

Developed on behalf of the Swan Canning Policy Forum



Priority Plan for Investment in the Swan Canning Catchment

May 2011



WALGA



Foreword

If, as a community, we want to maximise the social, economic and environmental values that the Swan Canning system provides, a more coordinated and better resourced effort must be made.



Mayor James Best



Mayor Troy Pickard

If we want to fully maximise the opportunities for public amenity and waterfront development while improving the existing infrastructure and environmental values of the Swan Canning system and its tributaries, we need a long term strategy that acknowledges the realistic levels and methods of investment required.

If we want to be a water sensitive city that responds to the demands of a drying climate on our growing city, we will need to improve our activities to understand, manage and maximise our urban stormwater resources.

Issues related to the health and future wellbeing of our rivers also impact upon the health and wellbeing of our community. Foreshore and river wall protection that improves adjacent public open spaces, reduction of urban water pollution that improves the quality of our waterways and treating disused landfill on the edges of the rivers can all have a positive impact upon our lives.

Issues such as these and the opportunities they present have been brought together in this *Priority Plan for Investment in the Swan Canning Catchment*. A shared vision and strong leadership will be required to meet the challenges that lay before our great City in order to capitalise upon the many opportunities in the Priority Plan.

Our vision is for a healthy, vibrant river system which contributes to the health, wellbeing and quality of lifestyle of the Perth community and where responsibility for its health is shared by all, for all.

To succeed, any plan must be effective, affordable and equitable. The people of Perth today, and the extra half a million who will call this city home by 2031, will all be making a contribution to the health of our rivers – and we will need to see and experience the benefits of this contribution. This Priority Plan will achieve that goal.

A long term, strategic approach is necessary to guarantee adequate funding for this important issue. We need evidence-based policies and programs built on the best available science, with appropriate funding to meet the long term needs of the river system.

The Western Australian Local Government Association, on behalf of the metropolitan Local Governments and the communities they represent, is committed to ensuring that the sector plays a leadership role in placing our most iconic asset at the forefront of a 21st Century Perth.

This Plan delivers an efficient, equitable and realistic solution that demonstrates that commitment.

Mayor James Best
Chair – Swan Canning Policy Forum

Mayor Troy Pickard
President – WALGA

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The ecological, social, cultural (including Indigenous) and amenity qualities provided by the river system add enormous value to our urban landscape – in essence, the river system is the defining feature of Perth.



1.0 Executive Summary

The Western Australian Local Government Association (WALGA) Swan Canning Policy Forum was developed because of members' concerns about continuing water quality decline and asset degradation in and along the Swan and Canning Rivers.

The Western Australian Local Government Association (WALGA) Swan Canning Policy Forum was developed because of members' concerns about continuing water quality decline and asset degradation in and along the Swan and Canning Rivers. The Policy Forum started as a representative group of the 21 Local Governments which abut the river system, consisting of Elected Members and Chief Executive Officers. The group has evolved to represent the entire Swan Canning catchment and wider metropolitan area.

The health of the rivers and wetlands in the Swan Canning catchment (the catchment) is fundamental to the health and wellbeing of the Perth community, regardless of how close they live to the rivers. The Swan Canning river system adds enormous value to the urban landscape because of its ecological, social, cultural (including Indigenous) and amenity qualities. In essence, the river system is the defining feature of Perth. Described by Premier Colin Barnett as 'the City's greatest asset', it is a central focus in both our Indigenous and colonial history.

Unfortunately, at present, the value and importance of the waterways in the catchment is not reflected in the level of investment being made to protect their health. The Swan River Trust (SRT) is the statutory body responsible for the management and protection of the Swan Canning river system, with an annual budget of just \$13 million. Its responsibilities extend to foreshore management, development assessment, community education, research, policy and projects, as defined in the *Swan and Canning Rivers Management Act 2006* and associated policies and regulations.

Despite the exemplary efforts of the SRT to manage and protect the major, high-value receiving environments within the catchment, with limited resources, the system is under stress due to past and current practices. Nutrient inputs to the Swan Canning river system are too high, causing eutrophication and toxic algal blooms. Harmful contaminants are also entering waterways through drainage

networks, groundwater leaching and runoff, which pose a major risk to human and ecological health. Current nutrient loads of phosphorous and nitrogen to the Swan Canning system are almost double the maximum acceptable load¹. This decline in water quality has caused fish kills and may have contributed to the death of six dolphins in 2009. These water quality issues are compounded by the impacts of riparian habitat loss (past and present), erosion, urban development and increased use of the Riverpark.

The majority of the SRT's work extends only to the Riverpark area (river and foreshore areas as defined in the *Swan and Canning Rivers Management Act 2006*), yet many of the water quality problems we face are caused by activities throughout the wider catchment area. Here Local Governments are the key land managers with the capacity to make real improvements to water quality discharge. Local Governments manage the majority of drainage networks in the catchment (80%), which aid the delivery of nutrients and non-nutrient contaminants to waterways. Local Governments also have the capacity to improve water quality through foreshore rehabilitation, local laws, land use planning and community education. A number of disused landfill sites vested with Local Government are also potential sources of contamination to our waterways.

Local Governments, as managers of public open space infrastructure, are also cognisant of a massive infrastructure backlog in relation to assets that protect and serve to enhance the community's enjoyment of these iconic and dynamic assets.

There is an urgent need to establish a robust framework for relevant statutory stakeholders to improve land use planning, land and water management practices, community behaviours and sustainable financial resources in order to address urban stormwater water quality throughout the catchment. The current level of investment in the rivers and other waterways inadequately addresses the

water quality issues. There currently exists a substantial backlog of drainage and river infrastructure capital works which have become a barrier to the implementation of best management practices. Under current funding arrangements, it would take an estimated 75 years to address the backlog of drainage works and 63 years to address Priority 1 ageing and deficient shoreline infrastructure and foreshores within the river system. In addition, climate change is likely to exasperate these existing issues if the current level of investment is maintained.

Local Governments are one of the key land managers and, as statutory approval authorities, have a great capacity to reduce nutrient loads entering receiving waterways. There is a lack of government leadership in Western Australia to address water quality issues which has led to fragmented programs and investments which have delivered few beneficial outcomes to the environment and wider community.

