	\$8000
Total Funding	\$37,000

There has been considerable passion and community commitment to catchment management in the Eastern region for many years. With changes to natural resource management since the initial ICMP, the ERG, coordinated by Perth Region NRM, identified a need to review the existing Catchment Management Plan to assess the opportunities and challenges facing natural resource management in the region and identify appropriate strategies.

The ICMP has been a good tool for facilitating on-ground works and also providing strategic evidence in funding applications. It has helped to drive on-ground work and maintain momentum in the community. The review has provided an opportunity to evaluate and focus on achievements to date and also identify opportunities for brokering partnerships with the key stakeholders and the community,

to ensure effective integrated catchment management.

The review process commenced in 2010 with community surveys circulated to Catchment and friends groups. A series of dedicated workshops and planning meetings were held with each of the catchment groups over a period of eighteen months to consider the planning processes appropriate to each catchment group. These workshops collated information to develop on-ground and individual catchment plans to align within the overall ECMP.

In August 2011 a community workshop was held which provided the community with information on how and why the ECMP was being developed and an opportunity to contribute to the development of the ECMP. The workshop enabled the ERG to understand what natural resources in the Eastern Catchments are most important to

the community, and what should be done to protect those values.

Coordination of the project was transferred to EMRC and the key stakeholder groups funded the development of the plan with significant in-kind contribution of officer time by EMRC. The survey and meeting results were further refined and implementation plan was developed with the common issues identified for the ECMP.

No priority or ranking has been assigned to these issues, as they vary between catchments, landscapes and communities. Rather, it is important to consider each of the key issues as interrelated and interdependent, and the same applies to the strategies developed to address those issues. Strategies to address these key focus areas are detailed at Section 4.

4. IMPLEMENTATION

The following strategies and how to implement them are intended to provide a framework for overall catchment management issues. Lead organisations and supporting partners will implement the plan in the constraints of existing budgets and resourcing levels. They are committed to working together to actively seek new resources and opportunities.

Overall strategies to deal with a particular issue are further broken down into more specific detail, which in turn provides potential for a measurable outcome. Further detail can also be found in the individual Catchment Action Plans.

It is important to note that no commitment has been made to any of the strategies or actions from any of the proposed stakeholders,

project groups or potential resource providers. These are suggestions as to how the framework may be implemented at the catchment or sub catchment level.

4.1 Timeframes

A timeframe for implementation is detailed in Table 7.

Table 7: Definition of timeframes for implementing actions

Timeframe	Actions to be completed within
Short Term	1 – 2 years
Medium Term	2 – 5 years
Long Term	5 – 10 years
Ongoing	To occur throughout the implementation of the Plan

4.2 Definitions

The implementation plan is organised under the following headings:

- **Strategies** – the management options aimed at addressing the long term goals.
- **Action** – what is required to implement those strategies which should be achievable within the suggested timeframe.
- **Lead organisation** – refers to the stakeholder and / or groups that have an interest in implementing the strategy.
- **Supporting partners** – refers to a potential source of human and financial resources required
- **Timing** – as defined in Table in section .1
- **How / Where** – these are additional comments and resources that will assist in completing the action / strategy.
- **Type** - each action in the plan has been assigned a category that defines the type of action it is. This allows user groups to use the plan in a different format. The additional description of the action will give direction to lead organisations, supporting partners, local government officers and community members on what is required to implement the action. Actions have been categorised into the following:
 - **Advocacy** ▲ – involves advocating for a clear commitment to integrated management, for compliance and appropriate environmental conditions being placed upon development applications, and to support organisations and community volunteers to ensure actions can be implemented and followed through.
 - **Engagement and Education** 📖 – involves integrating the community and the environment. Promotion of environmental material and publications at events and holding field days and networking events to encourage sharing of resources. Education aims to increase the knowledge and skill set of individuals and raises awareness of conservation management. Education needs will be identified and opportunities explored to create new resources and training modules while expanding core training with programs such as the Bush Skills for the Hills program.
 - **Governance** 🏛️ – is the opportunity for progressing catchment management with the development of new frameworks. In a changing environment, guidelines will be reviewed, updated and incorporated into all relevant decision making. Governance involves an integrated approach, across local, state and regional departments.
 - **Support Systems** 🔄 – is a network of resources and involves implementing systems that support and promote environmental projects. This action requires the lead organisation, with support from others, to carry out and put the action plan or policy into effect.
 - **Opportunities** 🗒️ – The action requires further exploration to identify future opportunities that may exist. Once the information is gathered this will enable the action to be implemented or revised where appropriate.
 - **Research and Development** 🔬 – with an ever changing environment further research is required to support environmental programs. Development of new resources and researching opportunities will lead to further action.
 - **Monitoring and Review** ✓ – is a measure of evaluating actions and activity, and is critical for conservation management. Reviewing the action allows for recognition and achievements and is an opportunity to adjust the strategy, based on the new knowledge and understanding.



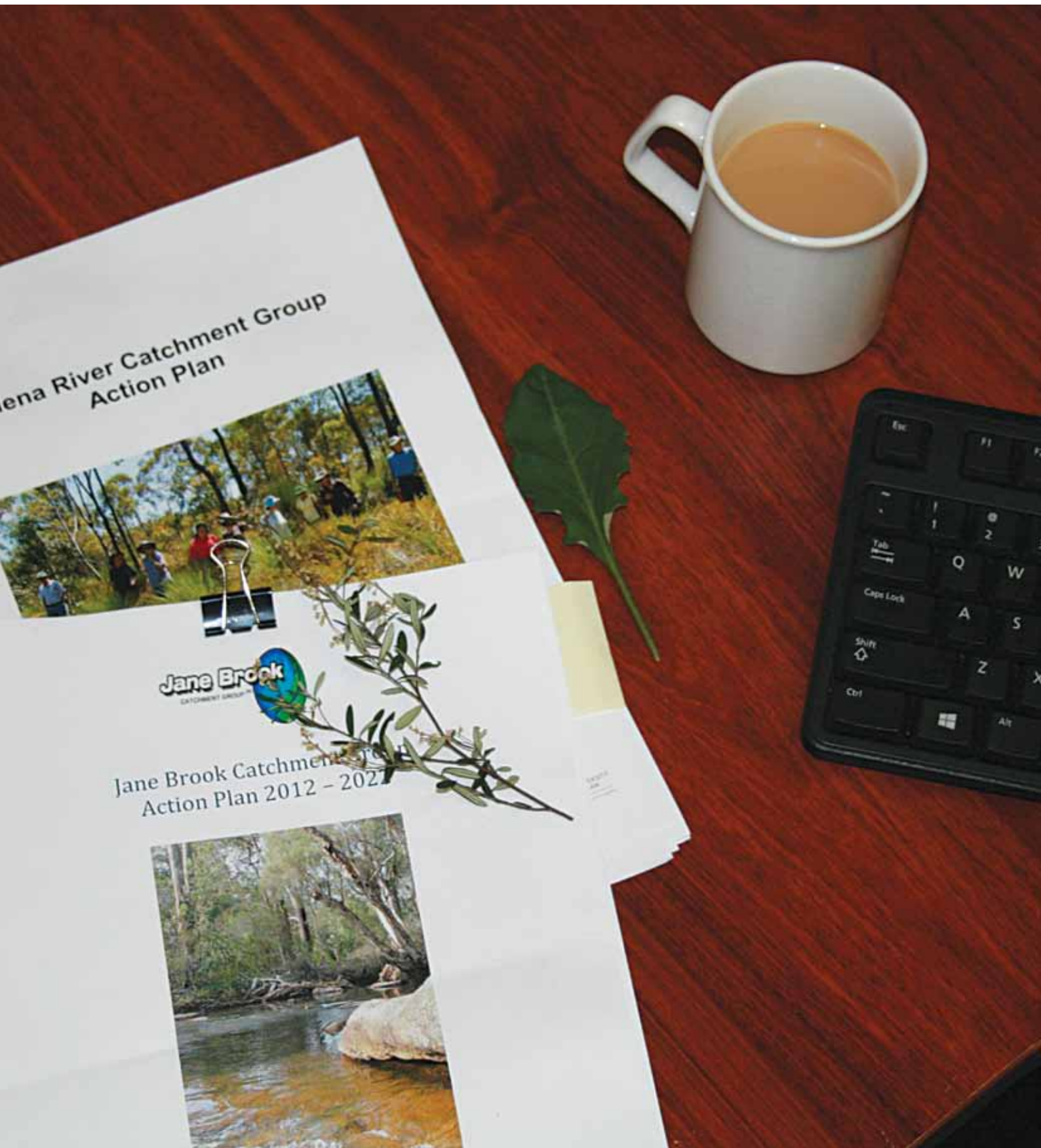
4.3 Key Focus Areas

From the common issues identified for each of the catchments through the workshop and planning meetings, the key issues for the ECMP area are identified as:







- Education
- Water
- Vegetation
- Biodiversity
- Land Management
- Community Capacity and Support
- Climate Change























5. IMPLEMENTATION PLAN











5.1 Key Focus Area - Education involves raising awareness and encouraging involvement across all sectors of the community, which is crucial to the success of catchment management in the region. Education is required for successful long term sustainable management and depends on the cooperation and involvement of the key stakeholders.

Strategy	Action	Lead Organisations	Supporting Partners	Timing	How /Where	Category
1. Develop a partnership approach between community, local government, educational institutions, research, state and federal government agencies and business.	1.1 Identify opportunities for partnership arrangements to benefit catchment management. (Support for local groups, research opportunities, resources, funding applications/projects, on-ground activities etc.)	EMRC Shires Catchment groups	Trust PNRM	Ongoing	<ul style="list-style-type: none"> EHCMP to continue providing support Continue EHCMP, catchment groups and friends groups meetings to identify future partnership opportunities Current support from Trust for Sub Regional Coordinator to assist in implementation of Healthy Rivers Action Plan and coordination of the EHCMP Support for maintaining community capacity across the NRM sub regions identified in the DRAFT River Protection Strategy EMRC continue to liaise with Universities to develop research projects, such as the Marri canker project. EMRC continue its partnership with DOW, the Trust and Murdoch University for the Helping the Helena project which will address water quality issues in the Swan Catchment. 	 
	1.2 Develop a grant calendar to assist with collaborating partnerships for environmental projects.	EMRC	Shires Catchment Groups Friends Groups Trust	Ongoing (annually)	<ul style="list-style-type: none"> List grant opportunities on calendar and update with relevant information such as project applications, successful projects and partnerships 	
	1.3 Investigate a working or reference group which would coordinate and provide direction to EHCMP and other projects in the region.	EMRC	Trust PNRM Shires	Short	<ul style="list-style-type: none"> Refer to previous working reference group, the East Reference Group (ERG) for historic information. 	
	1.4 Identify agencies that have a clear commitment to an integrated catchment management approach.	EMRC	Shires PNRM	Short		
	1.5 Lobby through EHCMP on behalf of member councils for a clear commitment to an integrated catchment management approach.	EMRC	Shires PNRM Trust		<ul style="list-style-type: none"> Clear commitment identified in EMRC's Regional Advocacy Strategy and PNRM Business Plan 	









Strategy	Action	Lead Organisations	Supporting Partners	Timing	How /Where	Category
2. Raise awareness of catchment issues and increase community involvement.	2.1 Investigate a future funding project to link web sites and resources; Friends Groups manuals, Greenpage, BS4H's factsheets, Catchment groups, upcoming activities, and local and state government sites into an ECM website.	EMRC	Catchment groups Trust PNRM Shires NRMA Officers DPAW – Urban Nature	As funding resources become available	<ul style="list-style-type: none"> Link ECM website to Communications Strategy Continue to conduct networking events and end of year volunteer celebrations, collecting resource information Create a database of contacts to find environmental information where required (Manage as per Greenpage) PNRM has obtained a quote for this type of resource Consider the option of making this a statewide resource and partnering with all catchment groups across the state to share costs Continue to promote catchment health through promotion events such as family planting and activity days 	 
	2.2 Develop a Catchment group manual and update the Friends group manual, linking the two resources together.	EMRC Shires	Catchment groups Friends groups	Short - medium	<ul style="list-style-type: none"> Shire of Mundaring and Shire of Kalamunda to review Friends Group manual and support City of Swan in development of a Friends Group manual 	
	2.3 Increase distribution of Greenpage newsletter including but not limited to libraries and schools.	EMRC Shires	Short		<ul style="list-style-type: none"> Advertise newsletter and Bush skills for the Hills through local newspapers 	
	2.4 Secure funding for signage, install signs on reserves and major community focal points, and ensure location is relevant and optimal.	Shires		Annually	<ul style="list-style-type: none"> Signs to identify catchments, friends groups, provide education and awareness Look at incorporating Aboriginal names and interpretation on signage 	
	2.5 Develop Catchment and Friends groups, Sign Locations Plan.	Shires Environmental & Operations staff	Catchment groups Friends groups	Short - medium	<ul style="list-style-type: none"> Work with Operational staff to identify sign locations 	
	2.6 Review the objectives of the BS4H's program and look at expansion of activities.	EMRC Shires	PNRM Catchment groups Friends groups	Ongoing	<ul style="list-style-type: none"> Harness volunteer knowledge and incorporate community ideas and suggestions into the program Continue to hand out feedback and suggestion forms at workshops 	 
	2.7 Continue the core training of BS4H's to provide training and ongoing support to conservation volunteers and the community.	EMRC Shires		Ongoing		
	2.8 Investigate other programs that provide training and support to volunteers and the community.	EMRC Shires		Ongoing		 
	2.9 Create a BS4H's strategy that harnesses volunteer knowledge and involves suggestions of friends and catchment groups in planning process for the program.	EMRC Bush Care Coordinators	Catchment Groups Friends groups	Ongoing	<ul style="list-style-type: none"> For example Native Grass workshops with Una Bell 	

Strategy	Action	Lead Organisations	Supporting Partners	Timing	How /Where	Category
	2.10 Continue to conduct Catchment and Friends groups networking events.	Shires EMRC		Ongoing	<ul style="list-style-type: none"> Friends groups will have the option to become members of the new PRNRM which could potentially increase opportunities for networking across the region 	
	2.11 Continue to hold Annual End of Year Volunteer Celebration Events.	EMRC Shires		Annually		
	2.12 Create a database of contacts to find environmental information where required and manage as per Greenpage.	EMRC Shires	PRNRM Catchment and Friends groups	Short - medium	<ul style="list-style-type: none"> Link with action on investigating a future funding project to link web sites and resources (2.1) 	
3. Apply Local Government Communication strategies.	3.1 Use PR and Communication Officers to promote activities in local media.	EMRC Shires Local Government PR and Communication Officers	Catchment Groups Friends groups PRNRM	Ongoing	<ul style="list-style-type: none"> Local media examples to include but are not limited to: Community paper, Greenpage, Bush Skills for the Hills PRNRM will promote activities / events on their website. EMRC and Councils will continue to promote activities / events on their website. 	
	3.2 Create an ECMP Communication Strategy which takes into consideration Local Government's current strategies.	Shires EMRC		Short		
4. Improve linkages with community groups and schools.	4.1 Source funding for an Education Officer to establish programs and integrate existing activities.	EMRC	Shires Department of Education Lotterywest	Short	<ul style="list-style-type: none"> Promote school based education programs on Environmental Education Directory for the region such as Discover Dieback /Ribbons of Blue/ River Rangers/Water Corp Schools Education Officer to develop and support a network of active primary and secondary schools Have a regular environmental presentation at events such as the SOM's Principal Networking Group for schools Look at ways to support schools through talks and presentation where and when required EMRC is developing a grant application for a Bush Skills for Our Youth Program Link with EMRC proposal for an Environmental and Sustainable Education Program 2013/14 	
	4.2 Broaden outlook for volunteers by advocating community groups in flora and fauna protection	Shires EMRC	Community groups Fauna groups i.e. Native Arc	Ongoing	<ul style="list-style-type: none"> Offer opportunities for volunteers to network with flora and fauna protection groups. 	
	4.3 Update Shire of Mundaring Environmental Education Directory and involve the Shire's EAC to implement their current Community Education Strategy.	Shire of Mundaring	EAC Mundaring Arts Centre	Short	<ul style="list-style-type: none"> Continue partnership with Mundaring Arts Centre and EAC to conduct Environmental Art Awards 	











