



Celebrating 10 Years of Catchment Management 2000-2010



People Working Together for a Healthy Environment



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Celebrating Our First Decade

Since our incorporation in 2001, the Peel-Harvey Catchment Council has brought together the efforts of government, landowners, the private sector and the volunteer community to protect and manage the Catchment.

In the Peel-Harvey the business of understanding and restoring the estuary and its catchment has been going on for some forty years, and we are only just beginning to address the biggest and most complex parts of our challenge. It is indeed a 'wicked problem'.

Through this report we give thanks to all of those groups who have helped the PHCC try to bring about a healthier catchment. We hope it demonstrates our commitment to building the social capital of the catchment community. We also hope that it helps the PHCC and other organisations to learn how to do things better in the future.

As the PHCC enters its second decade, our organisation faces a new challenge. We now know what measures and tools are available and required to meet the water quality goals for the Estuary, but we, as a society are reluctant to make the tough decisions to bring about the necessary changes in development and land use. There is much work to be done.....

Jan Star AM
Founding Chairperson
(2001-present)



Chairperson Jan Star with Federal Minister for the Environment, Hon. David Kemp (2001 – 2004)

Welcome to the Catchment

The Peel-Harvey Catchment encompasses an area of more than 1.1 million hectares south of Perth, Western Australia, and extends from the Peel-Harvey Estuary at Mandurah up to 150 km into the Wheatbelt. Defined by the catchments of the Serpentine, Harvey and Murray Rivers, the catchment is host to extensive agricultural areas, residential populations, state forests, mining and an array of ecosystems across three distinct bioregions (Figure 1). The catchment encompasses all of the Peel Region and parts of the Perth Metropolitan Region and Wheatbelt Region.

The catchment can be categorised into four main zones:

- Upper catchment - largely cleared inland country under broadscale agricultural land use
- Middle catchment- well vegetated State Forests and water supply catchment
- Lower catchment - heavily cleared coastal plain under mixed agricultural and rural residential land use
- Estuarine System and coastal lakes - including the Peel-Harvey Estuary and Peel-Yalgorup Ramsar System.



Mandurah and the Peel Inlet, Ocean Channel

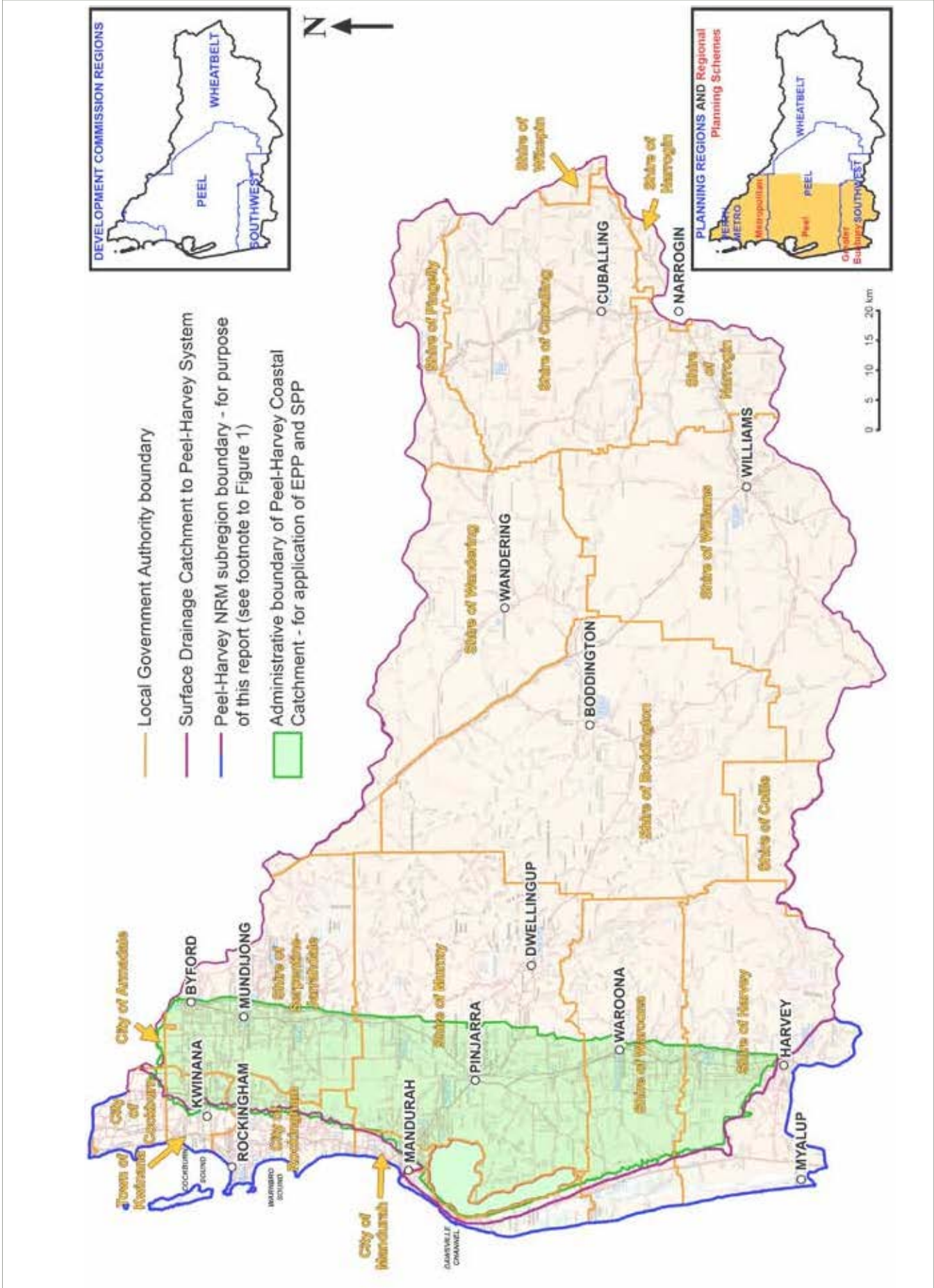


Figure 1: Peel-Harvey Catchment and Administrative Boundaries

Nature's Resources

The catchment's natural resources include water, soils and landforms, ecosystems and habitats, many of which form the basis of economic development and social activity.

In many ways, the key natural asset in the catchment is the Peel Inlet and Harvey Estuary (Peel-Harvey Estuarine System). The Estuary and the broader *Peel-Yalgorup System* (Wetland of International Importance - Ramsar Site No.482) are recognised as wetlands of international importance under the Ramsar Convention by the Australian and State Governments (Figure 2). The Ramsar Site is the most important site for waterbirds in south-western Australia and is of the highest ecological value. It includes numerous large freshwater, saline and estuarine wetlands, and is home to the largest known lake-bound, living thrombolite reef in the southern hemisphere, at Lake Clifton.

For its ecological values, the catchment is an important part of the internationally acknowledged South West Biodiversity Hotspot; recognised for its incredible diversity, high levels of species endemism and the high level of threat to this biodiversity. High value environmental and natural resource assets throughout the catchment include the Ramsar Site, Jarrah Forest, Dryandra Nature Reserve and other inland remnant vegetation, major river corridors, coastal wetlands and woodlands, and the coastal tuart forest.

With most of the catchment's brooks and rivers originating in the forested scarp, the catchment's water resources form the basis of extensive water supply infrastructure including groundwater aquifers and surface water dams supplying a significant portion of the state's potable water supply. Whilst all river systems in the catchment have portions which are severely degraded and deliver high nutrient loads to the Estuary. The Murray River is too saline for potable or irrigation purposes because of extensive clearing in the upper catchment.

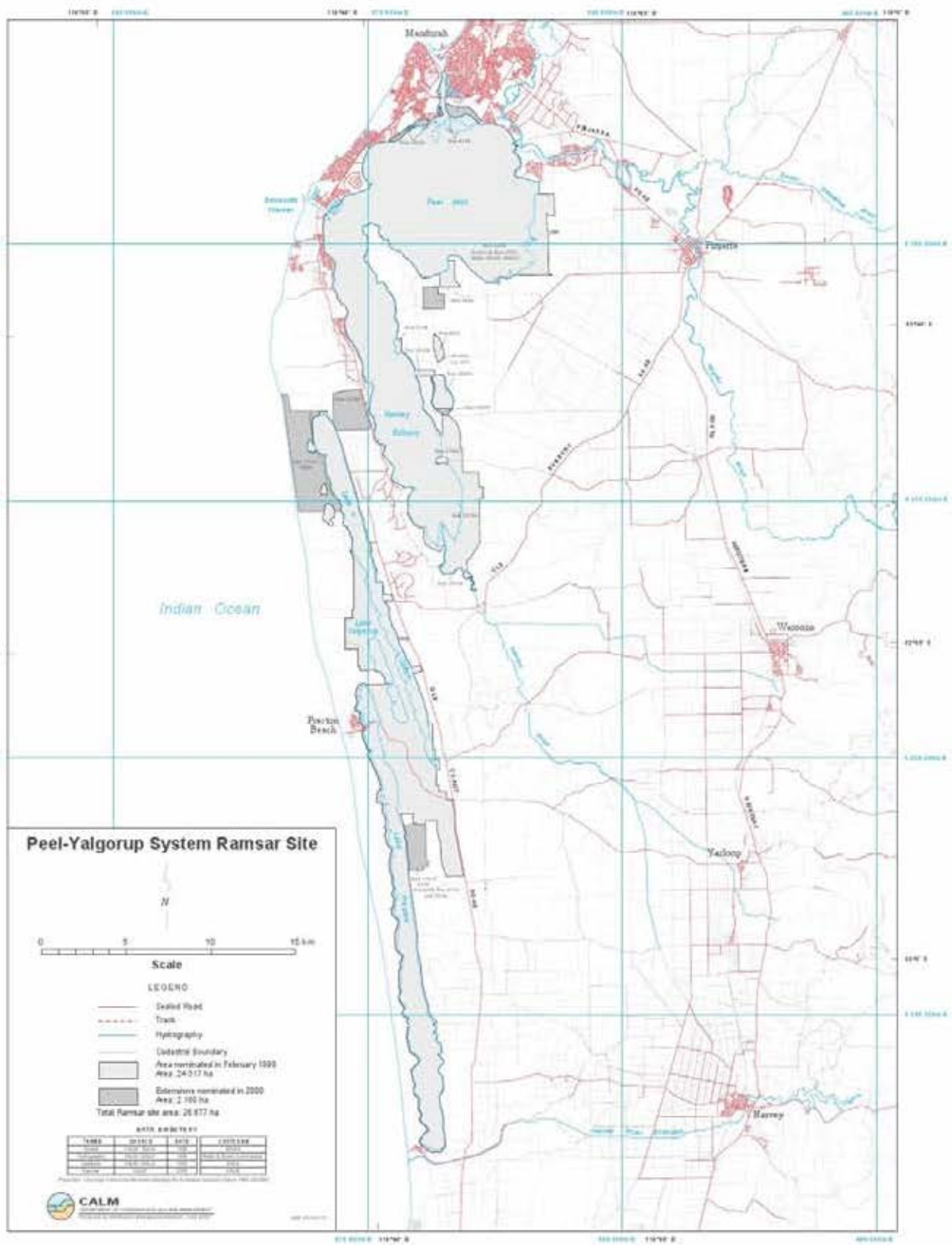


Figure 2: Peel-Yalgorup Ramsar Site

Nutrient Pollution – a Critical Challenge for the Catchment

Eutrophication of the Peel-Harvey Estuary had become evident as far back as the 1950's, and 'by the late 1950's, it was obvious that the estuary was not just suffering a temporary fluctuation' in water quality (Bradby, 1997). If the 1960's were characterised by consolidation of the problem, the 1970's brought the confirmation that the Estuary's ecological health issues were due to excessive nutrient pollution, mainly phosphorus from superphosphate fertilisers entering the estuary from the catchment. This was exacerbated by the highly surface drained (man-made) nature of the coastal catchment to enable European settlement.