Therefore, through the Swan Canning Policy Forum, Local Government has decided to take a lead role in advocating for more investment aimed at restoring and enhancing the City's most important natural asset. Over \$28 million is invested in drainage infrastructure annually by metropolitan Local Governments, as well as significant funding into community education, foreshore rehabilitation and land use planning. These efforts are often done in isolation and would benefit from an integrated, funded and costed strategy to improve water quality discharges, and therefore the health of waterways throughout the catchment. Such a strategy would also strengthen the partnerships that currently exist and provide opportunities for more coordination between community groups, Local and State Government.

The Objective of this Priority Plan is to recommend a preferred funding mechanism and institutional arrangements that will result in:

- Improved water quality in the rivers, waterways and groundwater
- Improved condition of built and natural foreshore areas through implementation of best practice
- Improved stormwater management to best practice standards
- Increased community awareness about the water quality issues in the catchment
- Behaviour change influenced to reduce nutrients and contaminants reaching waterways
- Water quality considerations integrated into land-use planning processes
- Current and future development maintaining or improving water quality
- Increased trust, collaboration and understanding between key stakeholders
- Improved river resilience to manage climate change impacts
- Clarity on the roles and responsibilities of relevant stakeholders

This proposal investigates the development of a sustainable funding mechanism to improve catchment management and an enhancement of institutional arrangements to deliver more integrated and coordinated outcomes. A number of revenue streams are explored, with the preferred option including a healthy catchments rate as a required outcome within an overall framework that includes improvements to wetland and asset management, land-use planning policies and process, community engagement and institutional arrangements. This would be allocated to the river system in the first instance and then expanded to be delivered across the metropolitan area.

It is considered that the overall framework will be managed by a central, independent Board. This Board will be responsible for the administering of funds for catchment restoration, waterway protection and water quality improvement through direct and competitive funding arrangements. This model will potentially generate over \$90 million per year to address a number of water quality, quantity and natural and physical asset management issues currently being experienced. The current drainage rate administered by the Water Corporation produced an income of \$36 million in 2009/2010 with an additional \$4 million generated through headworks contributions. This proposal seeks to expand that system and to "rate" the entire Perth metropolitan area. Funds would be allocated in a transparent and accountable way and quarantined to ensure they are invested only in priority investment areas and not diluted in consolidated revenue. Existing levels of investment by state agencies would need to be maintained to ensure the existing base level of management is built on and enhanced.

This model is based on the principle that the responsibility for the health of the river system is shared by all.

The Recommendations of the Plan are therefore;

1. The State Government works with key statutory stakeholders to develop an equitable and on-going funding mechanism to improve the health of the Swan Canning Catchment and river assets,
2. Local Government develops stormwater quality management plans to improve asset management and implement current best practice for integrated water management,
3. Water Corporation develops stormwater quality management plans and reports on water quality within main drains and capital works programs as well as implements current best practice for integrated water management,

4. The State Government increases funding for the Swan River Trust in future State budgets,
5. A partnership agreement is signed by all statutory stakeholders to commit to water quality improvement and to clarify roles and responsibilities,
6. Water quality targets/guidelines are established for new development and enforced through the planning system or Department of Water,
7. A compulsory nutrient offset scheme be considered and applied to future urban land development within the Metropolitan Regional Scheme,
8. The State water reform agenda to include water quality management provisions for drainage service providers as well as mechanisms to reduce transfer of nutrients and contaminants to water bodies, and
9. Expand the Infill Sewerage Program to include industrial areas and currently unsewered urban areas.

The following Plan addresses Recommendation 1 in some detail. Recommendations 2-9 are seen as important components of the overall strategy, although not developed in detail in this document. The implementation of Recommendation 1 alone is not considered adequate to address all the issues currently associated with waterway health in the Swan Canning catchment.

The WA Local Government Association State Council endorsed these recommendations at its April 2011 meeting.

¹ Swan River Trust. (2009) *Swan Canning Water Quality Improvement Plan*. Perth, WA.: Government of Western Australia.

2.0 Background



The Swan Canning Estuary has been identified as a coastal 'hot spot' by the Australian Government. A coastal hotspot is defined as an area that:

- encompasses one or more matters of national significance as defined under the *Environment Protection and Biodiversity Act (1999)*;
- is under pressure as a result of population growth and development, disturbance of acid sulphate soils, and water quality decline; and
- is suffering ecosystem disturbance leading to habitat loss and biodiversity decline²

The Swan Canning Estuary is recognised as an area of national environmental significance under threat but is not currently being managed to national standards. The 2010-11 Caring for our Country Business Plan did not identify the system as a priority coastal hotspot and it was therefore excluded from Federal funding.

Current level of investment into its protection and the lack of holistic policy and management frameworks for the system are inadequate and need to be addressed. Local Governments in the metropolitan area have united to take leadership on this issue and investigate opportunities to improve the health and condition of this nationally significant catchment which is home to more than 70 per cent of WA's population.

2.1 Current Issues

The health of the rivers and wetlands in the Swan Canning catchment and popular beaches in Perth's coastal catchments are fundamental to the health and wellbeing of the Perth community. The Swan Canning river system adds enormous value to the urban landscape for its ecological, social, cultural and amenity values. Described by Premier, Colin Barnett as 'the City's greatest asset' in his Premier's statement to Parliament of February 2010, it is a central focus in both our Indigenous and Colonial history.

This iconic river system is under stress. Water quality, in terms of oxygen, nutrients and non-nutrient contaminant levels, is in serious decline. Natural foreshore areas are degraded due to erosion, access

and weed invasion. The river walls which protect property and infrastructure from flooding are in dire need of restoration, while traditional drainage infrastructure is assisting in the transfer of nutrients to waterways. Additionally, the opportunities to move Perth towards becoming a water sensitive city are not being realised at an adequate pace and investment is lacking.

2.1.1 Water Quality

Modification of the natural characteristics of a catchment, through processes such as land-use change and development, has a significant impact on the nature of stormwater discharge and runoff. These changes generally result in greater volumes of runoff and increased sources and loads of pollutants entering waterways.

With urbanisation, pollutants become entrained in stormwater runoff and are efficiently delivered to waterways. Their accumulation can result in severe and often irreversible impacts, which ultimately affect the quality of life enjoyed by the community.