Strategy	Action	Lead Organisations	Supporting Partners	Timing	How / Where	Category
5. Improve knowledge and commitment to natural resource management in Councils.	5.1 Identify environmental awareness and training needs of Elected Members and Management Team.	Shires	WALGA	Short - medium	<ul style="list-style-type: none"> Also listed as an action in the RCCAAP 	
	5.2 Create a training module for each LGA.	Shires	WALGA	Short - medium	<ul style="list-style-type: none"> Training module to follow the election cycle every two years In the past there has been a training module presented at LG week. Follow up to see if this still exists 	
	5.3 Ensure all elected members have completed environmental awareness training.	Shires		Short - medium	<ul style="list-style-type: none"> To follow the election cycle every two years 	
	5.5 Ensure all planning, engineering and operational staff have access and knowledge to NRM policy, strategy and technical information.	Shires Environmental Operations and Engineering staff	Catchment groups Friends groups	Ongoing	<ul style="list-style-type: none"> Shire Officers run toolbox presentations with planning, engineering and operational departments 	
	5.6 Minimise the impact of Shire operational activities through full implementation of all Environmental Management Strategies.	Shires Environmental, Operations and Engineering staff	Catchment groups Friends groups	Ongoing	<ul style="list-style-type: none"> Provide annual training to outside staff Create an Environment training module for outside staff covering all environmental issues 	
	5.7 Identify and implement rewards and incentive schemes for private land conservation.	EMRC Shires	Shires PRNRM	Short - medium	<ul style="list-style-type: none"> Implement Private Land Conservation Strategy Investigate potential opportunities through PRNRM in the future 	
6. Promote Environmental publications & resources	6.1 Provide displays and distribute publications to the public at events and undertake information sessions.	EMRC Shires Community groups	EAC LGA Public Relations Officer	Ongoing	<ul style="list-style-type: none"> Create a list of publications available for the public Continue displays and distributing publications at community events and the TCUP 	
	6.2 Investigate incorporating a map of catchments and promotional material in council distributions to ratepayers.	Shires	EMRC	Short	<ul style="list-style-type: none"> Include material in rate notice distributions 	

5.2 Key Focus Area - Water aims to maintain and improve water quality and is a key target of catchment management. Increased impacts of development and subdivisions on drainage, as well as loss of vegetation, nutrient and chemical pollution, increased runoff, erosion, sedimentation and damming of waterways all result in lowered water quality and related impacts on waterways and biodiversity. The impacts of development on our waterways has been substantial and threats such as weed infestation, stock grazing, loss of riparian vegetation, bank and channel erosion and damming of waterways continue to threaten their health.














Strategy	Action	Lead Organisations	Supporting Partners	Timing	How / Where	Category
1. Ensure water quality is maintained to acceptable environmental standards	1.1 Ensure sample collection and analysis is consistent with Water Information Network (WIN) measures.	EMRC Shires	DOW Trust EAC	Ongoing	<ul style="list-style-type: none"> Request involvement and information sharing of catchment groups and LGAs in any water quality testing Perthcare website Share information across directorates Helping the Helena Project 	
	1.2 Ensure local government officers and community members are aware of the Water Information Network (WIN) database and the information it contains.	Shires EMRC	Catchment Groups Trust	Ongoing	<ul style="list-style-type: none"> Incorporate awareness of the WIN database into the Bush Skills for the Hills program Helping the Helena Project 	
	1.3 Produce snap shot cards of water quality for each catchment using the WIN database.	DOW	EMRC officers	Short	<ul style="list-style-type: none"> Request the information from the Department of Water 	
	1.4 Work on minimizing fertiliser use in LGAs.	Shires	SERCUL PAP	Short-medium	<ul style="list-style-type: none"> Ensure the resources developed by SERCUL and the PAP are utilised 	
	1.5 Shire Operational staff to attend Fertiliser Wise training.	Shire Operational Staff	SERCUL	Short	<ul style="list-style-type: none"> Ensure all new staff attend training to reduce knowledge gaps 	
	1.6 Increase water quality monitoring in the Eastern Region.	EMRC	Trust Shires Catchment groups	Short - Medium	<ul style="list-style-type: none"> Support EHCMP officers with resources / time to increase monitoring Ensure monitoring is targeted and relevant Helping the Helena Project 	
2. Apply Water Sensitive Urban Design (WSUD) to planning	2.1 Ensure WSUD is incorporated into all relevant planning proposals consistent with the requirement of Better Urban Water Management, State Planning Policy and Local Government environmental conditions.	Shires WAPC	EMRC DOW DOP	Ongoing	<ul style="list-style-type: none"> Water campaign 	
	2.2 Recommend local eastern region sites for demonstration to PRINRM and other relevant educational programs.	Shires Catchment groups EMRC PRINRM	Trust Cooperative Research Centre (CRC) for Water Sensitive Cities	Ongoing	<ul style="list-style-type: none"> Promote and list suitable new sites Collate and review history of previous sites Water campaign 	





Strategy	Action	Lead Organisations	Supporting Partners	Timing	How /Where	Category
3. Improve or maintain waterway health and compliance	2.3 Continue to train and update WSUD information to key LGA staff, developers and ratepayers.	Shires	DOW PNRM Trust	Ongoing	<ul style="list-style-type: none"> Keep abreast of training provided by external partners 	
	3.1 Utilise guidelines and protocols for stream buffer protection and rehabilitation.	Shires EMRC Catchment groups	PNRM	Short	<ul style="list-style-type: none"> When made available review planning mechanisms developed at the Cities of Armadale and Gosnells for controlling sand drift from development and building practices to reduce impact on waterways 	
	3.2 Advocate for industry audits and compliance in the eastern region.	Shires	DER Trust PNRM Catchment groups	Ongoing	<ul style="list-style-type: none"> PNRM has developed Guidelines for Industrial Estates 	
	3.3 Encourage priority environmental projects for stream buffer retention and rehabilitation as a priority activity for projects and development conditions.	Shires Catchment groups	Trust DOW	Short	<ul style="list-style-type: none"> Water Quality Improvement Plans Foreshore Assessments Draft IPS4 – Watercourse Hierarchy Recommendation DOW's 30m buffer Foreshore Policy 	
	3.4 Instigate program of foreshore management plans for all major waterways in sub-catchments which address water quality, waterways health and biodiversity values based on Living Streams, Foreshore Condition Assessment, and Shire of Mundaring Waterways Protection Policy.	Shires DOW	Trust	Short-Medium		
	3.5 Identify potential pollution sources in catchments and initiate best management practices.	PNRM DER Shires Catchment groups	EMRC Trust DOW	Short-Medium	<ul style="list-style-type: none"> NRM Industrial guidelines PNRM – Industry Audits DER – Contaminated sites DER's Pollution Response and Environmental Hazards Branch, Target Industry Programs and DER Swan Region Industry Regulation Helping the Helena Project 	
	3.6 Continue to implement Swan Canning Tributary Foreshore Assessment project.	EMRC	Trust Shires Catchment groups	Ongoing	<ul style="list-style-type: none"> Continue to apply for funding 	
	3.7 Identify and promote sites for living Streams and river restoration techniques in all catchments.	Catchment groups Shires	EMRC DOW Trust	Ongoing	<ul style="list-style-type: none"> Work with DOW on their Stream Restoration Manual Conduct BS4H's workshops based on DOW's manual 	

Strategy	Action	Lead Organisations	Supporting Partners	Timing	How / Where	Category
4. Reduce impact and downstream effects of dams on water ways.	3.8 Develop funding applications through sub-catchment management / action plans and Catchment Groups for living stream restoration, based on a 3-5 year program.	EMRC Officers Shires Catchment groups	Trust DOW	Short-medium		
	3.9 River Restoration techniques and Living Streams to be included in annual training program.	EMRC	River Guardians Shires Catchment groups Trust DOW	Ongoing		
	3.10 Establish guidelines for waterways restoration that are local, simple and current.	Trust	Shires Catchment groups EMRC	Short - Medium	<ul style="list-style-type: none"> Trust has developed Best Management Practices for Foreshore Stabilisation in partnership with EMRC as part of the Swan and Helena Rivers Management Framework 	
	4.1 Develop environmental guidelines for the construction of dams.	SOK COS	SOM PRNRM	Short-medium	<ul style="list-style-type: none"> PRNRM's Community Engagement and MERI Coordinator has collated work on guidelines 	
	4.2 Apply local Government Environmental guidelines for the construction of dams.	SOM COS	DOW	Ongoing		
	4.3 Review Construction of Dam Guidelines and upgrade in line with DOW legislation.	SOM	DOW	Every 5 years		
	4.4 Apply environment conditions to dam development and encourage the use of living wetlands into the development.	Shires	EMRC EHCMP	Ongoing		
	4.5 Advocate for appropriate Environmental Water Release for the Helena River.	Shires Catchment Groups	Trust Water Corporation EMRC DOW	Ongoing	<ul style="list-style-type: none"> Continue to implement recommendations from freshwater fish research Helping the Helena Project 	
	4.6 Support and develop research and on ground programs to reduce the downstream effects of dams on waterways.	EMRC Shires Catchment Groups	Trust DOW Universities		<ul style="list-style-type: none"> Continued implementation of recommendations from freshwater fish research 	





















Strategy	Action	Lead Organisations	Supporting Partners	Timing	How / Where	Category
5. Raise awareness of drainage and its impact on the environment.	5.1 Develop a Drainage Strategy for Swan and Kalamunda and apply and review the Shire of Mundaring's Urban Drainage Strategy.	Shires Infrastructure Services staff		Short - Medium		
	5.2 Advocate for small business training in cleaner production and pollution prevention.	PRNRM Shires	EMRC	Ongoing	<ul style="list-style-type: none"> EMRC RES project, for energy and water with small business 	 
6. Reduce the impact of significant rain events on riparian zones.	6.1 Audit drains and structures and implement WSUD BMPs to mitigate discharge and erosion into waterways.	Shires Main Roads		Ongoing	<ul style="list-style-type: none"> Urban Drainage Strategy 	
	6.2 Determine opportunities for implementing WSUD principles into catchment areas to address storm surges.	Shires Catchment groups	DOW Trust Water Corporation	Short - Medium	<ul style="list-style-type: none"> PRNRM Industrial Estate Guidelines 	
	6.3 Link to local Climate Change Adaption Action Plans (LCCAAP).	Shires		Short - Medium		
7. Protect and maintain creek lines on private land.	7.1 Identify, access and promote incentives, funding and concessions for fencing stock from waterways.	Catchment groups Shires EMRC	Shires	Short-medium	<ul style="list-style-type: none"> Private Land Conservation Strategy Regional Environment Strategy SALP funding 	 
	7.2 Implement the Private Land Conservation Strategy.	Shires	EMRC	Ongoing	<ul style="list-style-type: none"> Shire of Kalamunda to develop a PLC Strategy 	
	7.3 Implement the Shire of Mundaring's Watercourse Protection Policy.	SOM Catchment groups	EAC Shires EMRC DOW	Short		
	7.4 Endorse, implement and promote City of Swan Waterways Management Strategy.	City of Swan Catchment groups	EMRC	Ongoing		 
	7.5 Identify and collate information resources relating to waterways protection and rehabilitation for promotion and distribution.	EMRC Catchment groups	DOW	Ongoing		

Strategy	Action	Lead Organisations	Supporting Partners	Timing	How / Where	Category
8. Promote awareness and understanding of restoration and waterways health.	8.1 Plan and implement field days to promote all aspects of watercourse rehabilitation and management.	Shires EMRC	Trust DOW Catchment groups	Ongoing	<ul style="list-style-type: none"> • Add to Bush Skills workshops • Link with other existing days such as, World Environment Day • Promote other groups 	
	8.2 Incorporate waterways issues into promotional action plans and link to community plans.	Shires Catchment groups EMRC	Catchment groups	Ongoing		













5.3 Key Focus Area - Vegetation - the removal of remnant vegetation contributes to salinity problems and to loss of native fauna. Remnant bush is under a range of threats including weed invasion, fragmentation, subdivision pressures, impacts of land use, stock grazing, pests and disease, and bush fire hazards.

Strategy	Action	Lead Organisations	Supporting Partners	Timing	How /Where	Category
1. Apply guidelines and practices for revegetation.	1.1 Identify, revise, and compile available resources for local guidelines.	Shires EAC NRP	Greening WA Catchment groups	Short Medium	<ul style="list-style-type: none"> Revegetation signs Dumping Garden escapes Bushfires, recommendations with planting suggestions 	
	1.2 Compile manual of relevant local information.	Shires EAC NRP	Catchment groups	Short Medium	<ul style="list-style-type: none"> Nominate a contact /central place to collect this information to share the resource 	
	1.3 Incorporate revegetation information package into education and promotion program.	Shires EAC NRP	Catchment groups	Short Medium		
2. Raise awareness of revegetation with local native species.	2.1 Continue to run revegetation workshops in Bush Skills for the Hills program.	EMRC Shires	PNRMA	Ongoing	<ul style="list-style-type: none"> Include revegetation seed collecting and seed cleaning courses in the Bush Skills for the Hills program 	
	2.2 Attend events and distribute information packages, including private landholder booklet and promote catchment and friends groups.	EMRC Shires	Catchment groups Friends groups	Ongoing		
	2.3 Promote the use of recommended provenance species.	EMRC Shires	Catchment groups Friends groups	Ongoing	<ul style="list-style-type: none"> Media articles to define and educate about positives of local provenance species 	
3. Develop an integrated approach to revegetation across catchments and reserves.	3.1 Identify, map, prioritise and implement revegetation programs on public and private lands enhancing wildlife corridors.	Shires Catchment groups	EMRC Catchment groups Community Fire Support Officers	Ongoing	<ul style="list-style-type: none"> Shire of Mundaring and Kalamunda to update their Wildlife Corridor Strategies Fauna Awareness Strategy PNRMA 	
	3.2 Encourage planting program at catchment and sub-catchment level to share resources within EHCMP.	Catchment groups Friends groups Shires	Shires EMRC	Short Medium		

Strategy	Action	Lead Organisations	Supporting Partners	Timing	How / Where	Category
4. Protect, enhance and maintain remnant vegetation.	4.1 Develop and implement policies, guidelines, strategies, and scheme provisions to ensure the best outcome for the environment and protect remnant vegetation.	Shires Catchment groups Friends groups	EMRC	Medium	<ul style="list-style-type: none"> Future Roadside Conservation condition Tree Preservation Policy 	
	4.2 Identify priority areas and reserves for protection and rehabilitation.	Shires	Catchment groups and Friends groups EMRC	Short	<ul style="list-style-type: none"> Catchment Action Plans 	
	4.3 Conduct training and include environmental inductions to all operations staff and contractors.	Shires Environmental staff, Operations Staff and Contractors		Short Ongoing		
	4.4 Integrate management of reserves between operations and environmental staff.	Shires Environmental and Operations staff	Catchment groups Friends groups	Short Ongoing		
	4.5 Survey remnant vegetation (actual extent and condition) and develop and implement reserve strategies.	Shires EAC NRPG	Catchment groups Friends groups	Ongoing		 
	4.6 Provide continued support to Catchment and Friends groups for projects involved in rehabilitation of remnant vegetation.	Shires EMRC Catchment groups Friends groups	Trust PRNRM	Ongoing	<ul style="list-style-type: none"> Financial support Letter of support for grant applications Attendance at Catchment Group meetings Greenpage Newsletter Bush Skills for the Hills 	
	4.7 Seek and identify opportunities for funding on-ground works.	Shires EMRC	Catchment groups Friends groups Caring for Our Country State NRM Office DPAW Environmental Grants	Ongoing	<ul style="list-style-type: none"> LGs to advocate for more internal resources for more on-the-ground actions Polytechnic Students Eco Jobs SALP funding 	
5. Protect remnant vegetation from stock.	5.1 Apply Keeping of Stock Guidelines and approvals.	Shires		Ongoing	<ul style="list-style-type: none"> Apply guidelines to all development applications and existing properties 	
	5.2 Increase awareness with private landholders through brochures and Private Land Conservation booklets.	EMRC Shires		Ongoing	<ul style="list-style-type: none"> Keeping of Stock and Private Land Conservation booklets 	

