Throughout the 1980's, the Government and the farming community increased efforts to develop or implement options to address the problem, but this was somewhat in isolation from each other. The Government's approach culminated in a formal environmental assessment and the Minister for Environment imposing (legally binding) conditions attached to the Peel-Harvey Estuary Management Strategy (Government of Western Australia, 1989). The Dawesville Channel, catchment management approaches and aquatic weed removal were the three main solutions. These conditions bound the Minister for Transport, Minister for Agriculture and (then) Minister for Waterways.

Bottom-line was that the amount of phosphorus pollution entering the Estuary had to be halved if it was to become a healthy ecosystem once again.

Since the 1990's there have been various large efforts to address the problem of phosphorus pollution and broader catchment management.

Today we are still faced with the challenge of managing the amount of phosphorus entering the lower rivers and Estuary.

Monitoring and research over the last twenty years has indicated that levels of the nutrient phosphorus, entering the catchment, need to be halved to that of current levels, if water quality is to be restored to safe levels (SIP, 2012).



Algal Bloom in the Serpentine River, 2006.

The Peel-Harvey Catchment Council

The Catchment Council¹ is an incorporated body formed in 2001 to work for a healthier natural environment in the Peel-Harvey catchment, southwest Australia. Over our first ten years the Catchment Council has achieved much and been involved in many events that have influenced how the catchment is managed.

The PHCC Board has members from the community, Local Government and the Departments of Agriculture and Food, Environment and Conservation, Water and the Peel Development Commission. The PHCC Board is skills-based, with membership determined by an independent panel based on experience and understanding of Natural Resource Management. The PHCC staff includes an Executive Officer and small staff to deliver the Council's on ground and capacity building projects.

Most PHCC's projects are based on partnerships and include on-ground works, targeted research and studies, awareness-raising, and promotion of better standards of natural resource management.



PHCC Membership (as at May 2007)

Top Row: Jane Star AM (Chairman), Andy Gulliver (Deputy Chairman), Ian Wight-Pickin (Secretary), Marilyn Gray (Treasurer), Dr Peter Hick (Executive Committee Member)

2nd Row: Don Glenister, Garry Heady, Tony Hiscock, Shane Kelliger, Maxine Whitely

3rd Row: Denise Needham (Local Government, Coastal), Denis Veitch (Local Government, Inland), Neil Guise (DAFWA), Murray Love (DEC), Bob Pond (DoW)

4th Row: Colleen Yates (PDC)

¹For more information, visit www.peel-harvey.org.au

A Snapshot of Events and Achievements

	Relevant events	PHCC achievements
1970's	Confirmation that pollution of Peel-Harvey Estuary is caused by excessive amounts of Phosphorus, largely through superphosphate fertiliser applications to coastal catchment.	
1980's	1989 - Minister for Environment imposes Ministerial Conditions to prepare Catchment Management Plan and places a moratorium on clearing of native vegetation and new drainage. Conditions remain to this day. 1989 - Three Land Conservation District Committee's (LCDC) formed on coastal catchment	
1990's	1994 - Dawesville Channel opened 1999 - Integrated Catchment Management Steering Committee commences meeting (precursor to the PHCC)	November 1999 - Peel-Harvey Catchment Council (PHCC) formed
2000		December 2000 - PHCC host Peel-Harvey Landcare Forum at Fairbridge
2001		Early in the year PHCC launches discussion paper on the 'Future of Natural resource management in the Peel-Harvey' May - PHCC becomes an Incorporated Body and employs an Executive Officer, Jenny Mercer, who has to resign after 3 weeks and is replaced by Greg Wyvill. September - First PHCC AGM held on 6 Sept 2001
2002	February - Public debate over Alkaloam fuelled by reporting in 'The West' April - EPA declines to comment on Draft Catchment Management Plan as it was considered premature, on the basis on future workshops to be held between EPA and PHCC. The plan is released under a different title "Draft Action Plan for Natural Resource Management" May - Environment Australia expresses interest in funding preparation of a Water Quality Improvement Plan for the Peel-Harvey	January - Ian Wight-Pickin commences as Executive Officer February - Draft 10 Steps Catchment Management Plan prepared March - Draft Catchment Management Plan submitted to the EPA for comment September - Landcare landscapes brochure (and tour) launched
2003	February - EPA releases Bulletin 1087 Reviewing compliance with Ministerial Conditions related to the management of the Peel-Harvey System. PHCC expresses concern that community action, in partnership with Government agencies in catchment, has been largely overlooked May - Four Peel-Harvey Local Governments are awarded Milestone One in the Water Campaign™ at the Australian Water Association Oz Water Conference July - Funding received under NHT2 for Rivercare Project, Water Campaign™ extension project, Foundation Funding and Coordinator and /facilitator funding. Funding for NRM Officers in catchment coordinated through PHCC	January 2003 - Peel Water Campaign™ commences March - Work commences on preparation of a NRM plan for the Catchment. Leads to Plan published in March 2005 March - and ongoing support given to all CCI projects, especially the Water Sensitive Urban Design Project. Good working relationships with all groups. May - Request to chairperson of the WA NRM Council that the Peel-Harvey be recognised as a separate NRM region September - Rivercare Officers commence delivery of projects (Alex Hams and Jesse Steele)



	Relevant events	PHCC achievements
2004		February - Peel-Harvey used as a case study by the Drainage Reform Group (State Government Initiative)
2005		March - Peel-Harvey NRM Plan released for public comment March - Peel-Harvey Biodiversity Decision Support System released June - Staff Move To Peel Waterways Centre, With Funding From Dow (Then Department Of Environment) August - PHCC Strategic Framework Report for PHCC 2006 – 2010
2006		June 2006 - NRM officer funding for 2006/08 had been announced 6.5 FTE's located in the Peel-Harvey Catchment July - Damien Postma commences as PHCC Executive Officer July - PHCC website launched November - PHCC – DEC partnership awarded funds to produce Ramsar Site Management Plan and Ecological Character Description. PHCC seeks MoU with DEC and Conservation Commission in relation to project.
2007		April - Need for a large scale drainage initiative recognised. PHCC floats concept of diversion of the Peel Main Drain to create large biofiltering wetlands as part of the New Perth-Bunbury Highway plans July - PHCC commissions study to address planning issues as part of finalisation of Peel-Harvey Governance framework prior to Cabinet consideration July - Peel-Harvey Drainage Reform Plan finalised
2008		March - PHCC becomes national pilot for the Catchment module of the Water Campaign™ June - Discussion with Tertiary institutions on collaborative research programs to cover the Peel-Harvey Estuarine System September - Hotham Williams Murray River Salinity Recovery Project completed AGM - Draft Ramsar Management Plan & Peel-Harvey Ecological Character Description completed
2009	March - 50% drop in Federal funding for NRM in the SW region announced June - All SWCC funding from SWCC/Caring for Our Country ceases.	April - New Peel Climate Change Adaptation project commences May - PHCC finalist in two UNEP award categories for Ramsar and Water Campaign™ (Australian World Environment Day) June - Kim Wilson commences as Acting Executive Officer August - PHCC relocates out of the Peel Waterways Centre. Kim moves to Waroona Landcare Centre and Amanda Willmott is hosted by City of Mandurah. October - WSUD Drive Tour launched with developers and Leschenault Catchment Council November - PHCC Board Strategic Planning workshop 'Moving Forward' December - PHCC contracted by the DoW to deliver the WQIP Implementation Project "Filtering the Nutrient Storm"
2010		July - Science Strategy for the Peel-Harvey Estuary completed. September - Jane O'Malley appointed PHCC Executive Officer October - PHCC receives grant to maintain the Executive Officer position and produce a Business Plan through Royalties for Regions and Peel Development Commission.

Roles of the Catchment Council

The seven major roles of the PHCC are:

1. Leadership

Contribution to strategic and policy changes, and recognition of existing policy, towards the PHCC's vision for the catchment.

2. Building Partnerships (Key Relationships and Collaborations)

Bringing together people with the necessary knowledge, resources and capacity to bring about change.

3. Co-ordination and Facilitation

The means by which different initiatives are managed in an integrated way and how PHCC encourages and supports partners to work together in achieving specific results.

4. Advocacy

Increasing the profile of the Peel-Harvey Catchment both within the catchment and at strategic and policy level and raising awareness of specific threats and opportunities affecting the region.

5. Technical Initiatives

Management of technical research, field studies, etc.

6. Project Facilitation and Implementation

Specific actions that lead to practical implementation of priority projects are the means by which physical change will actually occur.

7. NRM Planning and Project Development

Undertaking the work to describe the desired catchment condition and the steps that are required to get there.



Key Relationships and Collaborations

The involvement and support of the following organisations has been critical over the Catchment Council's first decade.

Australian Government and South West Catchment Council

The PHCC has maintained a strong, broad relationship with SWCC for all of its first decade. This relationship has included the PHCC assisting the SWCC to develop its Regional Strategy, and SWCC enlisting the PHCC's services to deliver projects to restore waterways and improve water quality.

The Department of Water

Despite the fact that no formal partnership between Department of Water (DoW) and PHCC has ever been established, a strong relationship has been formed between the two organisations. This relationship is founded on the common objectives of the DoW and PHCC, namely to manage and improve the condition of the estuary and catchment's rivers and wetlands. Department staff have helped the Catchment Council develop projects and attract much needed funding from State and Federal Government sources. On a practical level, the DoW provided a home for the PHCC between 2005 and 2009 at the Peel Waterways Centre.

Department of Agriculture and Food

The Department is credited with helping the community form the Catchment Council in late 1999 after a year of meetings and deliberations. Since 2000, the Department has provided expert staff to advise the Council in matters as far ranging as soil amendments to vegetable growing. Projects such as Filtering the Nutrient Storm would not have been possible without the commitment of the Department's soil scientists and drainage experts.