Water quality in Perth's waterways has been declining since the area was first settled. Development in the catchment to cater for Perth's population growth is placing increased pressure on these waterways, from their use as part of the drainage network, to the impacts of fertiliser practices of farming and residential communities. Water quality condition impacts greatly on the social, cultural, economic, recreational and environmental values of these waterways. Excess nutrients from a variety of sources have caused eutrophication and seasonal algal blooms in the major river systems and in many wetlands. The issue is so concerning that the SRT now monitors algal activity and has developed website-based algal activity reports. The need for the construction of oxygenation plants in both the Swan and Canning Rivers conjures images of a loved one on life support. Non-nutrient contaminants are also emerging as major concern for the health of the waterways and the communities they have served for millennia.

Since the early 1990's, there has been widespread recognition that the Swan and Canning Rivers are experiencing significant water quality problems. The

incidences of fish kills, outbreaks of toxic blue-green algal blooms and seasonal red and green algal tides have indicated water quality is declining in the river system. Further research has provided certainty to these concerns. The Swan Canning Water Quality Improvement Plan (SCWQIP) outlines the current state of water quality and identifies sources of phosphorous and nitrogen entering the system. Annually, 250 tonnes of nitrogen (N) and 26 tonnes of phosphorous (P) enter the system, close to double the maximum acceptable load, per year. The SCWQIP aims to reduce the nitrogen load by 120 tonnes per year (49%) and reduce phosphorous by 12 tonnes per year (46%). The main sources of phosphorous are from beef cattle grazing (predominantly fertiliser input and manure) in the Ellen Brook sub-catchment and urban fertiliser use (which is also a major source of nitrogen entering the system). The SCWQIP also predicts that increased urbanisation will increase nutrient loads by 18% total nitrogen (TN) and 25% total phosphorous (TP), due to increased runoff. Currently, an estimated 40% of the nutrient load to the Swan Canning Estuary comes from the catchment via the urban drainage network.

Disused landfill sites are also potentially contributing to the water quality problems being experienced in waterways. Harmful contaminants such as pesticides, heavy metals and hydrocarbons can leach into the groundwater system and enter surface water bodies. A WALGA survey conducted in 2010 found that there are an estimated 17 disused landfill sites along the river system, covering an estimated 300 hectares.

Septic tanks are also a significant source of nutrients; contributing 18% TN and 8% TP to the Swan Canning river system.³ These levels are as high as 50% TN and 62% TP in the Mills Street Main Drain sub-catchment where land-use is predominantly industrial. The lack of deep sewerage in some residential and all industrial areas is having a significant impact on the health of the waterways. The State Government recently announced a commitment to a budget of \$100 million over four years to complete the Infill Sewerage Program. However, it has stated it will not consider sewerage industrial

areas, despite research indicating that drains in industrial areas are carrying excessive levels of harmful contaminants. In the Port Phillip Westernport region of Victoria, Melbourne Water made significant investments in deep sewerage in both residential and industrial areas and saw a dramatic decline in nutrient loads over the medium term.

Fertilisers are considered the biggest contributor of nutrients from the catchment. The Fertiliser Action Plan was designed to legislate for the reduction of content and solubility of phosphorous in fertilisers. New fertiliser regulations introduced in January 2011 reduced phosphorous content in domestic lawn fertilisers to 1% and to 2% in garden fertilisers. This is recognised as an important first step in managing nutrients entering Perth's waterways.

A number of reports published by the Department of Water investigated nutrients and non-nutrient contaminants in the catchment. Despite the findings of these reports, it would appear that little action has been taken by the State Government to address the issues raised. For example, there is still no requirement to manage water quality in main drainage networks.

The study into contaminants in Perth's industrial drains⁴ found that all four drains in the study were contaminated to some degree. Contaminants found included: hormones, (in particular the synthetic hormone ethinylestradiol), polychlorinated biphenyls (PCBs), metals (including aluminum, arsenic, lead, chromium, copper, nickel and zinc), polycyclic aromatic hydrocarbons (PAHs), total petroleum hydrocarbons (TPHs), surfactants (both anionic and non-ionic forms), phenolic compounds (in particular phenol and creosol) and nutrients. These contaminants are harmful to human and ecological health and some also have the potential to accumulate in aquatic organisms. The drains in this study discharge into major lakes, groundwater and Swan River tributaries. Herdsman Lake and Balgay Drain also discharge to a popular swimming beach at Floreat.

The Baseline Study into contaminants in the Swan and Canning Estuaries⁵ also had concerning results. The middle portion of

the Swan River comprising Claisebrook, Maylands, Belmont Race Course, Burswood and the Central Business District was the highest priority area along with the Bull Creek and the Lower Canning in the Canning River. These sites had at least one contaminant which exceeded the ANZECC (Australia New Zealand Environment and Conservation Council) interim sediment quality guidelines High Trigger Value. Contaminants studied were metals, organochlorine (OC) pesticides and polycyclic aromatic hydrocarbons (PAHs). A similar study into contaminants in the drainage system⁶ found that contaminants were also present in high levels in sub-catchments throughout Perth.

A coordinated, strategic approach to improving water quality is essential to meeting the targets within the SCWQIP. It relies on a number of stakeholders working towards a shared goal, the integration of existing programs and on the development of an overall strategy to facilitate coordination. This will help to improve the health of the Swan Canning river system, associated wetlands throughout the catchment and Perth's popular beaches. This is supported by the community who are demanding more action and mobilising groups like 'Save Our Swan' to improve the health of the rivers. These groups demonstrate that the community is concerned and would be supportive of actions to improve water quality.

2.1.2 Shoreline Protection

A number of shoreline protection works, including river wall renewal and foreshore rehabilitation projects have been identified as requiring urgent works. These structures help to protect property and other infrastructure, including roads, from flooding. Deteriorating infrastructure poses a public liability risk and could potentially cause significant damage if not adequately addressed. Climate change will increase pressures on existing infrastructure and is likely to warrant the construction of new river walls to cope with increased sea level rise and storm surges.

The *Swan Canning Rivers Foreshore Assessment and Management Strategy* (2008) identified four main problems related to foreshore stability. These were: inadequate foreshore setback; inadequate

natural stability; disturbance of sediment transport patterns; and inadequate structural stability⁷. These problems are present in foreshores throughout the river system and cause water quality decline, erosion, sedimentation, loss of natural vegetation as well as adversely affecting access and useability of the river system and its foreshores.