Strategy	Action	Lead Organisations	Supporting Partners	Timing	How / Where	Category
6. Facilitate coordination of a catchment approach to weed control.	6.1 Educate community members about weeds in the Eastern Region.	Shires Catchment groups EMRC	DAFWA DPAV	Ongoing	<ul style="list-style-type: none"> Brochures and information packages Displays at events Bush Skills for the Hills workshops 	
	6.2 Incorporate weed management training and activity days into Bush Skills Calendar.	EMRC	Shires Catchment groups	Ongoing Short	<ul style="list-style-type: none"> Include Department of Health Guidelines pertaining to chemical use in the Bush Skills Calendar Encourage chemical free weed control 	
	6.3 Update weed control strategy and source funding for its implementation.	Shires EMRC	Catchment groups	Short		
	6.4 Develop work plans for friends and catchment groups, with seasonal, annual and long term weed management strategies.	Shires EMRC	Catchment groups Friends groups PRNRWA	Short Ongoing	<ul style="list-style-type: none"> Weed Management plans Catchment Action Plans 	
	6.5 Advocate for research in the impacts of herbicide use in the environment.	EMRC	ECU Murdoch University Trust DOW	Short	<ul style="list-style-type: none"> Partnership with ECU to undertake research into herbicide use in the environment Partnership with DOW, Trust, and Murdoch to undertake non nutrient water quality monitoring of the Helena River 2013 	
7. Reduce impact and spread of pathogens.	7.1 Create strategy for Dieback Management in Local Government, including mapping areas	Shires Dieback Working Group	EMRC Community groups TAFE students	Short	<ul style="list-style-type: none"> The Dieback Working Group has developed an online tool for mapping areas Identify dieback free areas and ensure protection 	
	7.2 Identify areas of vegetation decline and investigate source and control measures.	Shires	Friends groups Catchment groups	Short – Medium		
	7.3 Develop and implement training and educational material for all staff, friends, catchments, community and fire brigade groups.	Shires Dieback Working Group	Fire Brigades Catchment groups Friends groups	Short	<ul style="list-style-type: none"> Dieback Working Group is currently developing dieback awareness training, due to commence 2013 	
	7.4 Incorporate Phytophthora cinnamomi information into training and workshop program and communications / promotional strategy.	Shires Dieback Working Group EMRC	Catchment groups	Ongoing	<ul style="list-style-type: none"> Include training in Bush Skills for the Hills program Include education about the threat posed by Myrtle rust fungal leaf pathogen into the training 	
	7.5 Investigate funding opportunities for research into native tree decline including Marri Canker.	Shires EMRC	Catchment groups Murdoch University	Short – Medium	<ul style="list-style-type: none"> Project included in EMRC RES Funding received for partnership project with Murdoch through State NRM Office 	

Strategy	Action	Lead Organisations	Supporting Partners	Timing	How / Where	Category
8. Plan for fire management.	8.1 Advocate to DFES and LGAs to revise guidelines for bushfire hazards regarding vegetation management on Shire and private lands.	Shires DFES	Catchment groups	Medium	<ul style="list-style-type: none"> State Emergency Management Plan - WESTPlan Bush Fire 	▲
	8.2 Apply planning for bushfire protection guidelines.	DFES Shires		Ongoing		📁
	8.3 Research best species regarding fuel hazard reduction to retain biodiversity.	Shires EMRC	DFES	Short – Medium		📖 👓
	8.4 Advocate to DFES regarding information in their brochures on best fire retardant species.	Shires	Catchment groups	Short	DFES Brochure - <ul style="list-style-type: none"> Plant Guide within the Building Protection Zone for the Swan Coastal Plain of Western Australia 	▲ ➤
	8.5 Investigate alternatives to fire management in bushland.	EMRC	Catchment groups	Short	<ul style="list-style-type: none"> Explore other methods of fire management as opposed to burning the bush land for protection e.g. Hazard reduction 	👓









5.4 Key Focus Area - Biodiversity is the variety of all forms of life. It is the different plants, animals, and micro-organisms, the genes they contain and the ecosystems in which they function. Biodiversity is reduced by processes such as habitat degradation, population decline and extinction.










Strategy	Action	Lead Organisations	Supporting Partners	Timing	How /Where	Category
1. Increase the emphasis on biodiversity and habitat through an ecosystems approach to planning and management.	1.1 Review and implement the Wildlife Corridors Strategy through all POS opportunities.	Shires	EMRC	Ongoing	<ul style="list-style-type: none"> Wildlife Corridors Strategy Heritage Trails project 	
	1.2 Implement the Biodiversity Strategy.	Shires	EMRC	Ongoing		
	1.3 Promote the Wildlife Corridors Strategy to private landholdings identified as priority sites.	Shires Catchment groups	EMRC	Ongoing	<ul style="list-style-type: none"> Promote Private Land Conservation Strategy with private landholders 	
	1.4 Advocate for conditions in Town Planning Schemes to be placed upon development applications to ensure revegetation with local native species and vegetation protection.	Shires	EMRC Catchment groups	Ongoing	<ul style="list-style-type: none"> Facilitate and formalise conditions being placed upon development applications in Town Planning Schemes Landscaping and Revegetation guidelines 	
	1.5 Continue to support and fund the Tree Canopy and Understorey Program, Tree Giveaway Program, Swan's Rural Revegetation Program and Plants to Residents Program, to promote biodiversity awareness.	Shires	Volunteers EMRC	Ongoing	<ul style="list-style-type: none"> Funding and administrative support 	
	1.6 Investigate and implement conservation opportunities for all land vesting's.	Shires EMRC		Short		
	1.7 Advocate to DPAW the possibility of developing a foothills regional park linking the Swan River Park to the Darling Range Park along waterways and including wetlands.	WAPC Shire Reps on DRRP committee	DPAW's Regional Parks Unit Trust EMRC	Short - medium	<ul style="list-style-type: none"> Biodiversity Fund / Clean Energies Future may have resources available for this project Regional Parks information consult DPAW's Regional Parks Unit EMRC, PRNRM and community groups are developing a biodiversity corridors project from Woorloo to Midvale 	
	1.8 Continue to incorporate biodiversity and habitat components into all on-ground project proposals.	Shires EMRC Catchment groups		Ongoing		

Strategy	Action	Lead Organisations	Supporting Partners	Timing	How / Where	Category
2. Protect indigenous flora and fauna	2.1 Include biodiversity protection into weed management strategies.	Shires Catchment groups	EMRC	Ongoing	<ul style="list-style-type: none"> BS4H's Plant ID workshop 	
	2.2 Carry out weed control in parks and reserves to manage introduced species.	Shires	Catchment groups Friends groups PRNRM	Ongoing	<ul style="list-style-type: none"> Roadside Conservation Strategy 	
	2.3 Ensure weed control projects allow for realistic timeframes and follow with revegetation to ensure areas are not left bare.	Shires EMRC	Catchment groups Friends groups	Ongoing		
	2.4 Protect native vegetation and revegetate fauna habitat in all tributaries.	Shires EMRC Catchment groups Private landholders	PRNRM	Short/medium		
	2.5 Advocate for statutory protection for Bush Forever sites. Continue to manage Bush Forever sites for protection of fauna and flora.	Shires EMRC Catchment groups	DPAW PRNRM	Ongoing		 
	2.6 Investigate best management for control of fauna and flora disease including partnership opportunities with research projects.	Shires	Catchment groups Friends groups Private landholders	Medium		 
	2.7 Promote awareness to the community on feral animal and insect control programs. Investigate funding opportunities to implement feral animal control.	Shires Catchment groups Friends groups	DAFWA Regional Landcare Facilitator (PRNRM)	Ongoing		  
	2.8 Ensure that any weeds providing habitat, have a progressive removal approach to minimise impact on native fauna populations.	Shires Catchment groups Friends groups	EMRC	Ongoing		
	2.9 Investigate and promote chemical free weed control.	EMRC	Catchment groups Friends of groups	Ongoing	<ul style="list-style-type: none"> Promote projects with positive outcomes in chemical free weed control Explore different techniques for chemical free weed control 	 











Strategy	Action	Lead Organisations	Supporting Partners	Timing	How / Where	Category
	2.10 Investigate the creation of a Future Fauna Awareness Strategy.	Shires	EMRC	Medium	<ul style="list-style-type: none"> Secure funding for strategy and its implementation 	 
3. Plan for Fire Management.	3.1 Investigate a coordinated approach to fire management to protect biodiversity and fauna habitat and to educate all involved.	Shires Fire Officers	Catchment groups Friends groups Volunteer Brigades	Short	<ul style="list-style-type: none"> Process for fire mapping Process behind prescribed burning Educate all involved in fire management 	  
4. Raise awareness on biodiversity.	4.1 Conduct internal training workshops on biodiversity protection training.	Shires		Ongoing		











5.5 Key Focus Area - Land Management - improved land management is related to the way we use our natural resources so that any negative impacts are minimized and a sustainable level of management is achieved for the future. Land management includes practices that impact on vegetation, waterways, soils, biodiversity and quality of life.

Strategy	Action	Lead Organisations	Supporting Partners	Timing	How / Where	Category
1. Raise awareness on land degradation and land management issues.	1.1 Identify and compile resources to target land user groups for information on land degradation issues in urban and rural areas.	Shires EMRC	Trust DAFWA Catchment groups	Short term	<ul style="list-style-type: none"> List of resources in place and how they raise awareness Private Landholder Conservation Strategy 	
	1.2 Develop and implement training and awareness program on land management issues relevant to catchments.	Catchment groups Shires	EMRC	Ongoing	<ul style="list-style-type: none"> Bush Skills for the Hills 	
	1.3 Promote and distribute widely publications such as Caring for Your Land: A Guide for Small Landholders to all target groups.	EMRC Shires	Catchment groups Friends groups DAFWA	Short		
	1.4 Raise awareness of impact of drainage, erosion and land management on catchment and natural resources.	EMRC Shires Catchment groups Friends groups	Trust PRNRMA	Ongoing		
2. Raise involvement and increase participation in catchment, friends of groups and landcare groups.	2.1 Seek external funding support for integrated planning and on-ground activities.	EMRC Shires	Trust State, Federal and local funding bodies Catchment groups Friends groups Landcare groups	Ongoing		
3. Provide clarity of purpose and support for catchment and environment groups.	3.1 Update information such as Friends of Group manuals.	Shires	Bush Care Coordinator Catchment groups Friends groups EMRC	Short	<ul style="list-style-type: none"> Friends Group Manual review and development of Catchment Group Manual 	 
	3.2 Look at best management practices for managing volunteers.	Shires EMRC	PRNRMA Volunteering WA Act, Belong, Commit	Ongoing		 
	3.3 Provide staff support to volunteers, for example Bush Care Coordinator and EHCMP officers.	Shires EMRC EHCMP		Ongoing		



Strategy	Action	Lead Organisations	Supporting Partners	Timing	How / Where	Category
4. Reduce pollution and nutrient impacts from land use activities.	4.1 Identify and monitor sources of pollution.	Shires EMRC Trust		Short		
	4.2 Advocate for audit and compliance for sources of pollution identified.	Shires EMRC	DER PRNRM	Short – Medium	<ul style="list-style-type: none"> DER's Industry Regulation Branch 	
	4.3 Implement ways to reduce pollution such as reduction of littering and street cleaning.	Shires	Catchment groups Friends groups Clean Up Australia	Short – Medium	<ul style="list-style-type: none"> Use of local authority policy and legislation for waste discharges into the environment 	
5. Development proposals to adequately address key land management issues.	5.1 All development proposals to assess erosion, dieback, remnant vegetation protection and creekline protection, and include an implementation plan where applicable.	Shires WAPC	DOW DER Trust		<ul style="list-style-type: none"> Ongoing 	
6. Promote and support property planning opportunities for private landholders.	6.1 Provide resources for a program of workshops/seminars for small landholders and farmers. <ul style="list-style-type: none"> Increase understanding of property planning principles among small landholders Increase awareness of catchment and natural resource planning and management principles and practice among small landholders 	Shires EMRC	DAFWA PRNRM (Regional Landcare Facilitator)	Short/medium		
	6.2 Include property planning for private landholders as an incentive for special rural landholders to assist in future funding opportunities.	Shires	PRNRM (Regional Landcare Facilitator)	Short	<ul style="list-style-type: none"> PRNRM has developed an online tool for property planning – Target On 	
7. Support implementation of sustainable land management practices.	7.1 Promote and action catchment approach to salinity management.	Shires Catchment groups	DAFWA	Ongoing		
	7.2 Identify opportunities and access resources for implementation of an integrated approach to salinity remediation. e.g.) Tamarix and Juncus acutus	Shires Catchment groups	DAFWA DOW	Ongoing		

5.6 Key Focus Area - Community Capacity and Support - living, working and playing in a catchment are all social activities, and all have direct and indirect impacts on the catchments and natural resources. Recreation and tourism are important activities and these need to be managed so as to minimize the environmental impacts so that current and future generations are able to have the benefit of a healthy natural environment. Being involved in community life as a conservation volunteer is also a social activity, needing an approach where coordination of groups, efforts and resources is a priority.

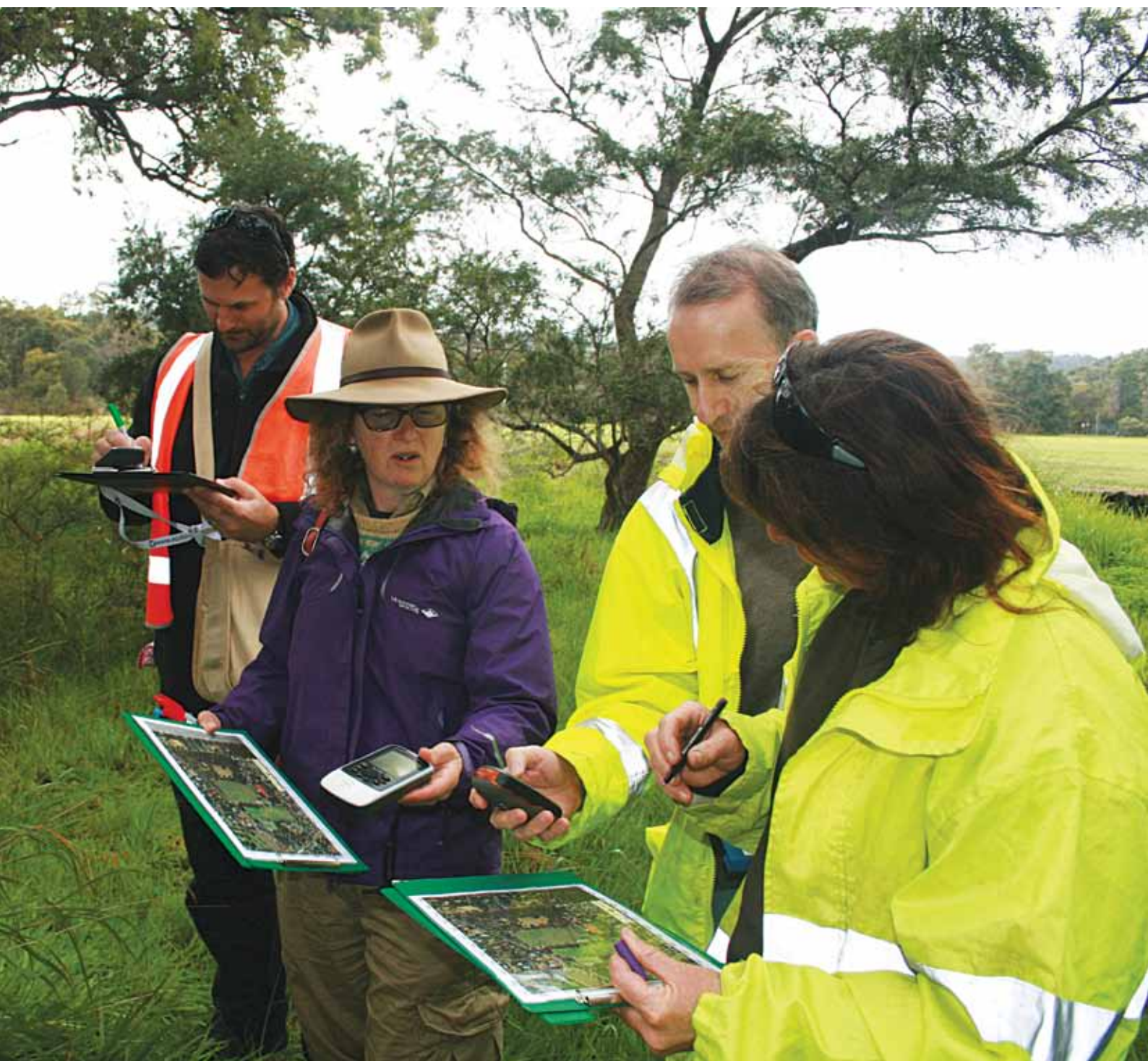
Strategy	Action	Lead Organisations	Supporting Partners	Timing	How / Where	Category
1. Continue to support the catchment approach in the region through the provision of adequate resources for strategic on-ground activities.	1.1 Establish a Catchment Reference Group to coordinate community efforts in the region.	EMRC Catchment groups	Shires Trust (via EHCMP Coordinator)	Short - medium	<ul style="list-style-type: none"> • Include past ERG members and Catchment chairs • Define purpose and point of reference 	
	1.2 Continue to support community development and partnership approach to catchment management in order to encourage community ownership.	EMRC Shires Catchment groups	Trust PRNRM DAFWA	Ongoing		
	1.3 Continue to develop and support the Friends Groups Strategy, and Bushcare Coordinator's positions, and future positions to support the role.	Shires		Ongoing	<ul style="list-style-type: none"> • Investigate future positions and incorporate this • Review Friends Group strategy at Mundaring and Kalamunda • Develop Friends group Strategy at Swan 	
	1.4 Develop individual detailed Catchment Action Plans.	EMRC Catchment groups	Shires Trust PRNRM	Short	<ul style="list-style-type: none"> • Documents at review stage with Catchment Groups 	 
	1.5 Create catchment management links to Aboriginal and European heritage, tourism, and recreation.	EMRC Shires Catchment groups	DIA DPAW Department of Tourism PRNRM	Short/medium	<ul style="list-style-type: none"> • Link with catchment management information and other catchment groups outside of the eastern region • PRNRM has developed an Aboriginal Cultural Heritage Management Action Plan for LGs • EMRC's Regional Aboriginal Consultation Guidelines (RACG) • EMRC's Heritage Audit and Interpretation Plan for the Swan and Helena Rivers Management Framework. 	
2. Promote the social values, including intergenerational equity, of the catchment approach to natural resource management.	2.1 Investigate including social and cultural aspects such as Aboriginal and European heritage, recreation and tourism in communications strategy.	Shires Local Government Public Relations Officers	EMRC Catchment groups	Short/medium		 
	2.2 Advocate to DIA for an Aboriginal Engagement Officer to assist Local Government with Aboriginal culture in catchment management.	PRNRM EMRC DIA Shires DPC – Native Title Unit		Short/medium	<ul style="list-style-type: none"> • Liaise with PRNRM Aboriginal Engagement Officer • Liaison officer to ensure culturally significant areas are protected 	
	2.3 Promote the EMRC consultation guidelines through community groups.	EMRC		Ongoing		