Peel Development Commission (PDC)

The relationship between the PDC and the PHCC is considered to be another of the special collaborations that helped the organisation achieve much over its first decade. The developing relationship with the PDC has provided the PHCC with an opportunity to politically advocate for the catchment independent of any State Government agency. That included the PHCC Chairperson and Executive Officer being part of the PDC organised delegation to Canberra before the 2007 election.

Other State Government Agencies

Through its first ten years, the PHCC developed strong working relationships with each of the other agencies with NRM responsibilities, such as Department of Environment and Conservation and Department of Agriculture and Food. A new working relationship is now also being forged with the Department of Planning, in an effort to achieve better outcomes for the environment as part of planning for development.

Local Governments

In its first decade, the PHCC has formed strong working relationships with most local governments in the catchment through offering tangible support and technical advice. This has come in the form of projects such as the Water Campaign™, Water Sensitive Urban Design, Rivercare and funding opportunities such as Groundworks. The LG's role has continued and matured with the appointment of various NRM and Environmental Officers, financial and in-kind support for local Landcare Centres, administrative support and project participation.

Catchment Landcare Organisations

Many of the achievements of the first decade can be attributed to the strong working relationship between the PHCC and landcare centres within the catchment. As a sign of a true partnership, both parties have benefitted from the relationship at different times, through direct contact with local landholders and community leaders, access to a rapid network of knowledge and expertise and ability to deliver on-ground projects efficiently. This was especially beneficial to PHCC in the early years (2001 – 2003).

Local Community Groups

Through its projects, the PHCC has been able to assist a number of local groups, including a number based round the Estuary, Ramsar Site and Lower catchment. Examples include the Friends of Rivers Peel, Friends of Ramsar Action Group for the *Yalgorup Lakes Environment (FRAGYLE)* and the *Lake Mealup Preservation Society (LMPS)*.

ICLEI

ICLEI, the '*International Council for Environmental Initiatives*', works directly with Local Governments worldwide on strategic environmental programs. One of these programs is the Water Campaign™, which aims to conserve water and improve the condition of receiving water bodies. Discussions between ICLEI and PHCC in 2002 led to the first trial of the Water Campaign in Western Australia commencing in early 2003. Nine of the Local Governments in the catchment participated in the Water Campaign™ between 2003 and 2008. The Water Campaign™ went onto become a state program through WA Local Government Association and the Water Corporation.

Greening Australia

The PHCC's relationship with Greening Australia WA (GAWA) has enabled the delivery of the Peel River Recovery Project and the Pinjarra Wetland Restoration Project. These projects were managed by GAWA's River Recovery Coordinator Peel, and ensured that a number of other PHCC projects achieved high standards of revegetation and bushland management.

Alcoa

Alcoa has had a long association PHCC and with catchment management in the Peel-Harvey, providing much needed funding for on-ground works. For example, Alcoa invested \$200,000 annually in the *Rivers, Wetlands and Habitats* program, all of which was spent on-ground from XX to XX, involving many volunteers and community groups.



Catchment Council Projects and Initiatives

Coordinating projects and delivering projects in partnership with other organisations forms a large part of the Catchment Council's daily business. Our projects range from catchment coordination and advocacy, to technical initiatives covering water resources, biodiversity or management of the Peel-Yalgorup Ramsar Site. This section showcases a few of our major projects since 2000. A more comprehensive list of Catchment Council projects is included at the end of this booklet.

Catchment Planning and Coordination

The Council's Catchment-focused planning has included the "Peel-Harvey Catchment Natural Resource Management Plan" (Land Assessment, 2005) and previous plans such as the '10-steps Catchment Management Plan' prepared for the Catchment Council in February 2002. The 2005 NRM Plan highlighted the Peel-Harvey's NRM priorities as part of the SWCC regional NRM strategy. It covered a wide range of issues, including water quality, biodiversity, dryland salinity, soil protection, adaptation to climate change.

Whilst the 2005 Peel-Harvey NRM Plan did not constitute the Catchment Management Plan (CMP) envisaged by the EPA and State Government in the late 1980's (Government of WA, 1989), it created a solid foundation for a comprehensive CMP. Unfortunately, a Catchment Management Plan recognised by the State Government is still yet to be prepared. The key 'missing' link has been the political will and statutory and bureaucratic mechanisms to prepare and implement a CMP.

Peel-Harvey Governance Framework

The lack of a formally constituted and recognised body with responsibility for catchment management in the Peel-Harvey catchment has been a significant barrier to implementing key policy reforms.

An opportunity to form such a body for the Peel-Harvey arose in 2006, with the then State Labor Government. This was in large part a logical progression of the development of the Peel-Harvey Water Quality Improvement Plan and the need to create a framework to implement the WQIP's recommendations. Fortunately, the then State Government was prepared to consider the establishment of such a body.

The Catchment Council was heavily involved in the development of a catchment management framework in which both government and the Council could operate. The Council chairperson and staff worked with State Government agencies to develop a model which was formally proposed to State Cabinet in 2007.

A summary of the main features of the model, including formation of a Peel-Harvey Water Quality Improvement Council is provided in Figure 3. The proposal was never made public, and the Labor Government lost the election in 2008. Today, the need for a catchment governance body, whether statutory or advisory, with formal links to Government and adequately resourced, is as great as ever Water and Waterways Projects

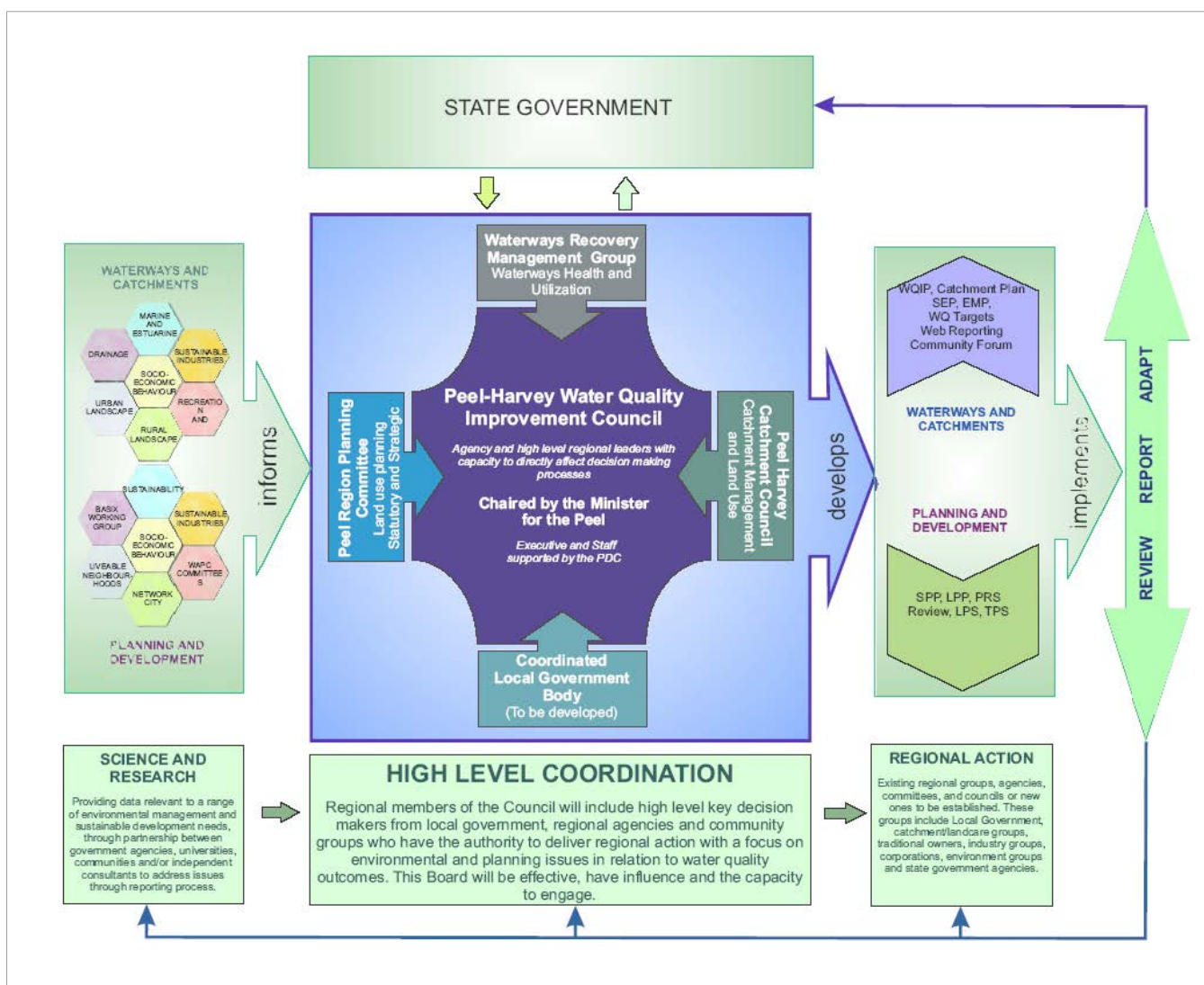


Figure 3: Proposed Governance Model for the Peel-Harvey Water Quality Improvement Council



Water and Waterways Projects

The Water Campaign™

The PHCC introduced ICLEI's² the Water Campaign™ to Western Australia in 2002/03 after initial discussions with ICLEI in 2002. The Water Campaign project started with four Local Governments in the Peel-Harvey Catchment, and by the time the project had finished in 2008, nine of the fourteen LGs in the catchment had successfully worked through the five milestones of the project. This level of participation in the campaign has not been achieved in any other catchment in Western Australia.

Through the Campaign, Local Governments measure the water that they use as a Local Government organisation in parks and Council facilities, and they also measure how much their communities are using (domestic and commercial). A plan is then developed to assist the Council and its community reduce the amount of water used.

The Campaign clocked up the following achievements (2003 – 2008) across nine Local Governments:

- 189 water management actions implemented
- 636 000 kilolitres saved during the reporting period
- Annual cost savings of \$311, 844 between July 2006 – July 2008
- 365 Water Quality points awarded through the ICLEI evaluation process to water quality management actions (PHCC, 2009b).

Water Sensitive Urban Design

The PHCC has taken an active role in Water Sensitive Urban Design (WSUD) since its inception given the impact that urban development has on the catchment's water resources and the state of its rivers and estuary.

By 2003/04, the PHCC had developed an acute understanding of the importance of assisting Local Governments with WSUD. Both the Federal and State Governments were emphasizing the importance of WSUD, but providing relatively little practical assistance to Local Governments to adopt the new approach to drainage. PHCC staff had already been closely involved in the development of the "Peel-Harvey Coastal Catchment Water Sensitive Urban Design Technical Guidelines" with PDC, which were released in 2006.