A number of Priority 1, 2 and 3 shoreline protection works have been identified, however there is little funding available to address them. The SRT Riverbank Project provides \$1 - \$2 million each year for shoreline projects. These funds are matched by Local Government. The current level of investment will not meet the needs for Priority 1 projects and the longer investment is stalled the more foreshore areas will degrade.

The City of South Perth bid to Infrastructure Australia (2009), made on behalf of river Local Governments, identified the urgent need for \$85.65 million to address deteriorating shoreline infrastructure. This figure was half of the total investment needed to address Priority 1 projects in 2009. These priority projects were based on the Swan River Trust's *Swan and Canning Rivers Foreshore Assessment and Management Strategy* (2008). Commissioning of these important works will protect natural and urban assets but as yet has not been successful in obtaining funding due to a lack of State Government support.

An integrated holistic approach to shoreline protection in the context of climate change adaptation would ensure the future protection of Perth's social, economic and environmental assets. Local Government has already made major investments in riverbank infrastructure. The City of Perth, for example, has invested a total of \$4.5 million in river wall construction in the past four years.

Natural foreshore areas provide important barriers from urban development and contain fringing vegetation which helps to strip nutrients and trap sediment. These areas also provide key habitat for native fauna. The protection of these areas from weed invasion, unregulated access, inappropriate uses, pollution, boat wash and sea level rise is crucial to the health

² Australian Government. *Improving Coastal Hot Spots*. Retrieved 14/08/10 from www.environment.gov.au

³ Swan River Trust. (2009) *Swan Canning Water Quality Improvement Plan*. Perth, WA.: Government of Western Australia.

⁴ Department of Water (2009) 'A Snapshot of Contaminants in Perth's industrial areas', in *Water Science Technical Series*, Perth, WA: Government of Western Australia.

⁵ Department of Water (2009) 'A Baseline study into contaminants in the Swan Canning Estuaries', in *Water Science Technical Series*, Perth, WA: Government of Western Australia.

⁶ Department of Water (2009) 'A Baseline Study of contaminants in the Swan and Canning catchment drainage system', in *Water Science Technical Series*, Perth, WA: Government of Western Australia.

⁷ Swan River Trust (2008) *Swan and Canning Rivers Foreshore Assessment and Management Strategy*, Perth, WA: Government of Western Australia.

2.0 Background



of the catchment. Natural foreshores are important social, amenity, cultural and ecological spaces which need to be managed in balance with these significant, yet sometimes competing uses.

2.1.3 Urban drainage infrastructure

The water quality problems experienced in the Swan Canning catchment are exasperated by ageing urban infrastructure. Traditional drainage systems which are designed to collect and convey stormwater to waterways facilitate the transfer of nutrients from the catchment into the river system, beaches and groundwater. The backlog of maintenance works for these systems limits the amount of money that can be invested into best management practice and water sensitive urban design. Current funding is inadequate to allow Local Government or the SRT to address existing water quality issues, let alone prevent future problems.

Furthermore, the lack of Water Corporation investment into water quality improvements through the arterial drainage network is a concern. The Water Corporation manages 828 kilometres of main drains in the metropolitan area to prevent flooding. These drains are designed solely for collection and conveyance of stormwater, which discharges into the Swan Canning river system, wetlands, beaches and groundwater system.

Effectively this means that there is no treatment for significant volumes of urban stormwater, and that opportunities for its reuse as a non-drinking water supply, are not being realised.

There is significant opportunity to address the 40% of nutrients that enter the river system via drainage networks through the implementation of best management practice and water sensitive urban design (WSUD). The SCWQIP identifies WSUD, engineering modifications and local water quality improvement plans as major management measures to reduce phosphorous and nitrogen loads. The inclusion of treatment mechanisms for water quality improvement not only aids in the removal of harmful nutrients and contaminants from stormwater, it

promotes biodiversity, restores natural water cycles and can also provide an opportunity for water harvesting. In a rapidly drying climate, stormwater should increasingly be used as a non-drinking water source. Implementation of WSUD restores the connection between the community and waterways and replicates natural drainage processes.

There is also opportunity to create wetlands, restore sections of the natural drainage system and create living streams as part of a treatment train approach for urban stormwater. This approach provides additional habitat for wildlife and has many additional environmental and social benefits.

The implementation of best management practices for Local Government activities can be successfully achieved through the development and holistic application of Municipal Urban Stormwater Management Plans. These Plans would require the collection of drainage network and sub catchment data and the prioritisation of these areas for water quality improvement works. Stormwater Quality Management Plans will assist Local Government to strategically identify and address:-

- the generation of pollutants from the urban catchment through a raft of structural and non- structural measures;
- opportunities for stormwater harvesting and water quality improvements;
- community education and partnerships with other stakeholders.

Programs would be delivered across the metropolitan area for Local Governments to ensure consistency and avoid the current piecemeal approach to urban water management. Similar plans which have been developed for priority catchments would be incorporated into Local Government Stormwater Quality Management Plans. There are a range of examples across Australia (and internationally) from which best practice approaches can be modelled, including the Victorian Stormwater Action Program, the Healthy Waterways Partnership in south-east Queensland and the New South Wales Stormwater Trust.

Changes will also be required to how the existing "main" drainage system administered by Water Corporation is managed. A policy shift is required to ensure the design and operation of main drains progressively transition to implement best practice to realise water quality, quantity and harvesting opportunities in the catchment. The Water Corporation is well poised to contribute to waterway health because of its operational obligations to maintain the main drainage network. This organisational shift is likely to require changes to the legislation, Operating Licence or Charter governing the Water Corporation, or a combination of these.

2.1.4 Waterway health

There is a plethora of both quantified and anecdotal evidence that the health of Perth's waterways is in decline. Gone are the days of holding swimming lessons at the Canning Baths. As are the days of family and friends catching prawns in the Swan River – there are simply no prawns left, and if there were, the Department of Health would issue warnings against eating them. The recent dredging in Fremantle Port caused the development of a huge plume of sediment containing pesticides and other chemicals and metals.

The removal of much of the riparian vegetation along the rivers has taken away crucial breeding grounds for aquatic biota and water birds. The removal of this vegetation has also taken away the buffering capacity of the system to remove nutrients and contaminants from receiving waters. Fringing vegetation plays a crucial role in the wetland system, providing habitat, breeding grounds and 'nurseries' for young organisms, stripping nutrients, providing oxygen and controlling foreshore erosion.