5.7 Key Focus Area - Climate Change -impacts on temperature, rainfall, bushfires, and storm events in the long term. Scientific modeling indicates that the south west of Western Australia will continue to be affected and the need exists to adapt our policies and ensure awareness of the impact of climate change to protect our catchments and natural resources.

Strategy	Action	Lead Organisations	Supporting Partners	Timing	How /Where	Category
1. Ensure awareness of the impact on climate change on catchment management.	1.1 Link focus areas to Regional Climate Change Adaptation Action Plans and Local Climate Change Adaptation Action Plan.	Shires EMRC		Ongoing		▼
	1.2 Investigate issues relating to climate change and establish best practices.	Shires EMRC		Ongoing		👍 📝

6. MONITOR AND REVIEW

Monitoring is a measure of evaluating actions and activity against their original objectives and is critical for conservation management. It shows whether the health of the environment is changing over time, and whether the actions have delivered the outcomes expected. Monitoring and evaluation allows recognition of the successes or failures, and to adjust strategies, projects and activities based on the new knowledge and understanding. The ECM Plan 2012 is a living document and in a forever changing environment it is recommended to commence a full review every five years. The review process will work in consultation with the community and identify new issues and actions for the future. The main overarching document along with the individual Catchment Action Plans (CAPS) will be updated and modernized as part of the review.



Strategy	Action	Responsibility	Timing	How / Where
1. Plan stakeholder meetings to review ECMP and CAPS	1.1 Establish an ongoing working group.	EMRC Shires Community groups Trust PRNR/M	Short	<ul style="list-style-type: none"> Working group to represent each of the stakeholder groups Identify any new stakeholders
	1.2 Organise stakeholder meeting to review key focus areas, to assess and document, the progress of the plans and determine the objectives and actions for the next 12 months.	EMRC Shires Community groups Trust PRNR/M	Annually – starting January 2014	<p>When determining the progress of the plan discuss:</p> <ul style="list-style-type: none"> How many times the plan has been used in obtaining grant funding How stakeholder groups have utilised the plan in their organisation Review actions in the plan and barriers to actions being implemented Awards over the past 12 months received
	2.1 In consultation with relevant stakeholders and the community, commence a full document review of ECMP and CAPS, and prepare updated plans.	EMRC Shires Community groups Trust PRNR/M	Start commencement process every 5 years	<ul style="list-style-type: none"> Determine the purpose of the revised plan Consult with relevant stakeholders and the community and consolidate: <ul style="list-style-type: none"> history achievements and awards how the plan has been utilised funding obtained volunteer hours Review and identify the key focus areas with stakeholders and consolidate comments Review the project area to expand into areas such as Poison Gully, Perth Airport North, and the Shire of Northam (Wooroloo Brook) Release the plan for comment, incorporate changes and prepare the final plan
	2.2 Establish community consultation to identify and review key focus areas	EMRC Shires	Every 5 years	<ul style="list-style-type: none"> Set up community workshops that provide community groups an opportunity to review and input into ECMP.
	2.4 NRM Officers to continue to support groups and attend catchment meetings.	EMRC	Ongoing	<ul style="list-style-type: none"> Assist catchment and friends groups to develop their on-ground plans and align with the ECMP.
	3.1 Ensure ECMP and CAPS are updated to keep the information current and relevant.	EMRC Shires Catchment groups	Every 5 years	<ul style="list-style-type: none"> Keep historical data up to date Ensure CAPS capture the groups history, funding, current and future projects

7. REFERENCES

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APPENDICES

Appendix 1: Landuse Charts

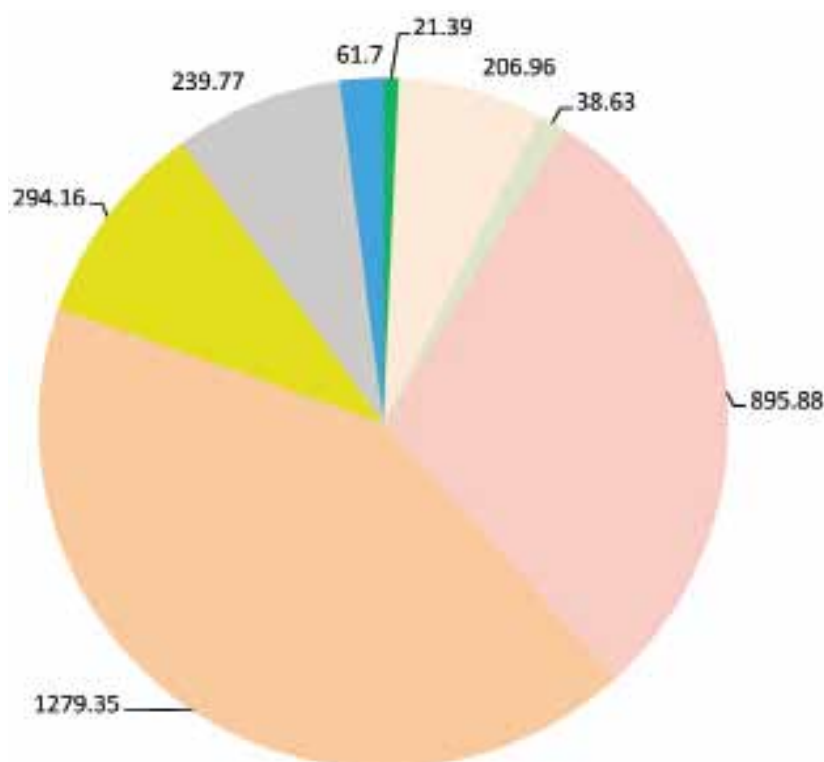
The landuse data of the ECM area and the calculated percentage area of vegetation provide a basis of catchment health. The land use data has been compiled by the Perth Biodiversity Project and the information is available as hardcopy maps to community and catchment groups from the Shire of Mundaring.

The tables and graphs below reflect local government administrative boundaries and relate to the maps shown in the Appendix 9 on Pages 65-70.

Key: Landuse in the Blackadder Woodbridge Catchment

Colour Code	Landuse Description	Area (ha)	%
	Remnant vegetation reserved for Parks & Recreation, State Forest and in Rural Conservation zone	21.39	0.70%
	Recreation reserves and State Forest cleared	206.96	6.81%
	Remnant vegetation within large lot rural land use	38.63	1.27%
	Cleared areas within large lot rural land use	895.88	29.49%
	Residential, development, roads and railways	1279.35	42.11%
	Commercial/Public Purpose/Special Uses	294.16	9.68%
	Industry	239.77	7.89%
	Wetlands	61.7	2.03%
	Total	3037.84	

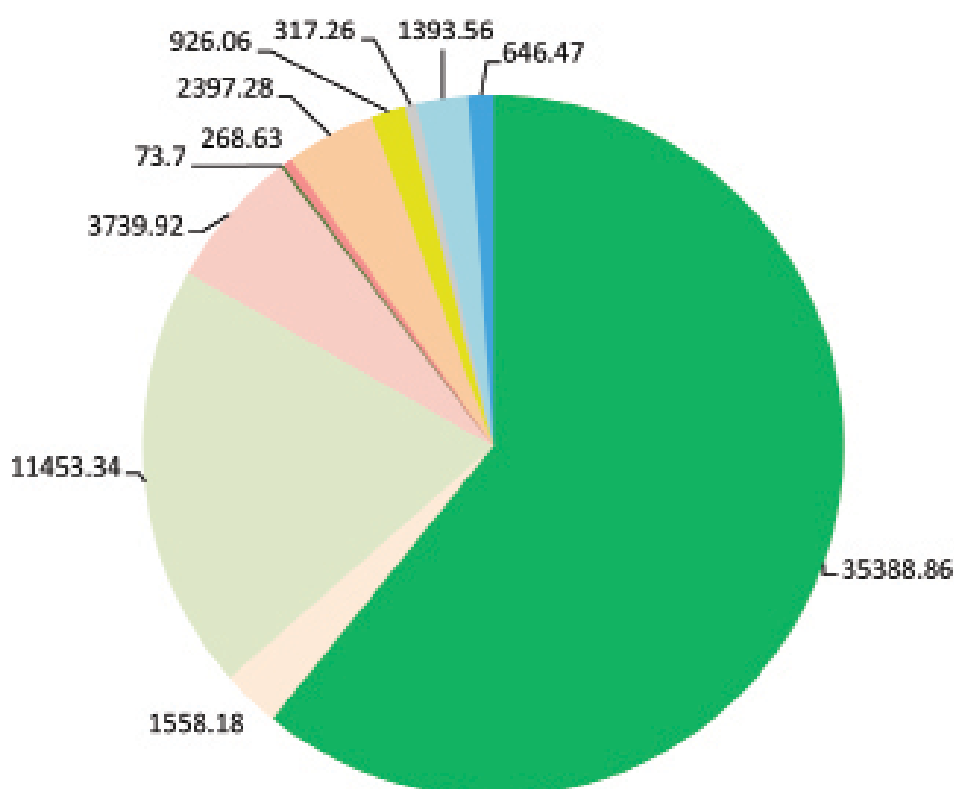
Chart: Landuse in the Blackadder Woodbridge Catchment



Key: Landuse in Helena River Catchment

Colour Code	Landuse Description	Area (ha)	%
	Remnant vegetation reserved for Parks & Recreation, State Forest and in Rural Conservation zone	35388.86	60.84%
	Recreation reserves and State Forest cleared	1558.18	2.68%
	Remnant vegetation within large lot rural land use	11453.34	19.69%
	Cleared areas within large lot rural land use	3739.92	6.43%
	Remnant vegetation within small lot rural land use	73.7	0.13%
	Cleared areas within small lot rural land use	268.63	0.46%
	Residential, development, roads and railways	2397.28	4.12%
	Commercial/Public Purpose/Special Uses	926.06	1.59%
	Industry	317.26	0.55%
	Pine plantations	1393.56	2.40%
	Wetlands	646.47	1.11%
	Total	58163.26	

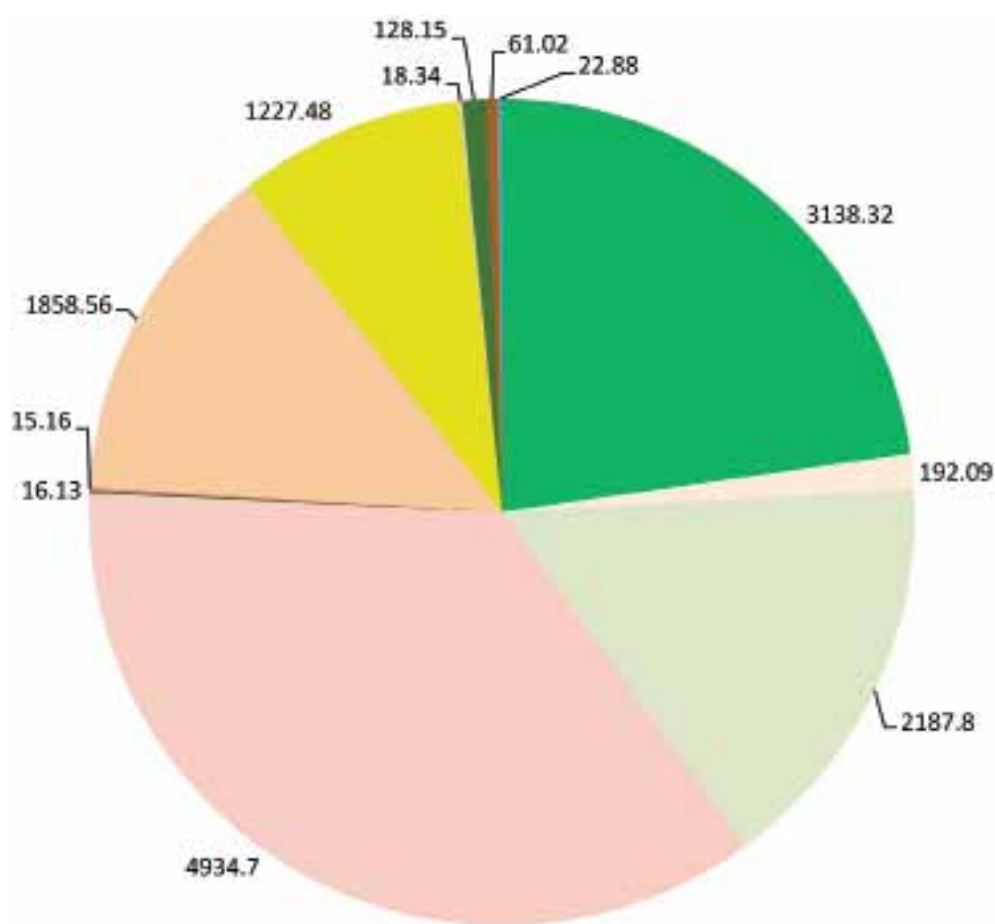
Chart: Landuse in the Helena River Catchment



Key: Landuse in Jane Brook Catchment

Colour Code	Landuse Description	Area (ha)	%
	Remnant vegetation reserved for Parks & Recreation, State Forest and in Rural Conservation zone	3138.32	22.74%
	Recreation reserves and State Forest cleared	192.09	1.39%
	Remnant vegetation within large lot rural land use	2187.8	15.85%
	Cleared areas within large lot rural land use	4934.7	35.76%
	Remnant vegetation within small lot rural land use	16.13	0.12%
	Cleared areas within small lot rural land use	15.16	0.11%
	Residential, development, roads and railways	1858.56	13.47%
	Commercial/Public Purpose/Special Uses	1227.48	8.89%
	Industry	18.34	0.13%
	Remnant vegetation within Resource zone (basic raw materials)	128.15	0.93%
	Cleared lands within Resource zone (basic raw materials)	61.02	0.44%
	Wetlands	22.88	0.17%
	Total	13800.63	