In response, the PHCC developed a project to assist coastal plain Local Governments to implement the WSUD Technical Guidelines. This involved working with five Local Governments to adopt a WSUD Local Planning Policy (LPP) as outlined in the Technical Guidelines and assist them to apply the policy to new developments. The Local Governments of Mandurah, Serpentine-Jarrahdale and Waroona had adopted the LPP by the end of 2009.

The impact of the Water Campaign and WSUD work with Local Governments has meant that they have placed greater attention to the issue of sensitive stormwater design in new developments. It assisted coastal catchment Local Governments to retrofit old drainage infrastructure. It also led to the development of a self-drive tour, with the help of developers, to enable the land development industry, local councillors and others to see examples of water sensitive design in the field. At a state level, PHCC leadership on this issue can be seen in the Better Urban Water Management framework and the New WaterWays program.

²ICLEI is the International Council for Local Environmental Initiatives.

Peel-Harvey Water Quality Recovery Program

This ambitious program (developed in 2005/06 and delivered from 2006 – 2008) with funding by SWCC was not just the Catchment Council's response to the emerging WQIP recommendations, it was an indication that the PHCC had entered a new, more sophisticated phase of operation. The program was designed as a multi-faceted program and had significant technical, collaborative, construction and educational components.

The program, known as WQ01, was designed to deliver on several management measures identified through the Coastal Catchments Initiative (CCI) program which would later become recommendations of the Peel-Harvey WQIP. The \$1.06 million program had four major components:

1. A Decision Support System (DSS) and Monitoring (WQ01a) to model water quality impacts of land use change and management options across the catchment. This included working with the Department of Water modelling experts to improve use of the model (LASCAM/SQUARE) in the Peel-Harvey
2. Development of Water Quality Improvement Plan for Nitrogen (WQ01b). This component was not progressed due to time delays with development of a new water quality-land use model, development of WQIPs in other catchments and limited financial resources. An assessment of nitrogen pollution levels has subsequently been addressed by the DoW (Kelsey et al, 2011)
3. Rural Drainage, including:
 - a. Research and report by Drainage Research Officer, Jesse Steele, "Management of diffuse water quality pollution in the Peel-Harvey Coastal Drainage System. A strategic approach to implementation of Best Management Practices" (Peel-Harvey Catchment Council, 2008a)
 - b. Establishment and assessment of use of perennial pastures to decrease nutrient loss from paddocks.
4. Urban Drainage WQ01d. This included:
 - a. Water Sensitive Design Tours of WSD installations across the coastal catchment, including the creation of a Water Sensitive Design Self Drive Tour brochure; this attracted professional planners and engineers from industry and Government
 - b. Working with Local Governments to ensure adoption of the WSD Local Planning Policy and implementation of WSD drainage
 - c. On-ground works to retrofit stormwater drains using WSD approaches at:
 - i. Pinjarra wetland in the Shire of Murray
 - ii. Installation of retrofits including gross pollutant traps (e.g. Cantwell Park)
 - iii. Thatcher Street retrofit project, Shire of Waroona.

Rivercare Program and Related Projects

Managing the catchment's rivers, creeks and drains for water quality improvement and ecological function have been two important PHCC objectives over the decade. Figure 4 shows the severity of the problem, with most of the catchment's watercourses on the coastal plain and upper Murray River catchment being classified in a degraded condition (Bosveld, 1997). Various programs and projects have been delivered by the PHCC to achieve these two objectives, and these are best illustrated by the Rivercare Program (2003 to 2009) and the work of the Harvey River Restoration Taskforce (HRRT) (2003 to present).

The Rivercare Program formally operated in the catchment between 2003/04 to 2008/09 and in terms of budget was the PHCC's largest project over the first decade (\$2.11 million). Some of the achievements of the Rivercare

Program and related projects were:

- 2003-2008: Works at 48 waterway sites including riffle constructions, stock crossings or other erosion control works
- 2004/05: 30 ha of riparian restoration and revegetation
- 2005/06:
 - 49.5 ha of riparian area fenced and protected
 - 100 ha of riparian vegetation rehabilitation, 2.5 km of stream bank stabilised
 - 28 ha of riparian revegetation
 - 28 voluntary agreements signed with landowners to protect 314 ha of vegetation or revegetation.
- 2007/08:
 - Gordon McLarty River Restoration project, including fencing for 4.2 km of river protection (Murray River and Marrinup Brook), eight riffles, one rock chute, one riffle stock crossing, and one flat rack bridge
 - Marrinup Brook headcut remediation
 - Bank stabilization work on the Lower Murray
 - Pinjarra Wetland Project – proposed name 'Morni Kep (Black Water) Park'
 - Lower Harvey River riffle installation (HRRT project supported by PHCC)
 - Bancell Link planting and Nell's Block project (HRRT projects supported by PHCC).

The work at Gordon McLarty's property was nominated, and was subsequently a finalist in the United Nations of Australia Association World Environment Day 2009 Award.

Whilst the HRRT is not a PHCC-led project, the collaboration between the HRRT and PHCC has attracted significant additional funding for the Coastal Catchment. HRRT funds were used to attract matching NHTII and NAP funds to establish the PHCC's Rivercare Program. This enabled the employment in 2003 of the Rivercare Officers, Alex Hams (Murray River catchment) and Jesse Steel (Harvey River) and then in time the City of Mandurah's Foreshore Restoration Officer³, Shane Kearney.



Minister for the Environment, Hon. Judy Edwards (2001-06) with Rivercare Officers Alex Hams and Jesse Steele.

³This position subsequently became a position fully funded by the City of Mandurah.

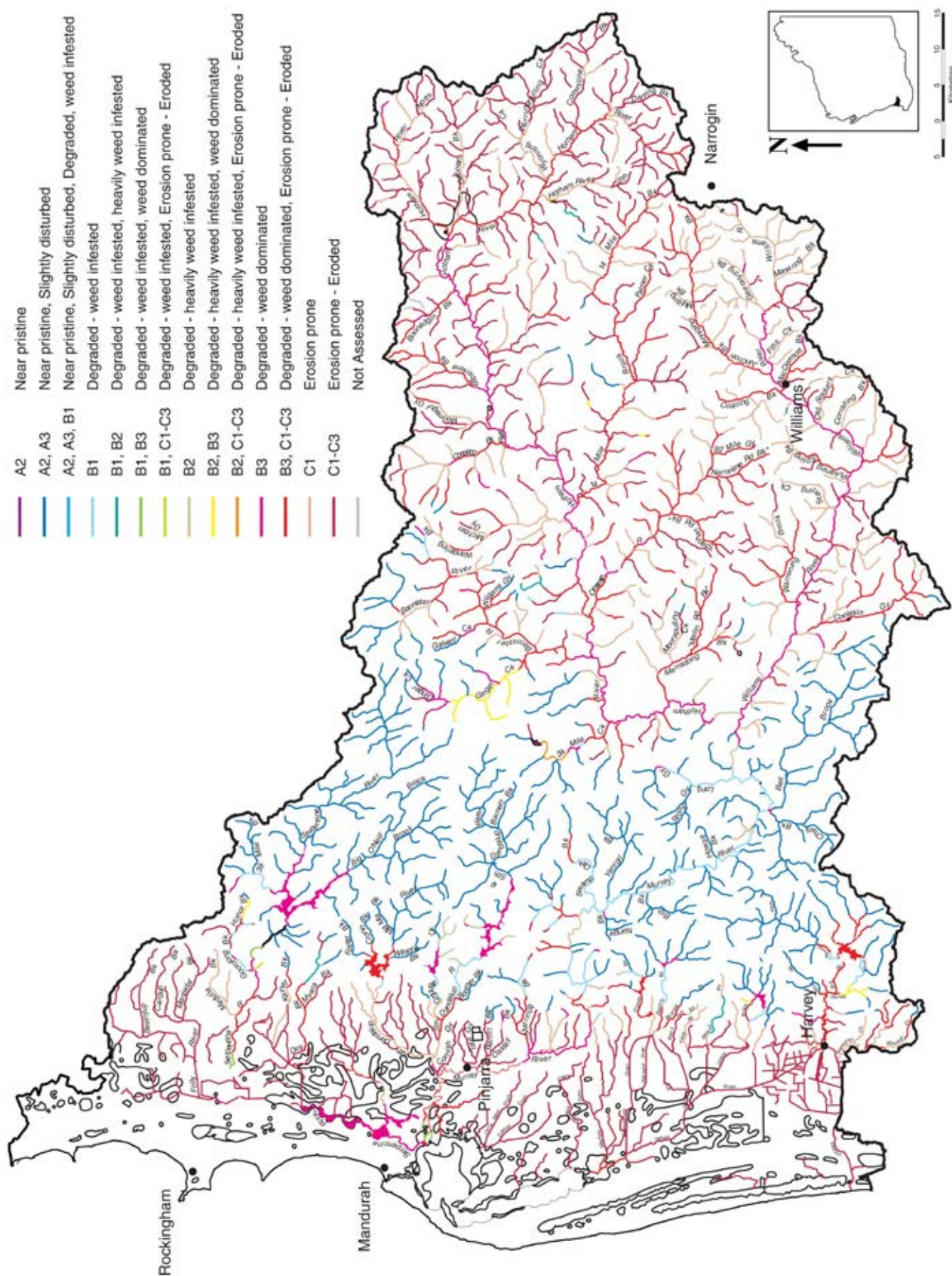


Figure 4: Condition of Catchment Watercourses as Assessed in 1997



Rural Drainage

The role played by the extensive network of drains on the coastal catchment in transporting nutrients to the Estuary has caught much of the attention of the PHCC over its first decade. Changes to the way that the drains are managed may reduce the amount of nutrients entering the Estuary.

The PHCC brought the need for rural drainage reform to the attention of a number of government instrumentalities over the first decade, including the Office of Water Regulation, Water Corporation, Auditor General, and State NRM Council. The Catchment was also made a case study as part of the State Government's Drainage Reform Group in 2004 and actively participated in the Department of Water's Coastal Drainage program (2006 – 2009).

The complexity of the rural drainage issue, the real or perceived financial implications, and the reluctance of successive governments to act on this issue have been major factors preventing significant reform in this area. Despite this, the PHCC initiated two important technical drainage initiatives in its first decade, culminating in the following reports:

- Management of diffuse water quality pollution in the Peel-Harvey Coastal Drainage System. A strategic approach to implementation of Best Management Practices (Peel-Harvey Catchment Council 2008a)
- Drainage Reform Plan: Peel Harvey Coastal Catchment: Volumes 1 and 2 (Del Marco, 2007).

The former report, prepared by Drainage Research Officer Jesse Steele, with the support of Dr Rob Summers of the Department of Agriculture and Food provides a thorough basis for the continuation of drainage buffer management on farms and minor order drains. These best management practices include fencing for stock control, revegetation with indigenous species, and use of perennial pastures.