The transition of the system to a more marine environment has impacted on aquatic life and will continue to do so into the future. The impacts of this transition need to be further monitored and managed. Environmental flows are also a key issue for the system, which has been greatly altered through the creation of dams, dredging and removal of wetlands since European settlement.

Six dolphins were recently found dead in the Swan River, accounting for an estimated quarter of the resident population. A report into these deaths found "The most likely cause was an increase in viral, bacterial and/or fungal infection(s), during conditions when the river system was flushed with fresh water associated with rainfall events. It is not feasible to determine if other factors have predisposed the dolphins to disease but possibilities include exposure to contaminants and stress induced by human activities."⁸

Healthy waterways should be the goal of not only land managers in the catchment, but the wider community. The health of the waterways is a shared responsibility which needs greater commitment and investment. Current arrangements see silo projects to improve waterway health with a lack of integration or strategic alignment.

Improving waterway health can be achieved through better collaboration and integration of programs and among stakeholders. Wetland restoration and conservation is essential to bring life back to the system and improve the resilience of the ecosystem to invasive pests and the impacts of climate change. Overall, the waterways will become more like their natural state with greater capacity to adapt to future impacts associated with land development, climate change and population increase.

A comprehensive ecological health monitoring, evaluation and reporting program needs to be developed so that the current state of the waterways is known and conveyed to the wider community and to ensure future investment is guided by sound and rigorous research.

Healthy waterways will lead to a healthier community. There will be improved tourism and other economic opportunities and improved potential for activity and access. Passive use of the waterways will increase as the ecological health improves and encourages people back to restore the connectivity between the community and the rivers. Everyone in Western Australia will benefit from a healthy and vibrant Swan Canning catchment.

2.1.5 Land Development

The Swan Canning catchment is under increasing pressure from development. The City of Perth is one of the fastest growing municipalities, with a rapidly growing residential population directly adjacent to the Swan Canning Estuary. Perth's northern and southern suburbs are also growing and will contribute additional nutrient loads to waterways. *Better Urban Water Management 2008* is the first step in ensuring water is considered throughout the planning process. Local Governments are working with developers to implement WSUD but what is lacking is an incentive for developers to implement best practice.

Nutrient offsetting is an important step forward in reducing the impact of land development on water quality. The SRT developed a draft Policy which supports nutrient offsetting, although this is voluntary in nature. The introduction of a compulsory nutrient offsetting scheme for the metropolitan area where developer contributions are calculated based on nutrient discharge loads would further encourage developers to reduce nutrients from catchments and would allow other agencies with more knowledge and expertise to develop projects to offset these loads.

In Victoria, the EPA developed guidelines⁹ for nutrient outputs from development. These guidelines included an 80% sediment load reduction and a 45% decrease in nitrogen and phosphorous. Although initially voluntary, these guidelines became enforceable under the Victorian Planning Provisions when they were amended to include the targets for nutrient reduction. Where developments cannot reach these targets, developers must pay a financial contribution which generates \$1 million annually for Melbourne Water in the Port Phillip/Westernport region. (See Appendix 6.7)

Land development and redevelopment is essential to meet the housing and infrastructure needs of Perth's population, which is expected to increase by half a million in the next 20 years. Development is a threat to the health of our waterways and way of life if it continues in an unsustainable way. Land development presents an opportunity rather, to

improve the health, amenity and access to waterways through innovation and water sensitive urban design. Mechanisms are needed to provide incentives for this industry to transform urban developments to achieve better environmental, social and economic outcomes.

2.1.6 Climate Change

The onset of climate change in the South West of the state is likely to increase the number of hot, dry days which will increase evaporation rates and reduce recharge to groundwater aquifers and the flow to waterways. Increased numbers of extreme storm events are expected to cause more flash flooding affecting infrastructure and natural environments. Coastal areas' infrastructure and natural environments are vulnerable to sea level rise and inundation.¹⁰ The low winter rainfall in 2010 has reduced streamflow considerably in the Canning River which has resulted in the Kent Street weir boards being left in over winter and spring for the first time to prevent saltwater moving upstream. The period of 1st April 2010 to 31st March 2011 was the driest on record for Perth and much of the South West region. This has impacted on water availability for ecosystems and water supplies for residents and businesses through the Integrated Water Supply Scheme.

Poor water quality and inadequacies in asset management have reduced the resilience of waterways to the effects of climate change. The Swan Canning river system has been changing to a more marine environment since the establishment of the Fremantle Port. With human settlement also came the development of many of Perth's wetlands for housing, infrastructure and landfill. The loss of these wetlands and transition to impervious surfaces has increased pressure on the drainage network. Many of Perth's beaches and foreshore assets are under threat from sea level rise and erosion as a result of storm surges.

All spheres of Government have a duty to protect natural assets like the Swan and Canning river system, and to act in the best interests of the community. Waterway health has long been neglected as a major issue in Western Australia

⁸ Beazley, L. (2010) *Dolphin deaths in the Swan Canning Riverpark and comments on the Bunbury inner waters, South-west of Western Australia*. Perth, WA: Murdoch University.

⁹ Victorian Stormwater Committee, (1999) *Urban Stormwater: Best Practice Environmental Management Guidelines*, Melbourne, VIC: CSIRO Publishing.

¹⁰ <http://www.walgaclimatechange.com.au>

2.0 Background

but there now presents an opportunity to address this issue through a united approach, to develop resilience and adapt to climate change.

2.1.7 Community interaction

The Swan and Canning rivers and wetlands throughout the catchment are highly valued by the community. However the use of these waterways has changed over time. Once lively swimming areas, they are now rarely used by swimmers. This may be due to declining water quality, limited access to foreshores or the increased use of recreational boating vehicles. Nevertheless, the community has certainly changed its recreational use of the rivers. Boating, sailing, canoeing and jet skiing are dominant activities on any day on the rivers. It is important that these values are protected because they contribute to the lifestyle of Perth but equally important is the need to restore the values of the past so that the rivers provide multi-use, safe recreational opportunities.