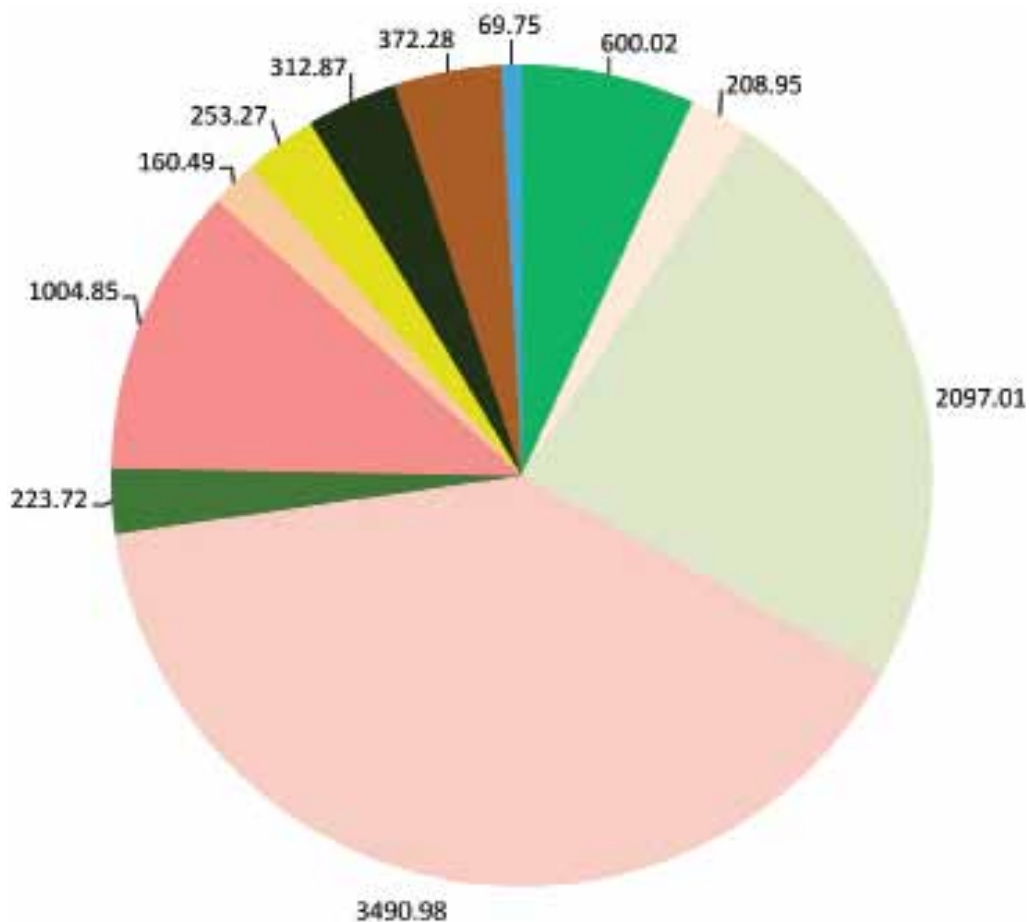
Chart: Landuse in the Jane Brook Catchment



Key: Landuse in Susannah Brook catchment

Colour Code	Landuse Description	Area (ha)	%
	Remnant vegetation reserved for Parks & Recreation, State Forest and in Rural Conservation zone	600.02	6.82%
	Recreation reserves and State Forest cleared	208.95	2.38%
	Remnant vegetation within large lot rural land use	2097.01	23.85%
	Cleared areas within large lot rural land use	3490.98	39.70%
	Remnant vegetation within small lot rural land use	223.72	2.54%
	Cleared areas within small lot rural land use	1004.85	11.43%
	Residential, development, roads and railways	160.49	1.82%
	Commercial/Public Purpose/Special Uses	253.27	2.88%
	Remnant vegetation within Resource zone (basic raw materials)	312.87	3.56%
	Cleared lands within Resource zone (basic raw materials)	372.28	4.23%
	Wetlands	69.75	0.79%
	Total	8794.19	

Chart: Landuse in the Susannah Brook Catchment

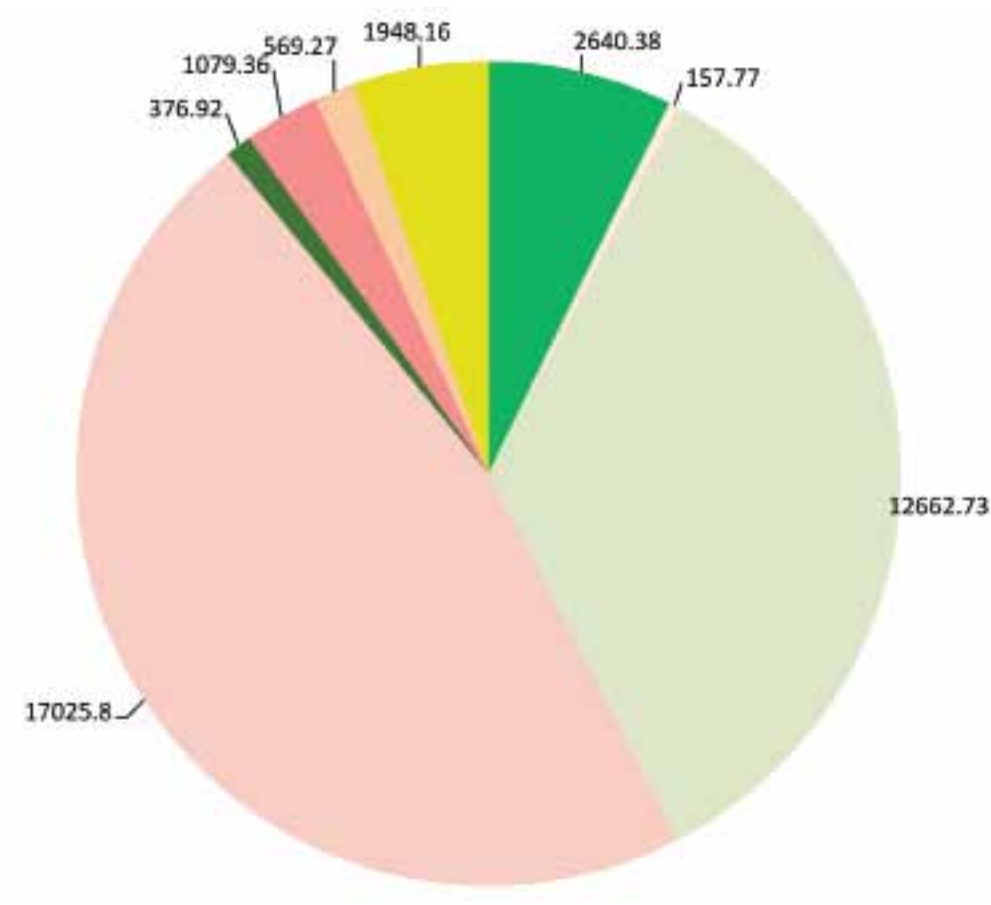




Key: Landuse in Wooroloo Brook catchment

Colour Code	Landuse Description	Area (ha)	%
	Remnant vegetation reserved for Parks & Recreation, State Forest and in Rural Conservation zone	2640.38	7.24%
	Recreation reserves and State Forest cleared	157.77	0.43%
	Remnant vegetation within large lot rural land use	12662.73	34.73%
	Cleared areas within large lot rural land use	17025.8	46.70%
	Remnant vegetation within small lot rural land use	376.92	1.03%
	Cleared areas within small lot rural land use	1079.36	2.96%
	Residential, development, roads and railways	569.27	1.56%
	Commercial/Public Purpose/Special Uses	1948.16	5.34%
	Total	36460.39	

Chart: Landuse in the Wooroloo Brook Catchment



Appendix 2: Shire of Kalamunda Plans, Policies, Strategies and Guidelines

Control and Eradication of Pest Plants	A policy to conduct the administration of the Council Local Law for the control & eradication of nominated pest plants.
Environmental Impact – Earthworks and Foundations	In recognition of the diversity of foundation materials and conditions experienced in the District, these Policy Statements express Council's interests in ensuring that environmental impacts are minimised.
Environmentally Sensitive Areas – Guidelines for Development	To set out pre-conditions and guidelines for development of houses (and associated development) in environmentally sensitive areas, within all zones in the Shire.
Flood and Stream Management	To permit and encourage a coordinated land and water management program and the retention of open land uses which will locate permanent structure and artificial obstructions so as not to obstruct the passage of waters nor destroy the natural public water areas within the Shire.
Fruit Trees – Removal from Reserves	A policy to remove any source fruit fly breeding on public property.
Hillside Protection – Guidelines for Development	To place special controls on any proposed developments, public or private, within hillside areas in order to: <ul style="list-style-type: none"> (a) preserve and enhance their use as a prime resource; (b) help protect people and property from potentially hazardous conditions due to grades and geology; (c) assure that any development be environmentally compatible; (d) encourage innovative design solutions.
Protection of the Environment	To plan for the long term physical and natural development of the Shire on the basis of preserving and enhancing the unique environment, character, charm and amenity of the District and therefore only those developments and pursuits which will not adversely impact upon this objective will be encouraged by Council.
Street Lawns and Gardens	A policy to encourage the development of street lawns & gardens by private residents' for the improvement of visual amenity.
Tree and Vegetation Preservation	This policy is intended to establish a set of guidelines to encourage the protection of trees and endemic vegetation in certain areas, in order to control problems of flooding, soil erosion, air pollution, noise, and landscape quality, by encouraging retention of the maximum number of trees and areas of endemic vegetation.
Weed Control Strategy 2002	Aims to identify invasive weed species with the highest priority for control. Includes at implementation schedules, external funding and performance targets for control.
Water Action Plan 2009	<p>The Shire in partnership with Eastern Metropolitan Regional Council (EMRC) has developed the Water Action Plan to progress through the Water Campaign™ milestone framework and improve water management practices within both corporate and community sectors.</p> <p>The Water Action Plan outlines the Shire's position regarding water management and focuses on water management in the four areas including:</p> <ul style="list-style-type: none"> • Corporate Water Conservation • Community Water Conservation • Corporate Water Quality • Community Water Quality <p>The Water Action Plan identifies four water management target goals for the Shire and sets out a project pathway to achieve these goals by 2012.</p>
Draft Local Climate Change Adaptation Action Plan (LCCAAP) 2012	The aim of the LCCAAP is to provide a risk management approach and local policy and planning actions to enable the Shire to adapt to the impacts of climate change. The plan consolidates and complements the actions in the Regional Climate Change Adaptation Action Plan, and focuses on actions related to the Shire's operations that are local in nature and/or partner with the community.





Local Biodiversity Strategy 2008	The strategy focuses on the protection of natural areas and aids the Shire in integrating biodiversity conservation into its core business and provides a basis for strategic, consistent and well informed decision making.
Wildlife Corridor Strategy 1998	This strategy seeks to establish a network of corridors to assist in the conservation of native flora and fauna species and provides a focus for rehabilitating the environment to create and maintain wildlife habitat. It also establishes local corridor links between existing bushland areas with conservation value
Conservation Atlas 1996	A key reference document for the Shire that enables desk top environmental assessment of developments and proposals for land use changes.
District Conservation Strategy 1995	<p>The strategy is a key statement by the community of its vision for the future environment of the Shire. The key elements of the strategy are:</p> <ul style="list-style-type: none"> • It deals with natural resource conservation and environmental quality • It seeks to improve environmental management in the Shire; • It was prepared, and must be implemented, as a co-operative exercise by Council and the community; and • It is a visionary document which provides a framework for environmental protection in the Shire
Kalamunda Advancing: Strategic Community Plan to 2023	The purpose of the plan is to identify the community's main priorities and aspirations for the future and to plan strategies for achieving them. Key issues and trends in the community included; population and growth, aged accommodation, future land use, industrial growth, housing development, public transport, sustainable development, tourism and urban design.
Publications	<p>Sustainable Living Guide 2013</p> <p>Private Landholder Bushland Information Package 2012</p> <p>Friends Group Manual 2013</p> <p>Water Quality Monitoring Program Results 2011/12</p>

Appendix 3: Shire of Mundaring Plans, Policies, Strategies and Guidelines

Environmental Management Strategy 1996	The strategy provided a comprehensive overview of the environmental issues facing the Shire and includes a detailed action plan with a strong emphasis on bushland conservation and protection. This strategy has now largely been implemented and a new plan developed to guide its environmental management activities.
Environmental Management Plan 2012	This report builds upon the Shire's previous achievements in the EMS and the State of the Environment Report. The aim of the EMP 2012-2022 is to guide the Shire's environmental management activities over the next ten years in order to protect and enhance the local environment. The report identifies six key focus areas (Atmosphere and Climate Change, Biodiversity, Heritage, Human Impact, Land and Water) based on the themes identified in the State of Environment Report.
The State of Environment Report 2008	The report provides a valuable snapshot of the health of the environment in the Shire at that point in time, providing baseline data for the region.
Local Climate Change Adaptation Action Plan (Draft)	To clarify and develop local policy and planning actions to enable the Shire to adapt to the issues of climate change.
Local Biodiversity Strategy 2009	A vision to protect, manage and retain a network of viable Local Natural Areas that support our native flora and fauna.
Wildlife Corridor Strategy 2000	Seeks to establish a network of corridors to assist in the conservation of native flora and fauna species and provides a focus for rehabilitating the environment to create and maintain wildlife habitat. It also establishes local corridor links between existing bushland areas with conservation value and complements the Perth Greenways Plan (Ministry for Planning, 1997) which identified strategic corridor linkages throughout the Perth metropolitan area.
Weed Control Strategy 2001	Aims to identify invasive weed species with the highest priority for control. Includes implementation schedules, external funding and performance targets for control.
Dieback Management Guidelines	The guidelines establish a procedure for the management of Dieback (<i>Phytophthora cinnamomi</i>) and aim to reduce the risk of introducing or spreading the disease, to bushland and other areas, through the application of practical and effective dieback hygiene measures.
Tree Preservation and Revegetation Policy 2000	Conditions placed in the Shire's Town Planning Scheme that set out the tree preservation and planting provisions.
Landscape Guidelines	Provides guidance on appropriate planning of landscaping works to satisfy provisions for landscaping as a condition of planning or subdivision approval.
Revegetation Guidelines	Provides guidance on appropriate planning of revegetation works to satisfy provisions for revegetation as a condition of planning or subdivision approval.
Community Education Strategy 2002	To educate, raise awareness and inform the community of Shire policies and strategies, to encourage community participation and involvement in environmental activities and to gain feedback from the community on environmental issues.
Friends Group Strategy 2003	The Strategy provides a framework for a partnership between the Shire of Mundaring and its Friends groups operating on Shire reserves. The strategy enables the shire to support friends groups and sets out the role of the Shire Bushcare Co-ordinator and the types of assistance provided by the Shire. The strategy sets out to ensure that Friends groups succeed in their objectives of managing shire conservation reserves to maintain and enhance the environmental values present.
Private Land Conservation Strategy 2000	The aim is to encourage practical conservation actions on land with important conservation values held under private ownership and to increase its protection and management.
Reserves Study 1996	A study that has provided a comparative analysis of the Shires bush land reserves and recommendations on ways to improve the management of public lands in the Shire.
Keeping of Stock Guidelines	Answers commonly asked questions and provides general advice on the Keeping of Stock in the Shire of Mundaring. Stock have the potential to cause environmental damage and the guidelines promote responsible management practices, which are environmentally sustainable.
Dams Policy 2000	Dam assessment procedures aimed at minimising the impacts of the dams on watercourses and the broader environment. Areas requiring consideration include: <ul style="list-style-type: none"> • Dam location, size, stability and vegetation clearing • Maintenance of natural water flow and • Cumulative impacts associated with dams along a watercourse
Watercourse Protection Policy 2007	To provide a guide for allowing development closer than 100 metres to a watercourse and ensures adequate vegetated buffers are retained along all watercourses.