The Drainage Reform Plan collated best management practices for the range of drain types, including middle order and large gazetted drains currently managed by the Water Corporation (Del Marco, 2007).

Further technical studies are likely to be part of future campaigns to make rural coastal drainage more catchment friendly. However, most rural drains in the Catchment are licenced to the Water Corporation and neither Government nor the Corporation have been particularly eager to change the conditions of licence to manage the drainage water resource more wisely. It will take significant public pressure, or a crisis, to re-open the debate on rural drainage reform.

Biodiversity

Launched on the world-wide-web in July 2004 and officially in November 2005, the Biodiversity Decision Support System is a web-based information resource to view changes in vegetation over time. The Biodiversity DSS provides a review of vegetation changes in the catchment for any period of time between 1990 and the present year.

The Biodiversity DSS Project has provided an important legacy for the catchment. The Project was led by Dr Peter Hick, and managed by Kim Wilson and Ian Wight-Picken and involved three main outputs:

1. A web-based mapping tool which can be used to monitor changes in perennial vegetation
2. An associated report
3. Training for PHCC staff as well as the catchment's volunteers and professionals.

Ramsar Initiative

After consistently advocating to Government the need to better manage the 26 000 ha Peel-Yalgorup Ramsar Site, the PHCC secured funds in 2005/06 to raise awareness of Ramsar and ultimately produce a Management Plan for the Site.

Ramsar Sites are wetlands of international importance and the Peel-Yalgorup System (Ramsar Site 482; Australian Ramsar Site 36) listing protects the Peel-Harvey Estuary, the lands and waters (10 lakes) of Yalgorup National Park, and Lakes McLarty and Mealup and surrounds, and will be include Goegrup and Black Lakes in the future. The protection of Ramsar Wetlands is essentially an Australian and State Government responsibility. Impacts on the ecological character of the Peel-Yalgorup Ramsar Site can invoke the Environment Protection and Biodiversity Conservation Act 1999 as a Matter of National Environmental Significance.

The initial investments were by the Australian Government (\$70, 000), PDC (\$30, 000), and DEC (\$10, 000). The PHCC Board members and staff, as well as local community groups, contributed significant time before and during the project. These investments and subsequent funding through to 2008/09 (e.g. Project WH.03c *Peel Yalgorup Action Plan and Goegrup Black Lakes on ground works*) enabled the PHCC to coordinate preparation of the Management Plan (PHCC, 2009d) and the *Ecological Character Description* (Hale & Butcher, 2007). Funds have also been used to conduct on-ground management works (rehabilitation, weed control, fencing for habitat protection) and support DEC with management of a number of wetlands in the Ramsar site.

Significant achievements of the Ramsar Program have been:

- The *Ramsar Listed Peel-Yalgorup System - Developing a Management Plan* (Project - W5-11/ SWCC IP 1 - C. Perry)
- Listing of the Lake Clifton thrombolites under the EPBC Act 1999 (nominated by the PHCC – A. Wilmott, J. Star - with assistance from DEC – J. Pryde)
- The *Peel-Yalgorup System: Management and Monitoring of a Ramsar Listed System*; (1/01/2009 - 30/06/2009 - CfOC, 2008-09 Transition Year Project, 4.06 Amanda Wilmott)
- Production of a shorebirds documentary DVD (A. Wilmott)
- *Rehabilitation projects at Lake Mealup & eastern estuary* (Project CC082614)
- *Waterbird counts and monitoring* (Project CC082614)
- *Implementing the Peel-Yalgorup Ramsar Management Plan: a Priority Coastal Hotspot* (CC082614; Coastcare-Amanda Wilmott/Liz Bonner)
- *Installation of Ramsar signage and interpretation materials around estuary* (C. Perry; The Ramsar listed Peel-Yalgorup System - Developing a Management Plan Project - W5-11/ SWCC IP 1)
- *Access control and gates – eastern estuary* (Project CC082614)
- *Fringing vegetation mapping and monitoring* (Project CC082614)

Funding partners on the Ramsar Initiative have been the Australian Government, City of Mandurah, Peel Development Commission and Department of Environment and Conservation. The collaborative approach and breadth of contributions are perhaps best illustrated by the fact that 27 stakeholder groups/agencies were represented on the Ramsar Technical Advisory Group (TAG).



The PHCC's work on the Peel-Yalgorup Ramsar Site has been one of the stand-out achievements of its first decade. It is an example of the PHCC's leadership qualities, ability to bring different organisations together, and attract investment to the region. It is also an example of how the PHCC was able to deliver projects which are firmly based in science and complex technical issues, undertake on-ground works and on-going monitoring.

The Ramsar Initiative funding continues until June 2011, with work to coordinate implementation of the Management Plan and Monitoring Guide (Hale, 2008). Two of the ongoing issues are the funding of coordination of Ramsar Site Management and consolidation of the relationships between DEC and PHCC to ensure the Ramsar Site receives the protection and management worthy of its international importance.



The Thrombolites, or Living Rocks of Lake Clifton; one of the features of the Peel-Yalgorup Ramsar Site.

Summary of On-ground Catchment Management Works

The extent of on-ground works in the Catchment since landcare records began in 1992 is impressive, with 5636 hectares of bushland protection, revegetation, streamlining and other works recorded for the period 1992 to 2010. This is made up of 3320 ha of works carried out through LCDC managed projects between circa 1992 and 2000, and 2316 ha carried out between 2001 and 2010 under LCDC and Catchment-wide projects (685 ha and 1631 ha respectively) (Table 1). Catchment-wide projects were coordinated by the PHCC.

It is important to note that these statistics only capture a portion of actual on-ground works, and do not include any works in the upper catchment east of the Darling Scarp. Table 2 summarises the extent of mapped landcare works for the periods pre-2000 and 2000-2010.

All works pre-2000⁴ were attributed to projects managed by one of the four LCDC's on the coastal Catchment: Serpentine-Jarrahdale, Dandalup-Murray, Coolup and Harvey River. Post-2000 works were either managed as LCDC projects or as part of Catchment-wide projects such as Rivercare, Groundworks or the Coastal Catchments Initiative. Tables 3 and 4 present this distinction, with Table 3 showing LCDC managed works, and Table 4 showing those works undertaken as part of Catchment-wide projects post-2000 and managed by the PHCC.

Table 1: Total Mapped Landcare Works in the Peel-Harvey Catchment (circa 1992 to 2010)

Type of works	Pre 2000 work (ha)	2000 to 2010 (ha)	Total (ha)
Treelots	228	0	228
Wetland protection	59	20	79
Vegetation belts	377	142	519
Streamlining	286	412	698
Revegetation	156	795	951
Protected area	2186	938	3124
Planting	0	6	6
Roadside enhancement	28	3	31
Total	3320	2316	5636

Table 2: Landcare Works Coordinated Through LCDCs for the Period circa 1992 to 2010

	PRE 2000 (ha)					2000 to 2010 (ha)					
	Land Conservation District Committee					Land Conservation District Committee					
	Coolup	Dandalup – Murray	Harvey River	Serpentine-Jarrahdale	Sub Total	Coolup	Dandalup – Murray	Harvey River	Serpentine-Jarrahdale	Sub Total	Grand Total
Treelots	41	45		142	228	0	0	0	0	0	228
Wetland protection	32	3	24	0	59	16	4	0	0	20	79
Vegetation belts	200	96	36	45	377	61	33	35	13	142	519
Streamlining	114	66	45	61	286	5	6	11	35	57	343
Revegetation	50	9	11	86	156	27	34	213	80	354	510
Protected area	305	196	350	1335	2186	43	10	50	0	103	2289
Planting					0				6	6	6
Roadside enhancement	18	10			28		3			3	31
Total	760	425	466	1669	3320	152	90	309	134	685	4005

⁴These statistics were initially captured by a Department of Agriculture and Food WA project. Early in the decade Colleen Archibald took on the recording of the on ground work, as part of her role as NRM Support Officer, based in Waroona, when the Department was no longer resourced to do so.



Table 3: Landcare Works Occurring Through Catchment Wide Projects 2000 -2010.

Other projects (Project Manager)	Main type of works	Area of works (ha)
HRRT 2004/08	streamlining	158
HRRT 2009/10	streamlining	20
CCI 2004/05 (Thelma Crook)	protected area (river)	126
Groundworks 2008 (Kim Wilson)	revegetation	433
CfOC 4.04 2009 (Alex Hams)	protected area	22
PHCC Rivercare 2006/08 (Alex Hams)	streamlining	164
Murray river 05/06 (Alex Hams)	protected area	43
Filtering the Nutrient Storm 2010 (J Montoya)	streamlining	13
Ramsar 2009/10 (A Willmott/L Bonner)	revegetation	8
Hotham Rivercare 2006	protected area	427
Hotham Revegetation 2008	protected area	217
Total		1631

As an example of the extent of on-ground works in the coastal catchment, Figure 5 presents the locations of works within the Coolup LCDC⁵.