The foreshores are still popular picnicking and recreational areas and are important locations for Perth's iconic events including the City of Perth Skyworks and Red Bull Air Race. This Plan hopes to enable richer and more organic interactions with the river system so that it can be enjoyed by current and future generations. Its aim is to bring the community back to the rivers so they can be reconnected with its natural beauty and continue to have valuable experiences.

2.1.8 Becoming a water sensitive city

The concept of water sensitive urban design may have originated in Perth but the city has been slow to integrate the concept and transition to a water sensitive city. There is a lack of agreement and leadership on the water quality problem in Perth as well as a "lack of a coordinated science-policy agenda around waterways protection."¹¹ Political will and complacency have also been barriers which have been holding Perth back from reaching its potential as a water sensitive city.

Professor Rebekah Brown in her presentation at the Perth Urban Drainage Summit into Creating a Water Sensitive City (2009) identified the following enabling transition variables:

- 1. Socio-Political Capital:** Aligned community, media and political concern for improved waterways health, amenity and recreation.
- 2. Bridging Organisation:** A dedicated organising entity that facilitates collaboration across science and policy, agencies and professions, and knowledge brokers and industry.
- 3. Trusted and Reliable Science:** Accessible scientific expertise, innovating reliable and effective solutions to local problems.
- 4. Binding Targets:** A measurable and effective target that binds the change activity of scientists, policy makers and developers.
- 5. Accountability:** A formal organisational responsibility to the improvement of waterway health, and a cultural commitment to proactively influence practices that lead to such an outcome.
- 6. Strategic Funding:** Additional resources, including external funding injection points, directed to the change effort.
- 7. Demonstration Projects and Training:** Accessible and reliable demonstration of new thinking and technologies in practice, accompanied by knowledge diffusion initiatives.
- 8. Market Receptivity:** A well articulated business case for the change activity.

It is clear that Perth lacks many, if not all the enabling variables to become a water sensitive city. This Proposal is essentially the business case for change which hopes to address the gaps where these variables are not being met to progress Perth towards reaching its potential as an innovative, sustainable and progressive urban city.

2.2 Water Reform

An objective of the draft Water Services Bill is to license drainage service providers, which can include Local Government. A three year exemption for Local Government has been applied to allow the Department of Water a transition period to prepare for this new licensing regime. The Association has requested an extension on this exemption and is awaiting a formal exemption order. There may be an opportunity to introduce service standards and water quality targets for drainage providers if a voluntary framework fails. This is not explicit within the draft Bill but may become part of the regulations which support the legislation. Local Government is currently exempt from all drainage licensing, meaning their operations are largely unregulated.

The licensing of drainage will introduce costs, potential auditing and service standards for Local Government. The current reform process is a perfect opportunity to establish a framework for improving water quality and introducing a sustainable funding mechanism which requires community and Government contribution. It is also an opportunity to legislate service providers to improve management of both water quality and water quantity and drive integrated urban water management and the move toward becoming a water sensitive city.

The development of a Partnership Agreement with a commitment to water quality improvement will foster greater trust and understanding between Local and State Governments. This kind of model has worked well in Victoria where the Victorian Stormwater Action Program was implemented successfully with no legislative amendment.

2.3 Stakeholders

There are a number of stakeholders who have statutory planning and infrastructure management responsibilities within the catchment. The coordination of these statutory stakeholders is fundamental to the health of the waterways. A partnership agreement in which each agency commits to water quality improvement will be an important step forward. This model has been adopted in Victoria where the *Protecting our Bays and Waterways Partnership Agreement* was developed between the Environmental Protection Authority Victoria, Municipal Association of Victoria and Melbourne Water for urban stormwater management in the Port Phillip and Westernport catchments. The purpose of the Agreement is to "set out the accountabilities of each of the parties who have a responsibility for stormwater management and engender their commitment to improving the management of urban stormwater quality".¹² This was developed out of a voluntary process where each stakeholder acknowledged their roles and responsibilities and made a commitment to improving water quality. Similar approaches have been developed as part of the South East Queensland Healthy Waterways Partnership.¹³

The key to this agreement is the commitment to action by the partners. These are listed broadly as:

- Working with common principles of urban stormwater management.
- Establishment of performance objectives to guide planning and design of urban stormwater systems.
- Strategic application of the best practice tools, in the context of agreed principles and performance objectives, through urban stormwater management planning.
- Monitoring of best practice environmental management practices for urban stormwater management.
- Review and refinement of financial and administrative arrangements to deliver the required outcomes in the most cost-effective manner.

- Resolving disputes or other problems before they become impediments to improved environmental outcomes.

A similar model needs to be adopted in Western Australia for the Swan Canning catchment. This would lead to improved water quality outcomes, clearly defined roles and responsibilities for water quality management and improved working relationships among statutory stakeholders. A draft model Partnership Agreement between the Department of Water, Water Corporation, Swan River Trust and WALGA has been provided in Appendix 6.5.

Outlined below is a brief summary of the present role and functions of the main stakeholders, who would form part of the proposed partnership model, with the aim of highlighting their key roles in the proposed partnership.

Swan River Trust

The Swan River Trust (SRT) is a state government agency responsible for the protection and management of the Swan Canning river system. The SRT is legislated under the *Swan and Canning Rivers Management Act 2006*, which replaced the *Swan River Trust Act 1988*. The *Swan and Canning Rivers Management Act 2006* is designed to protect the ecological, social, cultural and amenity values of the Swan and Canning Rivers and associated land, establishing the Riverpark as the jurisdiction in which the SRT operates its various planning, protection and management functions.¹⁴

The SRT was allocated \$12.18 million in the 2010/11 State Budget to carry out its management responsibilities. In addition to this, it receives funding from sponsors and the State Government on an irregular basis. In 2010 it was successful in obtaining an additional \$3.19 million for implementation of the SCWQIP. This level of resourcing is very modest in relation to the complexity of river and catchment restoration demands.

The SRT would be a key stakeholder in a partnership model given their key responsibilities for the Riverpark.

Water Corporation

The Water Corporation is the state's major water service provider. In the metropolitan area, the Water Corporation is responsible for the management of main drains and is legislated under the *Metropolitan Water Authority Act 1982* to manage water quantity in these drains.