Atmosphere and Climate Change	Biodiversity	Heritage	Human Impact	Land	Water
Regional Climate Change Adaptation Action Plan Local Climate Change Adaptation Action Plan (Draft) (LCCAAP) Corporate and Community Greenhouse Action Plan Achieving Carbon Emissions Reduction (ACER) Perth Solar City EMRC Regional Environment Strategy 2011 – 2016 (RES)	Local Biodiversity Strategy 2009 Wildlife Corridor Strategy 2000 Weed Control Strategy 2001 Dieback Policy 2001 Tree Preservation and Revegetation Policy 2000 Landscape Guidelines Revegetation Guidelines	Municipal Inventory Local Planning Scheme 4 Regional Aboriginal Consultation Guidelines (Draft)	Community Education Strategy 2002 Friends Group Strategy 2003 Eastern Hills Catchment Management Program 1997	Private Land Conservation Strategy 2000 Reserves Study 1996 Keeping of Stock Guidelines	Integrated Catchment Management Plan 2000 Urban Drainage Strategy Dams Policy 2000 Creekline Protection Policy 1996 Watercourse Protection Policy (reviewed 2007) Stormwater Management Policy (reviewed 2009) ICLEI Water Campaign Water Efficiency Plan Erosion Sedimentation Guidelines

Appendix 5: City of Swan Plans, Policies, Strategies and Guidelines

Sustainable Environment Policy	This is a "Statement of Intent" which details the environmental commitment from the organisation.
Sustainable Environmental Strategy 2012	This strategy details the environmental pressures that drive the need for environmental improvement and scopes the role that the City's functions can play in achieving this objective. Focusing on seven key areas (biodiversity retention, water quality, water efficiency, carbon reduction, adaptation for the future, waste minimisation, and corporate capacity) the strategy provides a framework to progress the City and its residents towards a more sustainable future. Furthermore this document details the strategies, policy positions and actions that the City will undertake to pursue environmental improvement in the coming years.
Strategic Plan (2008 – 2012)	<p>Is the guiding strategic planning document with the aim; to build sustainable local communities and to improve quality of life within our City. The plan details four strategies that relate to Environmental Management which are;</p> <ul style="list-style-type: none"> • Protect and maintain our natural environment • Create and promote community awareness to encourage responsible environmental behavior • Effectively manage resource consumption, including water and energy, in order to reduce waste and greenhouse gas production and improve air quality • Build partnerships with organisations which will advance the City's environmental objectives
Biodiversity Strategy	<p>The strategy concentrates on local biodiversity issues and habitats that are not necessarily managed at a State or Federal level. The strategy compliments other biodiversity and conservation strategies, and the objectives are to meet the following four key outcomes:</p> <ul style="list-style-type: none"> • Establish policy and processes to ensure that biodiversity values are recognised in decision making by the Council, especially in relation to land use planning and development • Identify high priority natural areas and make recommendations for their protection • Assess lands managed by or vested in the City of Swan to prioritise management needs; and • Establish incentives for private land conservation
Landscaping Guidelines	These Guidelines apply to all landscape proposals for development of POS by owners' or tenants for residential and commercial properties and for proposals of public space by developers which will be under the management of the City of Swan.
Environment Planning Policy	This policy guides the town planning process for environmental policy.
Water Operation Strategy	The Operating Strategy outlines the commitment of the City of Swan through its administrative requirements, operating rules, monitoring regime, environment impacts, contingency plans and improved water efficiency to achieve best operating practices and sustainable irrigation for the Cities Public Open Space requirements.



Appendix 6: Eastern Metropolitan Regional Council's Plans, Policy and Strategies

Regional Climate Change Adaptation Action Plan 2009-2013	The aim is to provide a risk management approach and to clarify and develop regional and local policy and planning within the respective jurisdictions in order to enable the EMRC and its member Councils to adapt to the specific issues of climate change.
Regional Environment Strategy 2011 - 2016	<p>This Regional Environment Strategy (RES) provides an overarching framework for the delivery of the EMRC's environmental services, as agreed by member Councils, to ensure that the environment of Perth's Eastern Region is protected and maintained. The EMRC's Strategic Plan sets in place a vision for the organisation to "be a responsive and innovative leader in assisting Perth's Eastern Region to be a great place to live, work, play and do business". The EMRC's vision for the RES for Perth's Eastern Region builds upon this context and is defined as:</p> <p>A region supporting healthy ecosystems and habitat for flora and fauna, where the air, land and waterways are clean, there is green space, highly efficient buildings and transport systems, renewable energy and minimal waste and emissions.</p> <p>In order to reach this vision, the strategy aims to ensure a sustainable approach for the future development, protection and management of Perth's Eastern Region.</p> <p>The RES covers the main activity areas of:</p> <ul style="list-style-type: none"> • Land Use Planning • Biodiversity Conservation • Climate Change • Water • Advocacy • Engagement
Swan and Helena Rivers Management Framework	<p>The Swan and Helena Rivers Management Framework was completed with support from the Departments of Planning and Transport (previously the Department of Planning and Infrastructure) and the Swan River Trust.</p> <p>Consultation in development of the framework identified the following major issues as impeding outcomes for the rivers.</p> <ul style="list-style-type: none"> • Approvals process and lack of regional coordination • Management/maintenance of the river banks • Access to the foreshore • Foreshore stabilisation <p>Three high priority projects recommended in the framework were completed in 2009 and include:</p> <p>Swan and Helena Rivers Regional Recreation Path Development Plan;</p> <p>Swan and Helena Rivers Management Framework Heritage Audit and Statement of Significance; and</p> <p>Best Management Practices for Foreshore Stabilisation Project</p>
Regional Aboriginal Consultation Guidelines	Guidelines will assist EMRC member councils in dealing respectfully, efficiently and effectively with river management, project planning and approvals with Aboriginal heritage and engagement with the Aboriginal community, whilst also ensuring compliance with the Aboriginal Heritage Act 1972.

Appendix 7: Other Related Plans, Policy and Strategies

There is a large number and range of policies and strategies that exist for the eastern region that potentially have some influence on planning and activities in the catchments. Below is a sample of some of the state and commonwealth policies that guide natural resource management and strategy development in the ECM plan.

Environmental Protection Act 1986 (WA)	<p>The Act is the key legislation for environmental management in the State and is the main method of considering the environmental impacts of major developments. The Act:</p> <ul style="list-style-type: none"> established the Environmental Protection Authority and its governance arrangements; allows for the development of environmental protection policies; outlines the environmental impact assessment process including: referral and assessment of proposals; establishes the State's environmental regulations including pollution and environmental harm offences, clearing of native vegetation, and prescribed premises, works approvals and licences; and provides for enforcement of regulations including legal proceedings.
Environmental Protection and Biodiversity Conservation Act 1999 (Commonwealth)	<p>The Act provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places. The Australian Government Department of the Environment, Water, Heritage and the Arts administers the Act. The objectives of the Act are to:</p> <ul style="list-style-type: none"> provide for the protection of the environment, especially matters of national environmental significance conserve Australian biodiversity provide a streamlined national environmental assessment and approvals process enhance the protection and management of important natural and cultural places control the international movement of plants and animals (wildlife), wildlife specimens and products made or derived from wildlife promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resources
Wildlife Conservation Act 1950 (WA)	<p>The Act provides the statute relating to conservation and legal protection of flora and fauna. Under the Act, individual species of plants and animals are protected, with the level of protection varying depending on whether the species is rare or endangered. Flora and fauna that needs special protection because they are under identifiable threat of extinction, are rare, or otherwise in need of special protection are placed on the threatened species list.</p>
Conservation and Land Management Act 1984 (WA)	<p>The Act establishes a comprehensive set of legislative provisions dealing with state conservation and land management matters. The Act provides for the vesting or reservation of land, particularly State forest or timber reserve, and the ability to enter into agreements with private landholders.</p>
Transfer of Land Act 1893	<p>This legislation allows for local government to require the use of covenants in development to protect or offset environmental values.</p>
Agricultural and Related Resources Protection Act 1976 (WA)	<p>This Act is administered by the Agriculture Protection Board (APB), which is now incorporated into the Department of Agriculture. Regional Advisory Committees advise the APB on weed and other protection issues within WA and the Board has the authority to declare plants for part or all of the State under five different categories. Related legislation is the Plant Diseases Act 1989 (PDA). This Act is concerned primarily with pests and diseases. However, weeds are regarded as a form of plant disease under this Act with provisions allowing for plants to be permitted or excluded for quarantine purposes.</p>
Native Title Act 1993 (Commonwealth)	<p>The Act was enacted as a result of the decision made by the High Court of Australia in <i>Mabo v Queensland (No.2)</i> 1992. It:</p> <ul style="list-style-type: none"> recognises and protects native title; provides that native title cannot be extinguished contrary to the Act; provides for agreement making – Indigenous Land Use Agreements (ILUAs); validated any past grants of freehold or leasehold interests that were thrown into doubt by the <i>Mabo</i> decision; and created a National Native Title Tribunal to administer claims to land by Aboriginal people.
Aboriginal Heritage Act 1972 (WA)	<p>An Act to make provision for the preservation on behalf of the community of places and objects customarily used by or traditional to the original inhabitants of Australia or their descendants, or associated therewith, and for other purposes incidental thereto.</p>
Planning and Development Act 2005 (WA)	<p>The Act provides for a system of land use planning and development in the State and for related purposes. The aim of the Act is to:</p> <ul style="list-style-type: none"> Consolidate into one Act the existing planning legislation in Western Australia, namely the Western Australian Planning Commission Act 1985 (WAPC Act), the Metropolitan Region Town Planning Scheme Act 1959 (MRTPS Act) and the Town Planning and Development Act 1928 (TPD Act) in a rewritten form; provide for an efficient and effective land use planning system in the State; and promote the sustainable use and development of land in the State.

Biodiversity Conservation Strategy 2010-2030 (Commonwealth)	The Strategy is a guiding framework for biodiversity conservation over the coming decades for all sectors – government, business and the community. The Strategy sets out priorities which will direct our efforts to achieve healthy and resilient biodiversity and provide us with a basis for living sustainably.
Waterways Conservation Act 1976 (WA)	<p>The purpose of the Act is to make provision for the conservation and management of certain waters and of associated land and environment.</p> <p>The DoW has planning and pollution prevention powers under this Act for properties in declared areas to ensure the conservation and management of adjacent waterways and associated land.</p> <p>Section 31 provides for the Department or other management authority to enter into an agreement with a landholder in relation to the control and management of the land in accordance with the Act.</p> <p>Licences and approvals are also required for certain works in proclaimed management areas.</p>
Rights in Water and Irrigation Act 1914	The act provides the legislative basis for the planning, regulation, management, protection and allocation of water resources in Western Australia. The objectives of the legislation include providing for the management, sustainable use and development of water resources to meet the needs of current and future users, and for the protection of their ecosystems and the environment in which water resources are situated. The Act provides for the permanent or temporary transfer of a licence or water entitlement. Water transfers are at the discretion of the Department of Water.
Swan and Canning Rivers Management Act 2006 (WA)	<p>An objectives of the Act is to make provision for;</p> <ul style="list-style-type: none"> the protection of the Swan and Canning Rivers and associated land to ensure maintenance of ecological and community benefits and amenity; the establishment of a Trust with planning, protection and management functions in respect of the Swan and Canning Rivers and associated land; the management policies to be followed by the Trust and other persons in relation to the Swan and Canning Rivers and associated land; and the establishment of a Foundation with fund raising and other functions, and for related purposes.
Water Sensitive Urban Design (WSUD) guidelines (DOW)	<ul style="list-style-type: none"> Protect and enhance natural water systems within urban developments. Integrate stormwater treatment into the landscape by incorporating multiple use corridors that maximise the visual and recreational amenity of developments. Protect the quality of water draining from urban development. Reduce peak flows from urban development by local detention measures and minimising impervious areas. Add value while minimising development costs
Bushfires Act (1954)	An Act to make better provision for diminishing the dangers resulting from bush fires, for the prevention, control and extinguishment of bush fires.
National Climate Change Adaption Framework (2007)	This framework outlines the future agenda of collaboration between governments to address key demands from business and the community for targeted information on climate change impacts, and to fill critical knowledge gaps which currently inhibit effective adaptation. The framework aims to support decision-makers understand and incorporate climate change into policy and operational decisions at all scales and across all vulnerable sectors.

Appendix 8: Community Members Feedback and Comments

Perth Region NRM's East Reference Group conducted a survey of the Eastern Region in 2010 of Catchment and Friends groups from the Shire of Mundaring, Shire of Kalamunda and the City of Swan. Community members were asked about the "priority issues" or most concerning aspects of bush/catchment management requiring attention in their area. Priority issues were categorised into Water, Biodiversity, Land Management, Community Capacity and Support, Indigenous Cultural Heritage and Other. Below are the responses from the community on the issues for each category.

Priority Issue: Water	
1	Knowledge about damming and effect on downstream- local dam water levels dropping. Invasion of aquatic weed. i.e. pampus grass Gidgegannup. i.e. S African budding club rash Isoleha polifodoras.
2	Water quality – sump drains from shopping centre which includes petrol from pumps. Stock in and along creeks
3	Monitoring. Given the proposed effluent and grey water treatment and storage proposed for Willow Brook feeding Susannah Brook
4	Nyanya Brook in the SW Corner of Strettle Road Reserve suffers from watsonia and Bamboo invasions. Both invasions originate in private properties on the south side of Thomas Road. Property owners along Thomas Road should be "encouraged" to better manage their road verge.
5	Flash flooding with erosion
6	There was a permanent pond in Rilfellow Park which was inhabited by wild birds and frogs and water plants. Some years ago the shire acted on the opinion of one person and filled it in. As the creek only runs in winter this was a valuable water source for our wildlife in summer. Could something be included in the management plan so that this doesn't happen again.
7	The artificially cut, but natural, winter creek which runs through Norwood Reserve is subject to erosion and weed infestation. Our Shire Bushcare team has done some rockwork but I fear the sides will continue to erode causing the loss of native vegetation. Drainage directly onto Norwood Reserve from the adjacent and residential Hewson Place brings weeds and rubbish into the Reserve.
8	Control of runoff from streets/storm water. Important to get any run-off into the reserves/parks when rainfall is dropping but it needs filtering to some extent, to reduce wash-outs from heavy falls and potential to spread garden varieties/contaminants into catchment areas. Is it possible to install a type of 'rock filter', i.e. a pit of rocks, at main stormwater outlets into parks to try and slow and filter run off?
9	This concerns the winter creek. Since the development of adjacent estate the creek has been significantly impacted. Road runoff has been diverted into the creek. The extra flow has caused inevitable pollution, deepening and scouring the creek and unfortunately encouraged the growth of Watsonia. The prevention of this is a priority and spray control has been requested and approved. Planting along the creekline has had limited success but is ongoing. Protection, particularly from people and kangaroos may be improved by fencing off the creek. Water quality has deteriorated, but the planting and encouragement, particularly of tea-tree and reeds are helping.
10	Sharing Water • High biodiversity springs and wetland areas that are not in parks, at the top of the scarp are being cleared, drained and filled • Natural five day time of concentration of rainfall events with 75% recharge, is being changed with clearing and drainage of catchments to one hour response peaks, increasing flooding and erosion and decreasing duration of flow, water quality, stream habitat and recreational value The eastern hills needs more sustainable water management particularly of its springs and upper slope wetlands

Priority Issue: Biodiversity	
1	Removal of habitat by firewood business. Invasion of ES Woody weeds Illegal dumping by the tree loppers- mulch and pine logs. Illegal dumping of garden rubbish and site works all destroys the local vegetation and spreads weeds etc,
2	Dieback disease treatment. Weeds. Spot spraying when needed.
3	Weeds not being treated for long enough (years) before being replaced with local plants. Weed treated areas left bare for too long. Some weeds i.e. Kikuyu, Bull Rushes, needed for water rat habitat before local plants grow. How do we handle that?
4	Weeds are the primary issue (and add to the fire risk).
5	Weed infestation particularly Watsonia at Milligan Park Reserve Stoneville
6	watsonia, gladioli, babiana, various acacia, blowfly grass in my reserve • above plus veldt grass, wild oats, arum lilies, lavender, onion grass and so on in local area
7	Weed control- need more outside help to maintain creeklines through our properties adequately
8	Foxes are threatening/taking critters Phytophthora cinnamoni continues to spread Weed problems from old horse droppings along tracks Some 'garden escapees' on one border
9	Kangaroos and wallabies now rarely migrate from the State Forest into the reserve. Access to the reserve across Thomas Road has been blocked by the construction of new houses. We need to look at providing bush corridors into Strettle Road Reserve.