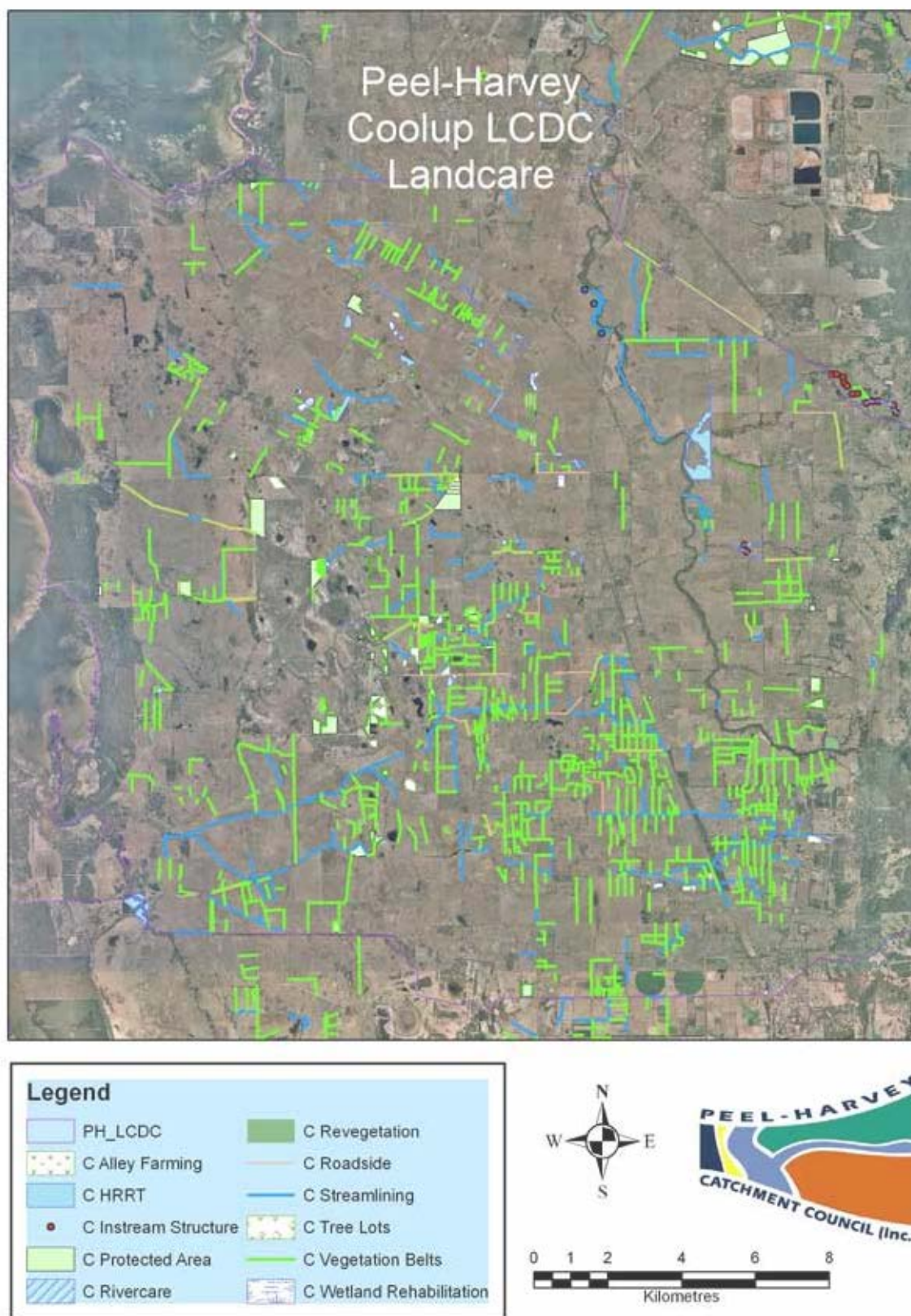


Figure 5: Landcare Works within the Coolup LCDC Area (circa 1992 to 2010)

⁵Please note that the thickness of lines indicating the location of works is not to scale.



Streamlining

One of the most significant types of on-ground works in the catchment is streamlining. Streamlining is where a drain, often in a very degraded state is fenced to control stock access and revegetated with local species of trees, shrubs and sedges so as to recreate some of the characteristics of natural watercourses. Streamlining projects may also involve installation of rock riffles and off drain stock watering points. The benefits of streamlining include improved water quality, habitat creation for native fauna, and improved stock health due to improved water quality.

The total length of drain streamlined between 1992 and 2010 is estimated at 698 kilometres (Table 4). . Of this:

- 286 kilometres was undertaken as part of LCDC projects prior to 2000
- 355 kilometres was undertaken as part of catchment wide projects between 2000 and 2010
- 57 kilometres was undertaken as part of LCDC projects between 2000 and 2010.

Table 4: Total Length of Watercourse Streamlined, circa 1992 to 2010

Landcare Group	Length of watercourse streamlined (km)
Coolup LCDC (Works circa 1992 - 2010)	119
Dandalup-Murray LCDC (Works circa 1992 - 2010)	72
Serpentine-Jarrahdale LCDC (Works circa 1992 - 2010)	96
Harvey River LCDC (Works circa 1992 - 2010)	56
Catchment-wide projects (Projects 2000-2010)	355
Total watercourses streamlined	698



Example of Significant On-ground Works Managed by PHCC, Harvey River Riffle Installation, 2007.

Funding and Financials

Figure 6 shows the PHCC's annual incomes over the 2001 -2010 period. The PHCC's total budget between 2001/02 – 2009/10 financial years to 2009/10 was \$9.076 million, an average of \$1.008 million per annum. The largest funding contributor has been the Federal Government (devolved funding through the SWCC), with \$7,817,397 or 80% of funding. Funding from the State Government and its agencies amounted to \$ 1,120,774, or 12% of total funding during the decade.

The purposes to which these funds were allocated is shown in Table 5 and Figure 7. Funding sources are shown in Table 6 and Figure 8. The statistics shown in these tables and figures do not include the indirect or uncosted support from agencies, local government, landholders, or the community. These uncosted contributions are likely to be significant.

The sub-regional coordination and facilitation program (PHCC operational costs) totalled \$1.194 million, or 12% of total budget. This is considered a very reasonable cost for the operation of the PHCC⁶, and the advocacy, community and government liaison work carried out by the PHCC over the decade⁷.

Note: These statistics only include funds that were accounted within the PHCC budgets and cannot be used to gauge other direct or indirect support for PHCC activities.

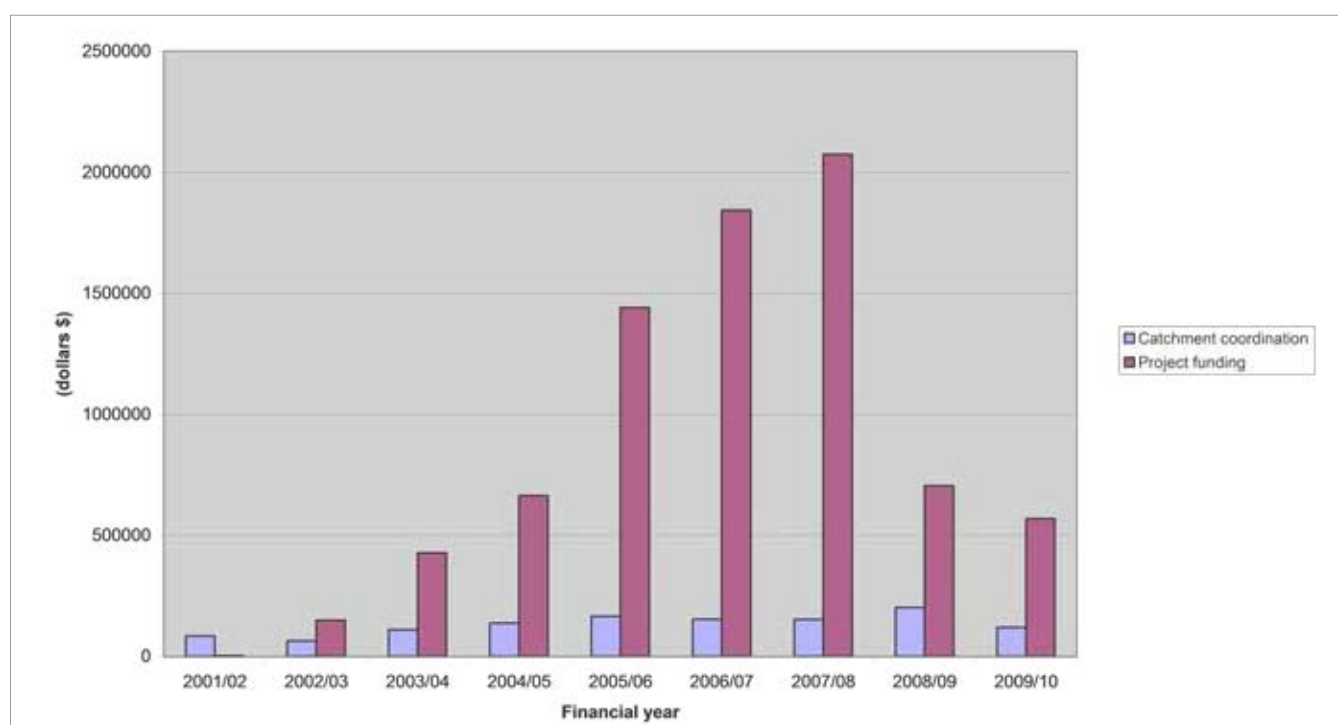


Figure 6: Peel-Harvey Catchment Council Income 2001/02 to 2009/10

⁶Including time bought by SWCC to contribute to SWCC operations.

⁷Capturing the in-kind contribution of the community is inherently difficult. However, Cathy Lyons whilst at Landcare SJ captured statistics demonstrating the invested funding attracted an in—kind contribution of 1:4; i.e. \$1 funding attracts a minimum of \$4 from the community in time and finances.

Table 5: Total Program Budgets (2000-2010)

Program or Project	Total Budget (\$)
Sub-regional coordination & facilitation	\$1,194,007
Project Management	\$539,427
Funding of Landcare/NRMOs	\$178,224
Operation of Waterways Centre	\$316,052
NRM/Catchment Planning projects	\$96,635
Other on-ground Projects 2001-2004	\$97,650
Water Campaign	\$867,566
Ramsar - planning and on ground works	\$801,207
Remnant vegetation and biodiversity projects	\$270,319
Climate change planning and adaptation	\$248,546
Rivercare and watercourse management projects	\$2,117,461
Coastal management Planning	\$87,500
Cultural landscapes project	\$95,000
Groundworks Program and landholder education	\$718,351
Water Quality Improvement Projects	\$1,525,557
Dryland salinity - Hotham-Williams _ Murray Project	\$400,000
Other special projects	\$103,500
Science Strategy Project	\$50,000
TOTAL	\$9,707,002