Under the Act: "*The Corporation has the control and management of main drains and main drainage works, and shall cause all main drains and main drainage works to be constructed, maintained, kept and cleansed with due regard to the Scheme and the health and convenience of the public.*" Under the current interpretation of the legislation, the Water Corporation is not required to address water quality considerations. The Corporation manages 828 kilometres of drains in the metropolitan area, diverting water from more than 400,000 hectares of land and preventing the flooding and water-logging of approximately 260,000 properties.¹⁵

The purpose of the Water Corporation, as outlined in its 2009 Annual Report is "Sustainable management of water services to make Western Australia a great place to live and invest". The Corporation has pledged commitment to meet current and anticipated needs for water sources, services and infrastructure without compromising those of future generations by minimising impact to the environment.¹⁶

There is an opportunity for the Water Corporation to realise this commitment through participation in a partnership approach to urban water management. The Corporation collects a drainage rate for the operational and capital costs of managing water quantity in declared main drains, a mechanism that could be expanded to include a wider catchment area and to further address water quality management. A significant contribution has been made to research within the main drains, however a mechanism is needed to ensure that this research translates into implemented works.

Given the Water Corporation's statutory responsibility for main drainage, its current rating system and the need for the management approach to drainage to be transformed over time, they are key part of this partnership approach.

¹¹ Brown, R., Keath, N. and Wong, T. (2008). Transitioning to Water Sensitive Cities: Historical, Current and Future Transition States, in Ashley, R.M. (Ed.) *Proceedings of the 11th International Conference on Urban Drainage*, Edinburgh, Scotland, 31st August - 5th September 2008, CD-ROM.

¹² *Protecting our Bays and Waterways Partnership Agreement between EPA, MAV and Melbourne Water for urban stormwater management in the Port Phillip and Westernport catchments*, Melbourne, VIC: State Government Victoria. ¹³ <http://www.healthywaterways.org/aboutus.aspx> ¹⁴ <http://www.swanrivertrust.wa.gov.au/trust/about/Content/Home.aspx> ¹⁵ <http://www.water.wa.gov.au/About+us/default.aspx> ¹⁶ Water Corporation.(2009) Annual Report 2009, Perth, WA: Water Corporation. Retrieved 14/08/10 from http://www.watercorporation.com.au/_files/PublicationsRegister/6/2009AR_FULLVERSION.pdf

2.0 Background

Department of Water

The Department of Water is responsible for managing the state's water resources and ensuring water services are provided to all West Australians. Its role in measuring and allocating the state's water resources, setting rules for extraction, wetland management, leading and supporting water-related scientific knowledge and "overseeing" water service providers is supported by legislation. The Department is responsible for protecting water quality, preparing policies and plans for future development, analysis of water resources information, issuing licences and regulating water use.¹⁷

The Department is currently driving the state's water reform agenda which will see the creation of three Acts to consolidate and modernise the plethora of water legislation currently operating in the state. These are the: Water Services Legislation Amendment and Repeal Bill, the Water Services Bill and the Water Resources Management Bill.

As the state agency responsible for water resource management, the Department of Water has a significant role to play in the partnership.

Local Government

Local Government plays an important land-use planning and foreshore management role and is responsible for the management of the majority of the drainage networks throughout the catchment. These typically consist of traditional systems designed for maximum collection and conveyance of stormwater to waterways and other receiving environments. Local Government does play a key role in recharging superficial aquifers through drainage sump infrastructure, however water quality considerations have only been adopted in recent years, and in an ad hoc fashion.

The sector has demonstrated varying levels of commitment to best management practice, WSUD and urban stormwater harvesting opportunities. The variation in uptake of best practice technology in the sector may be due to the limited funding and incentives available and also the increasing maintenance and replacement costs associated with existing infrastructure.

Local Government, as a catchment manager, key infrastructure and asset owner and land-use planning decision-making authority, is a key part of the partnership, particularly as it relates to the implementation of improvement programs.

Department of Planning and Western Australian Planning Commission

The integration of water management in the planning process has been recently enhanced by *Better Urban Water Management*, adopted by the Western Australian Planning Commission (WAPC) in 2008. These guidelines are designed to facilitate better management of urban water resources by ensuring an appropriate level of consideration is given to the total water cycle at each stage of the planning system. The document provides guidance on the implementation of *State Planning Policy 2.9 Water Resources*. The Guideline looks at what information is needed at the regional, district, local and development scales from government departments and developers. This is a useful first step in ensuring land development does not negatively impact on water quality. What is lacking however is regulation and enforceable target setting for water quality improvement.

The planning system presents an important opportunity to minimise the nutrient loads entering waterways, especially considering Perth's growing population and urban expansion. WAPC and the Department of Planning have critical roles in the ongoing implementation of best water management practices.

Other stakeholders

There are a number of other statutory and non-statutory stakeholders which have a responsibility for catchment management. These include developers, private landholders, indigenous groups, businesses and State owned agencies like Main Roads, Westralia Airports Corporation and other private enterprises are also responsible for local drainage management within the catchment. Community and catchment groups like Perth Region NRM and South East Regional Centre of Urban Landcare will be engaged and become part of the overall strategy. These groups currently manage a number of on-ground and community awareness projects which

are focussed on improving water quality in the catchment. SRT funded programs like *Great Gardens* and *Ribbons of Blue* also play a very important role in increasing community understanding and awareness of waterway issues.

There are already a number of initiatives targeted at protecting and managing waterways in the catchment. What is lacking is an integrated, coordinated strategy to link the various stakeholders and projects together. This has meant that projects are often localised and not developed as part of a strategic framework.

Another issue is the lack of consistent funding streams, which results in valuable programs being defunded. The SCWQIP has prioritised areas for action and the River Protection Strategy has identified stakeholders for implementation. An initial investment to fund these projects and the development of ongoing, sustainable funding mechanisms are now essential to improve the management of catchment inputs and the health of receiving environments.

2.4 Drainage rate

A drainage rate is currently collected from residential and commercial customers across 40% of the Perth Metropolitan Area. The rate is collected by the Water Corporation for water quantity protection works in its declared main drains. These are areas which have been declared drainage areas under the *Metropolitan Water Authority Act 1982*. The minimum rate has increased from \$67.40 per household in 2009-2010 to \$75.45 in 2010-11 and applies to multiple and single dwellings. A rate is also collected from commercial properties, although a limitation is applied for significant GRV increases. This created a revenue stream of \$36 million in 2009/10. The Water Corporation also receives an additional \$4 million per annum from Standard Headworks Contributions in new developments. This rate is currently \$490.00 per lot. These funds are not allocated to water quality or waterway protection works.