Priority Issue: Biodiversity

10	Weed infestations, of creekline from up creek, Freesias on hillside.
11	We just about manage to keep bulbous weed infestations under control, apart from Freesias, but have trouble with the growth of weedy perennial grasses in part of Norwood Reserve which we have had to revegetate due to disturbance and an old Watsonia infestation which was wiped out but left a bare area. There is an ever present threat from fire-lighting , bottle smashing and the use of trail bikes
12	Control of dieback is important for this region Control of weeds: watsonia, bamboo, escaping garden varieties, etc. in park and reserves Overgrazing/ travelling through corridors to residential areas by Kangaroos Build-up of rabbits in the area (often seen on Spring Rd) Eradication of any rainbow lorikeets venturing towards the hills
13	Weed control is our main problem with species including watsonia, wattle, kikuyu, arum lilly and some other grasses.
14	Weed infestation, particularly gladioli type, stink weed, Salvation Jane and cotton weed on 2 reserves are a concern. Bird variety excellent. Reptiles, such as snakes, bobtails, gecko and goannas common. Echidna, emu and possums have been sighted. Kangaroos are abundant. Long-necked turtles have been seen. Unfortunately rabbits are on the increase and foxes even pigs have been observed.
15	A foothills regional park linking the Swan River Park to the Darling Range Park along waterways and including wetlands has been suggested (Hill, 2004). A foothills park needs to be implemented

Priority Issue: Land Management

1	Hot fire burns affecting trees that then require felling. Locals take fire wood – is this thinning? Illegal? How to manage this issue?
2	Firebreak needs bulldozing or scraping. I think it is over 10 years since it was last done. Fire risk management: burn half one year, other half the next.
3	Stock still too close creeks and in them, Totally bare paddocks in summer, helps with fire control but causes wind erosion.
4	Residents damage to winter watercourses through their properties.
5	Most boundary areas require fuel reduction burn-offs
6	Dieback is endemic in the Reserve. Recent tracks put in by FESA may not have helped in the spread of dieback.
7	Reserve management
8	Over the past 5 years I have contacted several people in the Shire regarding an area of Giffellow Park which requires a slow burn for the sake of regeneration and reduction of fire risk. Also I have discussed with them regarding the burning or removal of debris, which has been stacked on the northern side of the creek which also pose a fire risk. Everyone I spoke to agreed that action was needed in these areas but as to date this work has not been carried out.
9	Fires in 2000 to 2003 were quickly brought under control. Norwood Reserve is surrounded by residential properties so fire management is very important but some areas of the Reserve need a fire to restore the vegetation which becomes dominated by dead Hakea trifurcata.
10	Not sure of what the burn-off schedule is for the Kalamunda Park and surrounding areas but hope there is an awareness of need balanced with making sure burn-offs are mostly kept to Autumn to allow regrowth before the summer, and keeping burns 'cool'.
11	The three reserves (Beacon Road Reserve) under the different jurisdictions viz DOLA, and Mundaring Shire but as a combined unit act as an important remnant/corridor of natural bushland which aid in preserving the biodiversity of the area. We request that they be listed as such to afford ongoing protection for future generations so if NRM could confirm this it would prevent concerns that in the future they may be sold for private development.
12	Sharing Power • The airport wetlands need to be better managed and protected, possibly in an expanded State foothills regional park, possibly as part of the Swan River regional park • To better protect eastern hills high biodiversity natural springs and upper slope swamp or escarpment wetlands, they might be considered for nomination to the EPA's currently unused South West Agricultural Zone Wetlands EPP protocol A more inclusive and encompassing foothills regional park is required to be planned and implemented

Priority Issue: Community Capacity And Support

1	Volunteers now only 2- wife and I.
2	Need to get more corporate bodies involved. Local people who are willing to help are usually involved in many other local groups and are prone to overload. They then drop out of everything.
3	You would think that in a semi-urban area there would be volunteers lining up to participate, but everyone seems to expect someone else to do the work. It is left mainly to older people who have the time, but not necessarily the energy to do what is needed. More money is needed for contractors to do the big jobs.
4	Only me in my friends group – so far unable to attract other volunteers
5	Community awareness – • if property owners cleared the verge weeds in front of their property, weed infestations would be greatly reduced • many people think that the 'pretty' flowers in spring are lovely – they are not recognised as weeds
6	Need hands on support for properties that are not public.
7	Marshalling local interest depends on the perceived level of threat to the Reserve!
8	Attraction of volunteers
9	There are only three of us and we would like more volunteer help but we would particularly like to be able to tell local residents about the wildflowers in the Reserve and what they can see at different times of the year just by walking along the adjacent footpath.
10	Not sure – training sessions may be helpful on weed identification and best control methods. Knowing how to control local weeds and which garden plants are potential weeds would be information worth targeting to all residents immediately adjoining national parks and local reserves to encourage them to do the 'right thing'... even if it is just controlling weeds on their own property it would be a big help for adjoining bushlands.
11	Always an issue but we perform work as our resources allow with the intention of not burning ourselves out.
12	These reserves are essentially part of a wildlife corridor reaching in to John Forest NP. More plants and volunteers to plant them are welcome. Unwelcome vehicles are a concern.
13	Protected Areas and Indigenous Rangers • When conserving biodiversity in Kalamunda we are continuing to look after Beeloo country, the country of the mungye or nectar people • We can ensure special areas are simply and quietly protected • Kalamunda might like to seek to employ suitably qualified multi skilled Whadjuk Nyoongar Indigenous ranger (s) to become natural and cultural heritage specialists • These Shire rangers might be located on rotation at the new Kalamunda cultural centre and be asked to liaise, assemble, establish and keep protected area and cultural information and advocate the protection of heritage sites and facilitate celebration of Beeloo cultural heritage in the Shire

Priority Issue: Indigenous Cultural Heritage

1	Shire liaison and Cheryl Ann McCann and SWALSC to have joint management of reserves inc. in Mundaring and Kalamunda Shires. Dual naming- follow to Nyungar names
2	Information is available on proposed reserve areas. Seek out more information.
3	Easier flow of info and dealing with approvals
4	This is sadly lacking for our reserve. We have some limited knowledge of the last logging campaigns- saw pits etc. - but no knowledge of indigenous heritage.
5	Understanding traditional knowledge.
6	I'm not aware of any information in the area. I hope that the new cultural centre / visitors centre in Kalamunda may have an indigenous display / info about history and cultural activities in the Kalamunda region. Maybe local Bibbulmun Huts could also have some info in them also?
7	Extensive work on the children cemetery has been done
8	Monuments at Risk on Kalamunda, Swan and Mundaring Wetlands Munday Swamp and the land around airport wetlands and heritage listed Bellevue farm and wetlands have extraordinary heritage and archaeological value (Hallam, 1983; Schwede, 1983) but their values are being rapidly lost The Eastern Hills Catchment project needs to advocate for the improved protection of Munday Swamp and other key monument wetlands in Bellevue





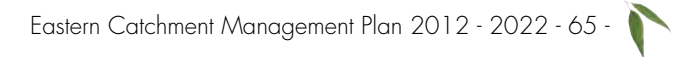
Priority Issue: Other	
1	Vandals destroying plants
2	Effluent treatment proposed in catchment.
3	Occasional impact from motor-bike use
4	Strettle Road Reserve straddles the Helena and Jane Brook catchments. 2. It may be time to ask the Wildflower Society to carry out another survey on the reserve. 3. It may be time to re-invite Anne Taylor and her TAFE classes to adopt the reserve as a training ground
5	Areas of shallow soil over granite Plus dry season leading to tree death
6	Probably that the reserves are so small, surrounded by residential properties but contain remnant Forrestfield Complex vegetation of which little is left in the Shire
7	Would like to see rubbish bin for park walkers placed at bottom of Spring Rd to discourage walkers from dropping rubbish in the area. We would be happy to empty this into our bins for pick-up.
8	The adjacent reserve needs to be protected from vehicle parking
9	Heritage and Catchments - Bellevue Wetlands, Bushmead, Kadina Brook and the Ridge Hill Catchment, have very high biodiversity (350sp plants, black cockatoo and superb fauna in a rare undisturbed context), and heritage values (Bellevue wetland is Perth's 2nd oldest archaeological site) with State and Federal protective heritage listings Heritage areas in this catchment needs protecting, particularly the 210 Ha heritage land in 270Ha Bushmead after the recent sale. Require addition needs to occur as soon as possible of Bellevue Farm, Kadina Brook foreshore and the 210Ha Bushmead Commonwealth and National heritage listed land into the Swan River Park or the Darling Range regional Park Recreation and Reconciliation • There is a need to implement a rejuvenated and signposted cultural trail network across Kalamunda, referring to old Nyoongar sites and trails; supporting the Shire biodiversity strategy, wildlife corridor strategy and district conservation park proposal. These links need to be secured for wildlife and the next generations of people to continue to walk This might include the railway reserves and waterways as linear reserves and wildlife corridors with links across Shire boundaries and make links to the Helena River and John Forest National Park in the Shires of Swan and Mundaring at Bellevue; along the waterways and through the turtle wetlands in the airport land, Kalamunda road swamp and soldier swamp at Guildford to the Swan River, and to Gosnells and Cannington along Brixton St wetland chains and Yule Brook and other waterways to the Canning River We need to establish wetland centres with walk trail links to wetlands with bird hides in the eastern Metropolitan region. Simple hide design is readily available from Britain's RSPB. Use of the well located bird hides after walking along linked trails might occur at the turtle swamp wetlands of Bellevue farm Wetland (and a Munjalline wetland heritage centre), Bellevue clay pits (also to be recognised as Yagan Lake after Midgegooroo history), Hazelmere Lakes, and with alternative design hides at Soldier Swamp, and Kalamunda Road Swamp.

Table 8: Response count to the Priority Issues survey of the Eastern region 2010

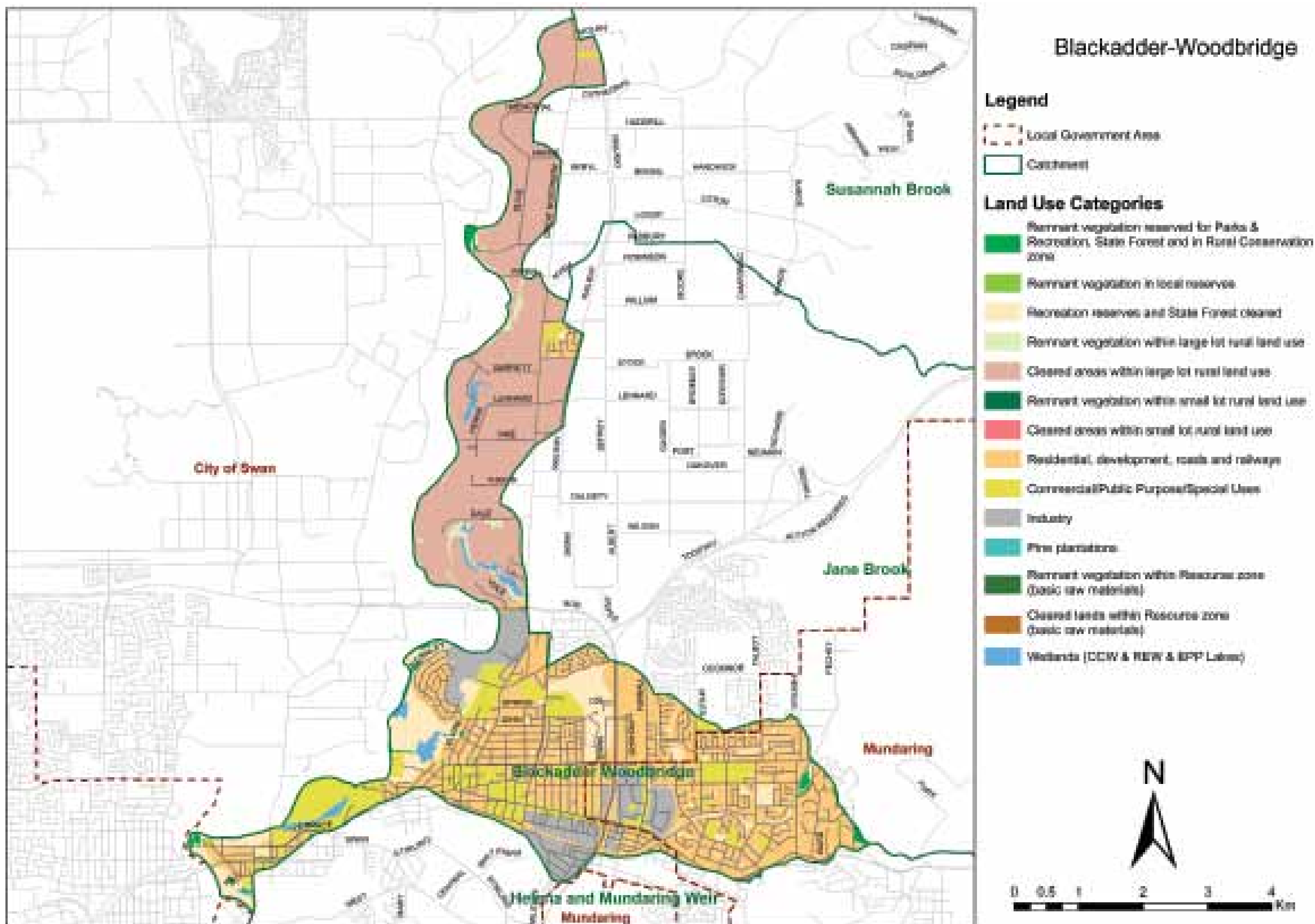
Category	Answered question	Skipped Question	TOTAL
Water	10	6	16
Biodiversity	15	1	16
Land Management	12	4	16
Community capacity and Support	13	3	16
Indigenous Cultural Heritage	8	8	16
Other	9	7	16

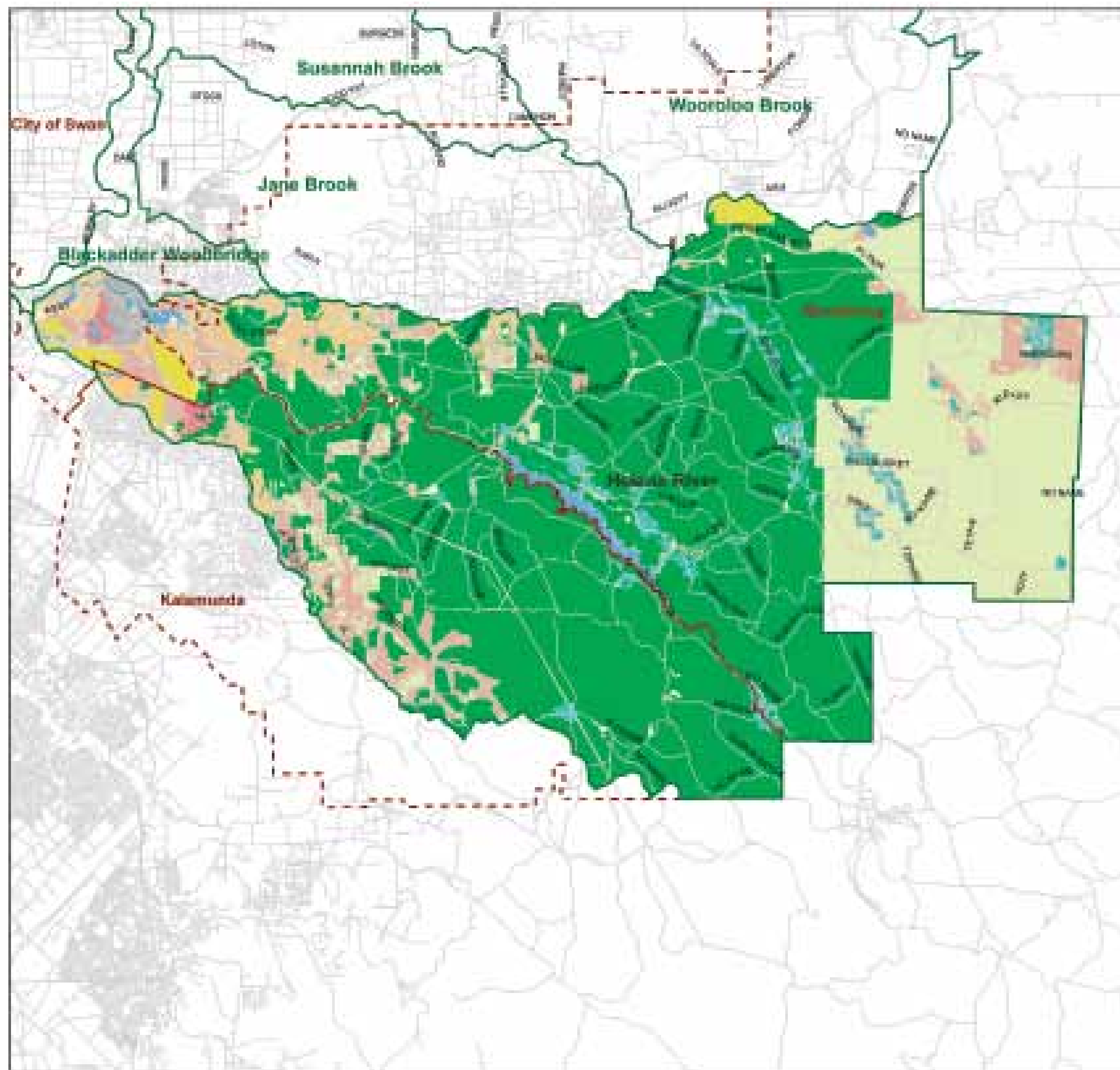
Table 9: Which Local Government responses are from, for the Priority Issues Survey of the Eastern Region 2010