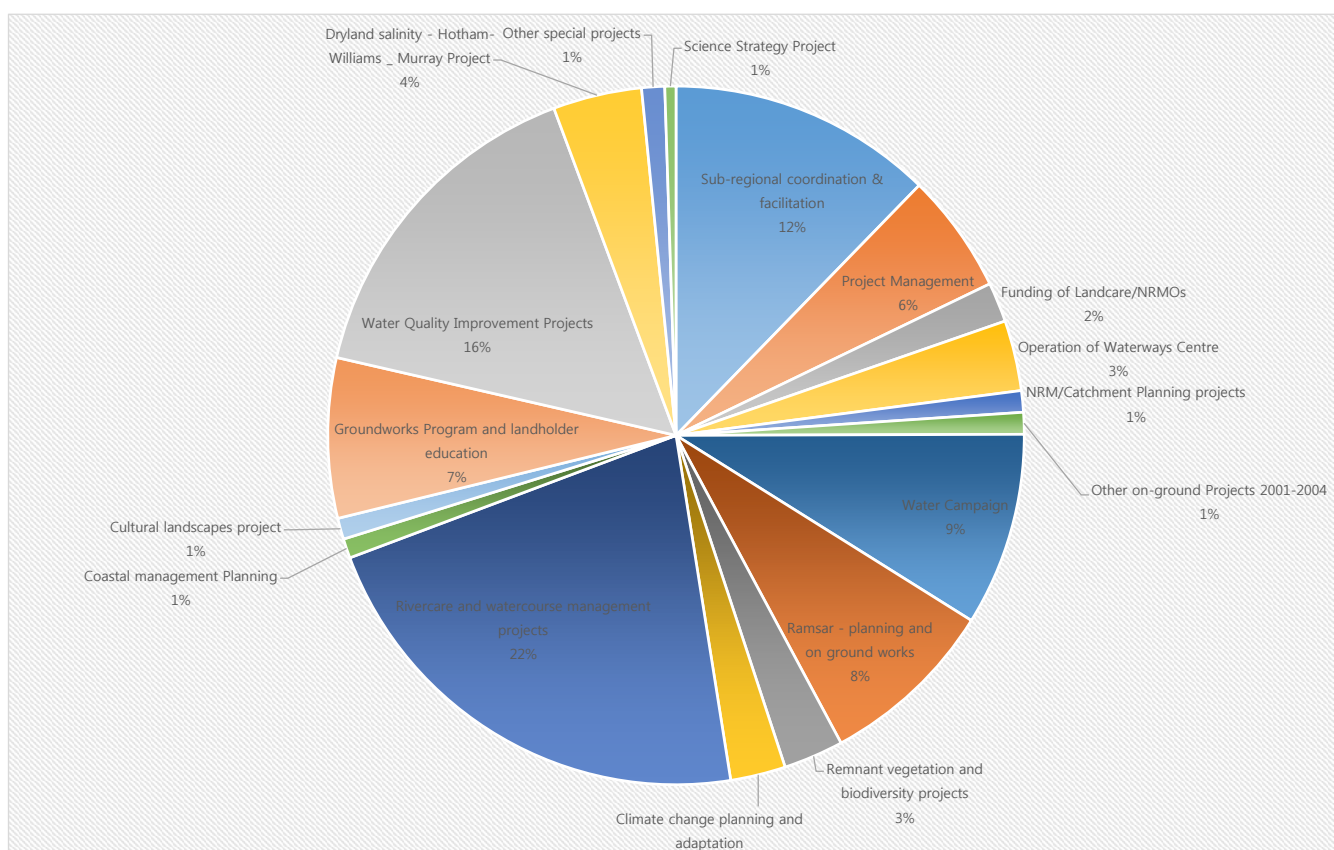
**Figure 7: PHCC Program and Project Costs (2001-2010)**

Table 6: Funding Source Contributions (2000-2010)

Funding source (2000-2010)	Total (\$)
Federal Government	7,817,397
State Government	1,120,774
Local Government	99,000
ALCOA	193,797
Landcare Australia	293,130
Greening the Catchment Taskforce	183,082
Total	\$9,707,180

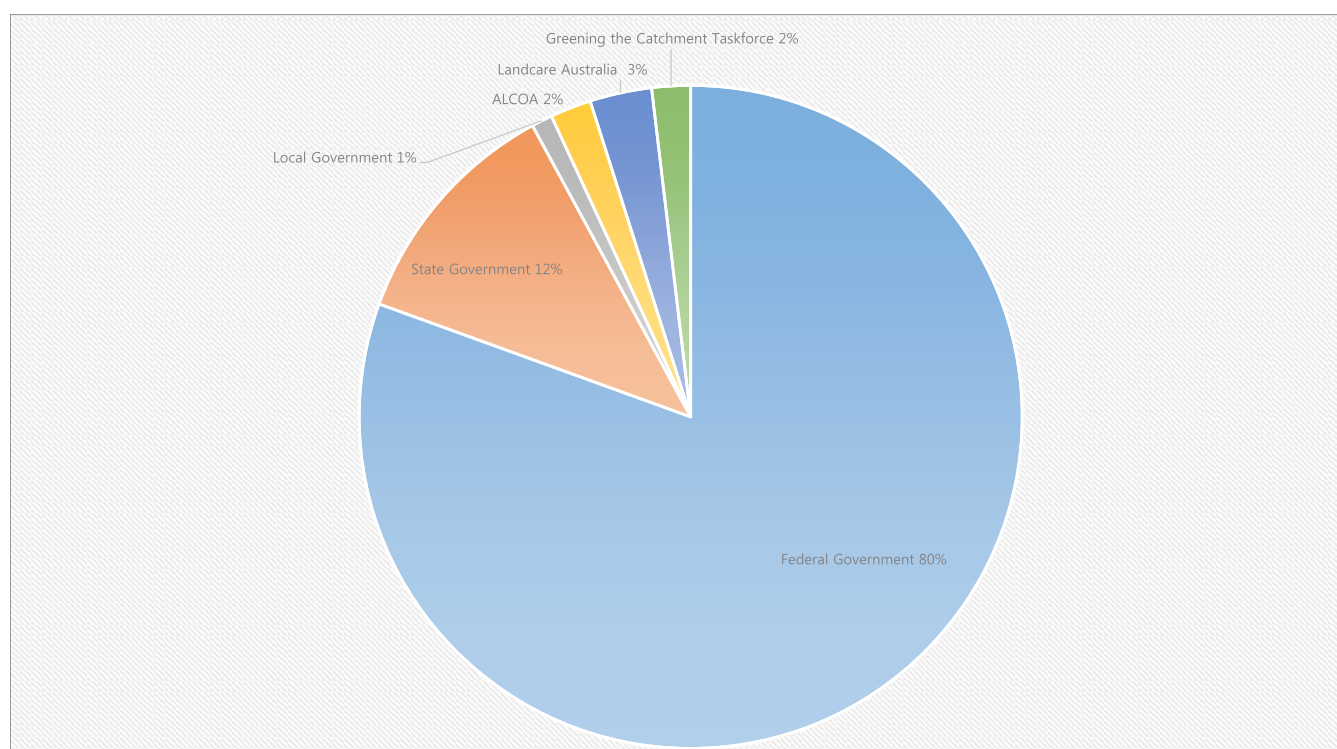
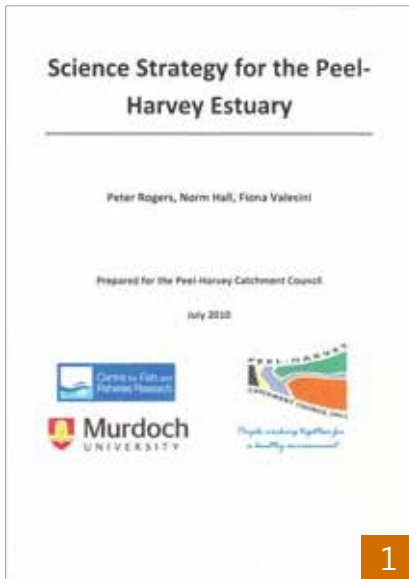


Figure 8: Funding Source Contributions 2000-2010 (\$)

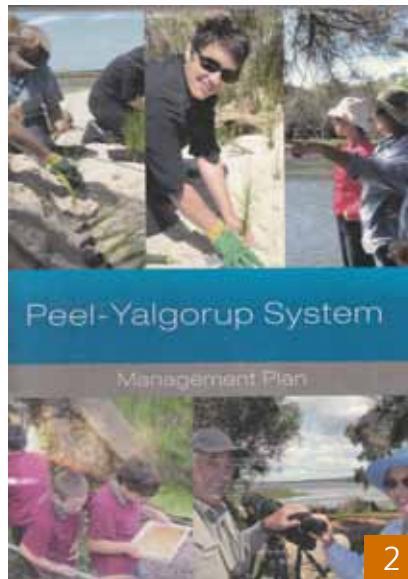
Key Publications

Table 7: Major PHCC Publications 2000 - 2010

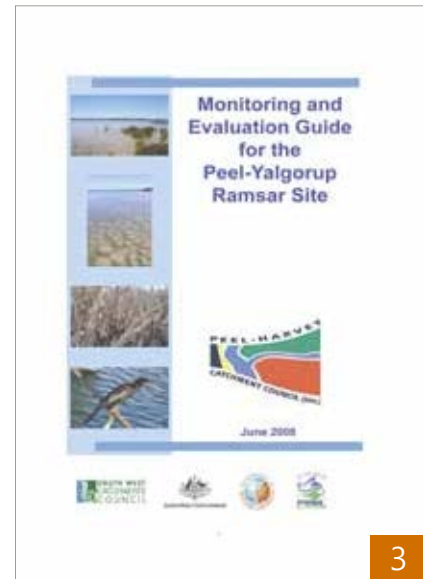
	Publication Title	Prepared by/for the PHCC	Publication Date
1	Science Strategy for the Peel-Harvey Estuary	P Rogers; N Hall; F J Valesini	2010
2	Peel-Yalgorup Management Plan	PHCC	2009
3	Monitoring and Evaluation Guide for the Peel-Yalgorup Ramsar Site	J. Hale	2008
4	Ecological Character Description for the Peel-Yalgorup Ramsar Site	J. Hale & R. Butcher	2008
5	Management of Diffuse Water Quality Pollution in the Peel-Harvey Coastal Drainage System	J. Steele (& R. Summers)	2008
6	Drainage Reform Plan: Peel-Harvey Coastal Catchment, Vol 1: Policy and Governance Discussion Paper	Ironbark Environmental	2007
7	Peel Harvey Coastal Catchment Water Sensitive Urban Design Technical Guidelines	Peel Development Comm	2006
8	Peel-Harvey catchment natural resource management plan	Land Assessment Pty Ltd	2005
9	2002-2007 action plan for natural resource management	PHCC	2002
10	Peel-Harvey Landcare Landscapes	PHCC	2000
11	The future of natural resource management in the Peel-Harvey Catchment: a paper for discussion and resolution by the Peel-Harvey community	Peel-Harvey Officer's Group	2000