LGA	Response %	Response Count
Shire of Kalamunda	18.8%	3
Shire of Mundaring	75.0%	12
City of Swan	0.0%	0
Unknown	6.3%	1
TOTAL		16



Blackadder-Woodbridge





Helena River

Legend

Local Government Area

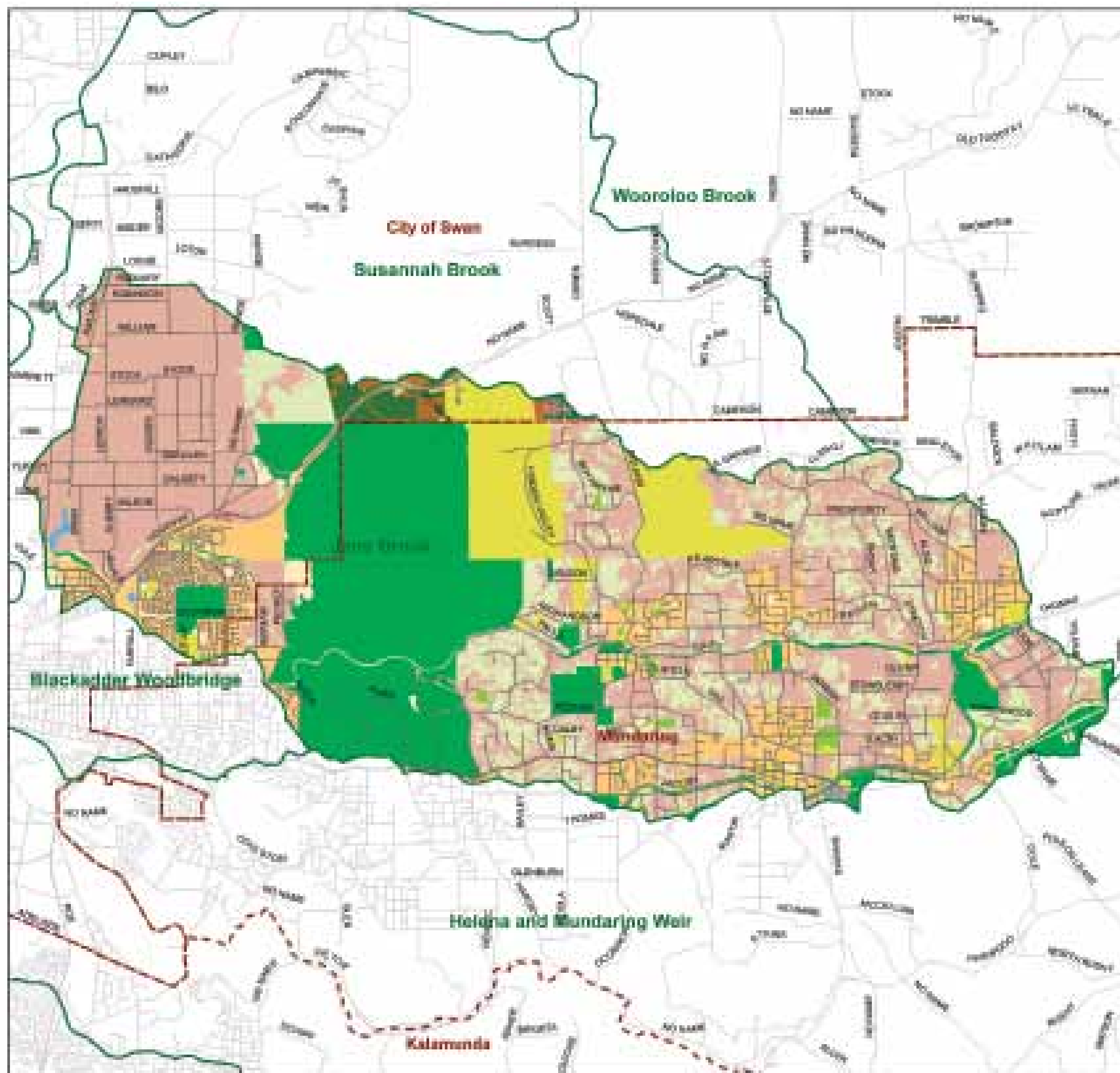
Catchment

Land Use Categories

- Remnant vegetation reserved for Parks & Recreation, State Forest and in Rural Conservation zone
- Remnant vegetation in local reserves
- Recreation reserves and State Forest cleared
- Remnant vegetation within large lot rural land use
- Cleared areas within large lot rural land use
- Remnant vegetation within small lot rural land use
- Cleared areas within small lot rural land use
- Residential, development, roads and railways
- Commercial/Public Purpose/Special Uses
- Industry
- Pine plantations
- Remnant vegetation within Resource zone (basic raw materials)
- Cleared lands within Resource zone (basic raw materials)
- Wetlands (CCW & REW & EPP Lakes)



0 1 2 4 6 8 10 Km



Jane Brook

Legend

Local Government Area

Catchment

Land Use Categories

Remnant vegetation reserved for Parks & Recreation, State Forest and in Rural Conservation zones

Remnant vegetation in local reserves

Recreation reserves and State Forest cleared

Remnant vegetation within large lot rural land use

Cleared areas within large lot rural land use

Remnant vegetation within small lot rural land use

Cleared areas within small lot rural land use

Residential, development, roads and railways

Commercial/Public Purpose/Special Uses

Industry

Pine plantations

Remnant vegetation within Resource zone (basic raw materials)

Cleared lands within Resource zone (basic raw materials)

Wetlands (DCW & REW & EPP Lanes)



0 0.5 1 2 3 4 5 Km

Susannah Brook

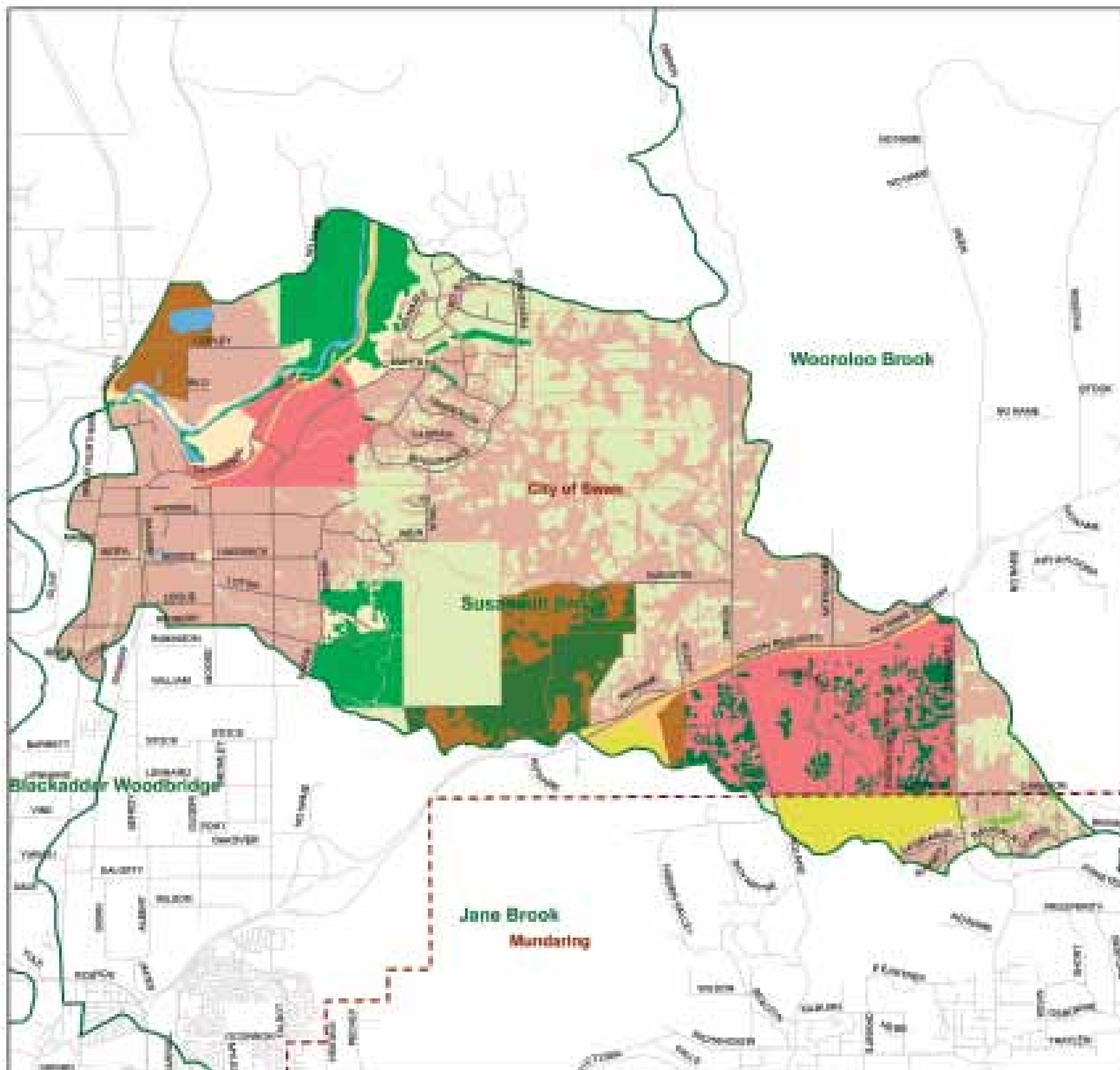
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 Local Government Area

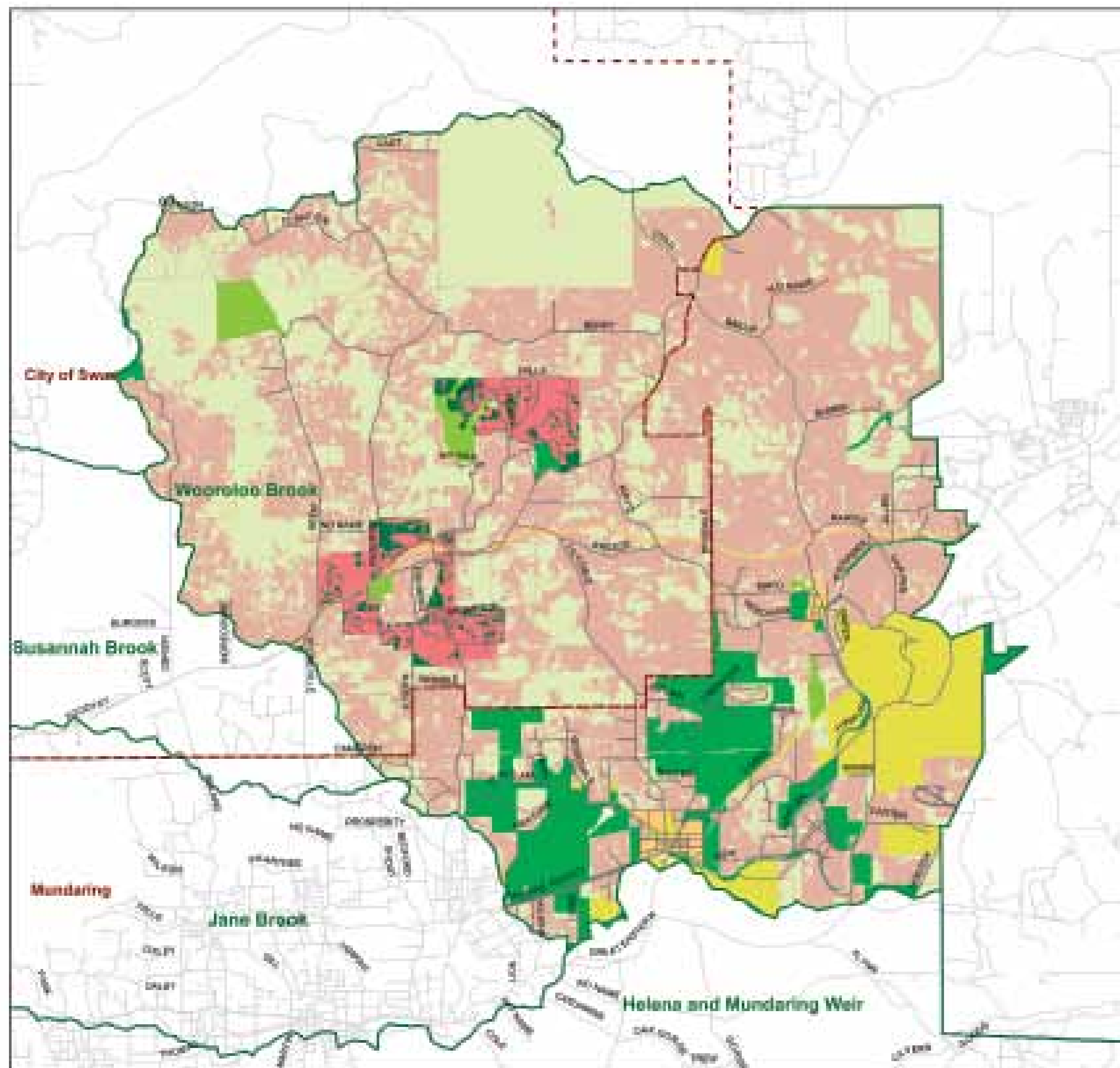
 Catchment

Land Use Categories

-  Remnant vegetation reserved for Parks & Recreation, State Forest and in Rural Conservation zones
-  Remnant vegetation in local reserves
-  Recreation reserves and State Forest cleared
-  Remnant vegetation within large lot rural land use
-  Cleared areas within large lot rural land use
-  Remnant vegetation within small lot rural land use
-  Cleared areas within small lot rural land use
-  Residential, development, roads and railways
-  Commercial/Public Purpose/Special Uses
-  Industry
-  Pine plantations
-  Remnant vegetation within Resource zone (basic raw materials)
-  Cleared lands within Resource zone (basic raw materials)
-  Wetlands (CCW & REW & EPP Licences)



0 0.5 1 2 3 4 5 Km



Wooroloo Brook

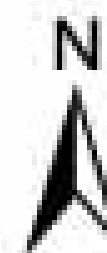
Legend

Local Government Area

Catchment

Land Use Categories

- Remnant vegetation reserved for Parks & Recreation, State Forest and in Rural Conservation zone
- Remnant vegetation in local reserves
- Recreation reserves and State Forest cleared
- Remnant vegetation within large lot rural land use
- Cleared areas within large lot rural land use
- Remnant vegetation within small lot rural land use
- Cleared areas within small lot rural land use
- Residential, development, roads and railways
- Commercial/Public Purpose/Special Uses
- Industry
- Pine plantations
- Remnant vegetation within Resource zone (basic raw materials)
- Cleared lands within Resource zone (basic raw materials)
- Wetlands (CCW & REW & BPP Lakes)



0 1 2 4 6 8 Km