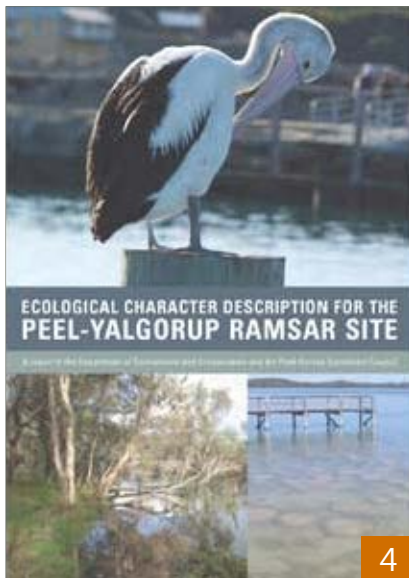
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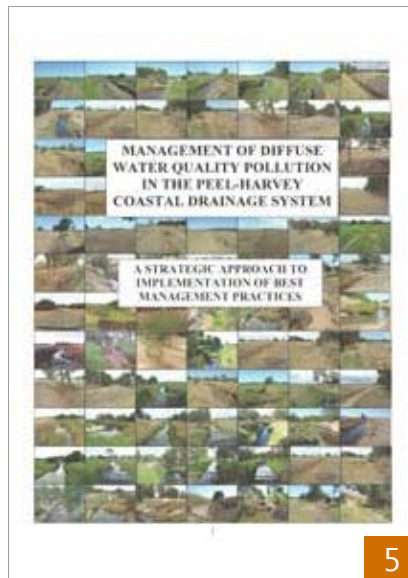
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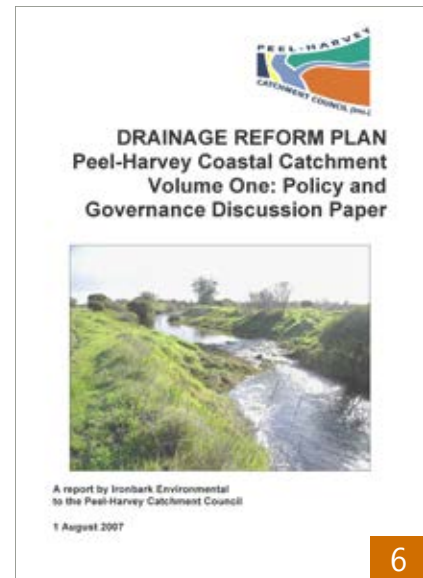
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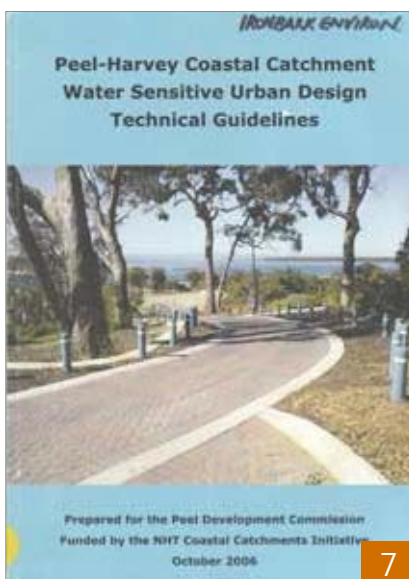
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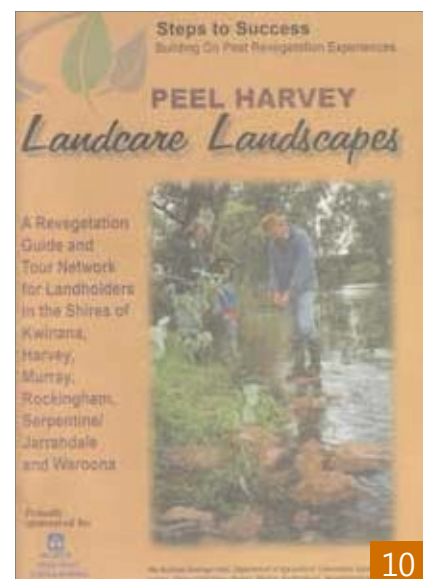
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Cover Pages of Major PHCC Publications (2000-2010).

PHCC Programs and Projects Summary

Table 8: Summary of Budgeted PHCC Programs and Projects

Program or Project	Main funding sources (Direct \$ contributions only)	Main purpose of funds/ program description	Program or project costs (\$)	Duration	Key achievements, on-ground, reports etc)
Total			9,076,150		
Sub-regional coordination & facilitation	GTCTF/WRC (2000 - 2002) 2003 – 2008 – (SWCC) 2009-10 (PDC)	Operation of the PHCC to fulfil its functions as a sub-region to SWCC, and as the peak Peel-Harvey Catchment organisation.	1,194,007	Ongoing	Support of major initiatives (e.g. SWCC, CCI, governance model, representation of catchment.
Waterways Centre Operation	Dept of Environment & Department of Water	Operation of Waterways Centre	316,052	2005-2009	N/A
Project Management Costs		Project Management	539,427	-	N/A-
NRMO Transfer	SWCC	Funding of Landcare and Coastcare NRMOs	178,224	2005-2006	NRMO positions maintained in Catchment's landcare centres up to 2006.
NRM Planning	SWCC	Preparation of the PH NRM Plan	86,635		Report: Peel-Harvey NRM Plan (Land Assessment, 2005)
	Water & Rivers Commission	PH Estuary Eastern Catchment Plan	10,000		State of Play report
On ground Projects 2001-2004	GTCTF/Wellard Rural Export	Rehabilitation of wetlands at Wellard Rural Exporters	50,697	2001-2003	Wetland rehabilitation
	GTCTF	Fodder Shrubs Project	11,000	2002-03	Investigating local Acacia saligna varieties for low- growth habits most suitable for grazing.
	Kwinana Shire City if/ Rockingham/Coolup LCDC/Alcoa	Landcare Landscapes	15,953	2002-03	Self-drive Landcare Landscapes Tour created for coastal catchment
	WRC/Dept of Local Govt & Regional Dev	Canal Habitat Project	20,000	2002-03	Trial installation of Reef Balls in canals
Water Campaign	PDC/PCWE/CoMand/ SSJ/ NHT/SWCC	LG Water management Project	288,922		Nine Local Governments & their communities assisted to measure water usage and implement efficiency measures
	SWCC	WH01.01 B LG WMP	285,651	2003-2009	
	SWCC	Regional Water Campaign W1-04	217,993		
	SWCC	LGWMP 4.03 – CfOC	75,000		

Program or Project	Main funding sources (Direct \$ contributions only)	Main purpose of funds/ program description	Program or project costs (\$)	Duration	Key achievements, on-ground, reports etc)
Ramsar - planning and on-ground works	SWCC/DEC	Ramsar - Peel-Yalgorup Man plan W5-11	101,994	2005-10	Major reports for the Peel-Yalgorup Ramsar Site: Ecological Character Description (Hale & Butcher 2007); Management Plan (PHCC, 2009) Monitoring and Evaluation Guide (Hale 2008); Significant on-ground works conducted, including fencing and signage.
	SWCC/DEC/ PDC RDS funds/DoW; Aust Govt, Dept of Environ, Water, Heritage & Arts/Alcoa (Biosphere funds tfr to this project (\$37796)	Ramsar WH03c - Peel-Yalgorup Action	311,771		
Remnant vegetation and biodiversity projects	Leschenault Catchment Council	Priority Remnant Vegetation Project	61,756	2005-07	Protecting biodiversity on private property
	SWCC	Regional Rural Vegetation Officer	49,695	2003-04	Report: Biodiversity in the Peel-Harvey Catchment. Parts 1 – 4. Part establishment of Biodiversity DSS
	SWCC	Biodiversity DSS Training	35,617		Further establishment of the Peel-Harvey Biodiversity Decision Support System (DSS) on web. training provision for the Biodiversity DSS
	SWCC	Dryandra Woodlands Project B2-09	51,600	2005-07	Fencing of 145 ha of remnant vegetation around Dryandra and a further 50ha within the greater Tunnaning district, revegetation of 5 ha of linkages
Climate change planning and adaptation	Dept of Environment	BR03 - Dryandra Woodlands IP2	71,651		
	SWCC	Climate Change Project L2-G4	16,136		Report: Understanding, Quantifying & Demonstrating the Likely Local Effects of Climate Change & Variability in the Peel-Harvey Catchment (PHCC. 2006)
	Aust Govt, Dept of Climate Change	Peel Climate Change Adaptation project	232,410	2009-2010	Biodiversity and Emergency Management Strategies for the 5 Peel region local governments



Program or Project	Main funding sources (Direct \$ contributions only)	Main purpose of funds/ program description	Program or project costs (\$)	Duration	Key achievements, on-ground, reports etc)
Rivercare and watercourse management projects	GTCTF	BRAG Project (Boddington River Action Group)	12,450		Contribution towards construction of the weir and Rivercare activities
	SWCC	River restoration training	62,513	2005-06	Provision of training to community members and professionals on river restoration techniques
	NHT	Rivercare Project	517,965	2003-2009	Significant on-ground impact. Rivercare program was responsible for most of the river restoration and watercourse rehabilitation carried out between 2003 & 2009 in the catchment.
	SWCC/Landcare Aust/ SoM	Rivercare Action Project W4-03	519,928		
	Cape 2 Cape	WH-02 PH Rivercare 06/08	731,475		
	SWCC	Rivercare CfOC	0		
	Landcare Australia	HRRT	243,130		Used the resources of the initial \$750,000 investment by the Water Corporation as an offset to enable funding of a Rivercare officer and attract funds for the PHCC Rivercare Program.
	Dept of Environment	Murray River Action Plan	30,000	2004-05	Murray River management: 2km bank protection baffle boards installed; 20,000 sedges and rushes planted; 33,800 other seedlings planted; 3.4 km of Murray River fenced (Hams & Steele, 2006, unpublished)
Coastal Investment Planning	SWCC/Dept of Environment	Coastal management Planning	87,500	2005-06	
Cultural landscapes Project	SCRIPT/SWCC/DEC/PDC	Cultural landscapes project	95,000	2006-07	Report: An Indigenous heritage management plan for the Eastern Foreshores of the Peel-Harvey Inlets (Cuthbert, Cuthbert & Dortch, 2007)
Groundworks	SWCC	Other on-ground works and landholder education	707,351	2006-08	Funded over 35 on-ground projects across the catchment.
Small Landholders Learning Events	Dept of Agriculture		3,000		Expanded on the Heavenly Hectares concept
Water Quality Improvement Projects	SWCC/Alcoa (\$100K)	WQ01 PH Water Quality Recovery 06/08	1,059,856	2006-2008	Significant program with on-ground, capacity building and awareness raising components.
	State NRM	State NRM Mayfield 09058 Project	31,390	2010-11	Landholder survey and preparation of Mayfield Drain-catchment management plan
	Dept of Water	Filtering the Nutrient Storm	301,000	2010-11	On-ground works to implement number of WQIP recommendations (e.g. creation of biofilters, stormwater retrofits and riparian management for water quality improvement)
	SWCC/ Leschenault Catchment Council	Coastal Drainage project	133,311	2004-07	Report: Peel-Harvey Drainage Report Plan (Del Marco (2007) or PHCC (2007)



Program or Project	Main funding sources (Direct \$ contributions only)	Main purpose of funds/ program description	Program or project costs (\$)	Duration	Key achievements, on-ground, reports etc)
Dryland salinity - Hotham-Williams - Murray Project	SWCC	RS01a HWM River Salinity	400,000	2006-08	
Other special projects	PDC	Urban sustainability Initiative	23,500	2006-07	Series of Great gardens workshops
	Alcoa World Alumina/ GTCTF	ALCOA Biosphere Project	60,000		Feasibility investigation into the establishment of a Biosphere Reserve in the Peel-Harvey (Estuary, Ramsar or catchment)
	PDC	Peel Waterways Institute Project	20,000	2005-06	Feasibility report
Science Strategy Project	SWCC (\$20K)/ DoW(\$15K) / DOAF(\$15K)	Murdoch Ecosystem Monitoring Project	50,000	2009-2010	Report: A Science Strategy for the Peel-Harvey Estuary (Rogers et al., 2010)

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