The Water Corporation also receives Community Service Obligation (CSO) payments from the State Government on an annual basis. In the metropolitan area, these provide for concessions granted to pensioners and seniors. In 2009/10, CSO payments for the metropolitan area totalled \$2.1 million. Main drain services in the localities of Albany, Harvey, Waroona, Roelands, Mundijong and Busselton are entirely CSO funded.¹⁸ These country drainage systems, however, are outside of the focus of this discussion paper.

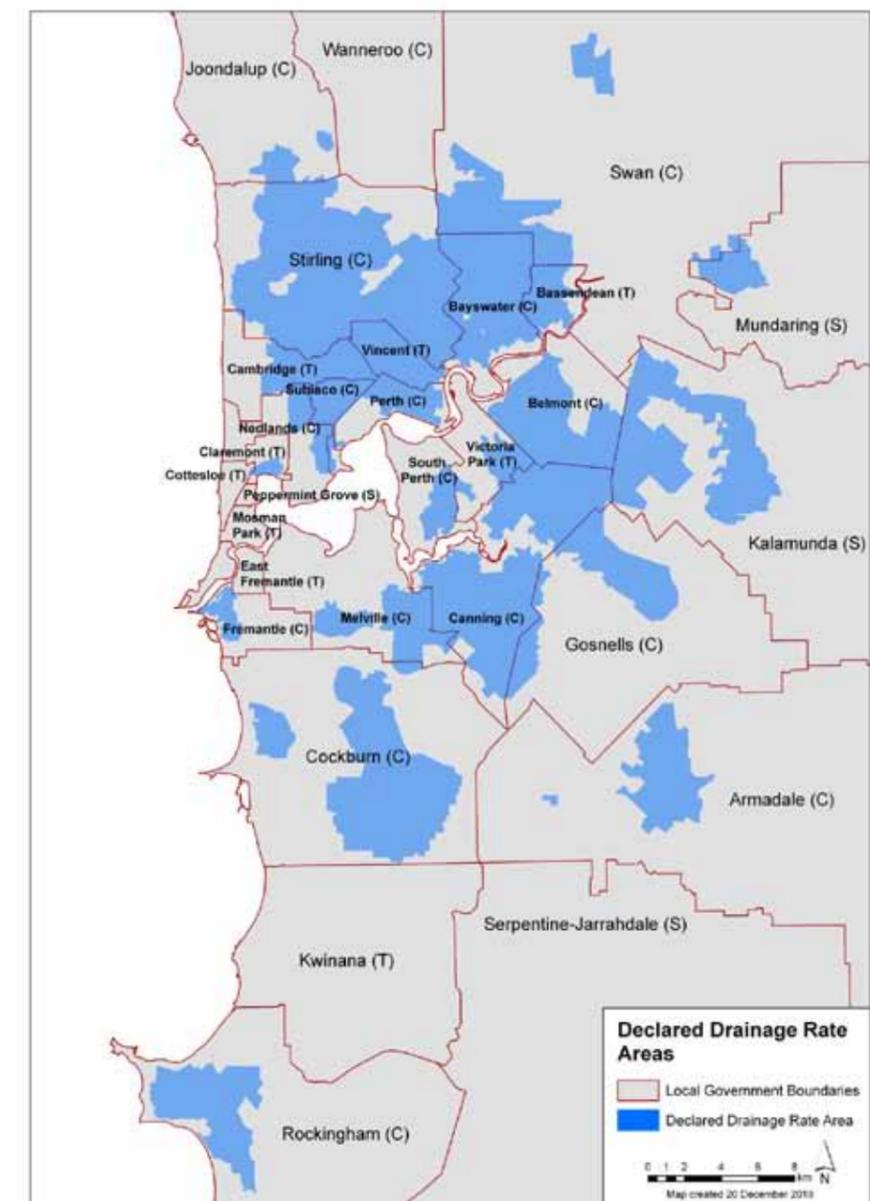
The map below shows the areas which are currently charged a drainage rate through the annual Water Corporation water rates billing and collection system. This rate applies to residential, commercial and industrial properties.

Local Governments fund local drainage works through the collection of rates. Some Local Governments leverage funds through developer contributions or 'special area' rates where considerable works are required. In 2004, the City of Swan Council endorsed a special area drainage rate in the Midland District Drainage Area at the same rate levied by the Water Corporation. Most Local Governments, however, fund drainage works through normal budgetary expenditure which is subject to consideration of competing priorities, including the expenditure needs of other services and the income available for drainage service provision in a given year.¹⁹ The collection of a drainage rate by individual Local Governments is not supported because it restricts investment and precludes a strategic approach to urban water management investment. A further complication is that Section 6.37 of the *Local Government Act 1993* states that special area rates must be raised on rateable land within a specific area where ratepayers will benefit, have access to or contribute to the need for that work service or facility.²⁰

Local Government is also restricted from applying for Community Service Obligation (CSO) payments from State Treasury to assist in covering the costs of servicing pensioners and those in financial hardship.

In developing this proposal, a number of background investigations have been undertaken in relation to alternative approaches internationally and within Australia. A summary of this background work has been included in Appendix 6.3.

Map 1: Water Corporation drainage areas in the metropolitan region, as at September 2010.



¹⁷ <http://www.water.wa.gov.au/About-us/default.aspx>

¹⁸ ACIL Tasman (2009) *Advice on Water Corporation's Drainage Charges*, Prepared for the Economic Regulation Authority, Perth, WA: ACIL Tasman.

¹⁹ ACIL Tasman (2009) *Advice on Water Corporation's Drainage Charges*, Prepared for the Economic Regulation Authority, Perth, WA: ACIL Tasman

²⁰ *Local Government Act 1995* (WA)

3.0 Investment



The SRT's draft River Protection Strategy (July 2010) estimates that current investment into Riverpark management is \$72.36 million annually, with approximately \$39 million allocated to water quality improvement and intervention programs. Total Local Government expenditure on the Riverpark was estimated to be \$23.2 million for 2009/10, incorporating the 21 Local Governments that are adjacent to the river system. The Local Government sector is the biggest collective investor in the Riverpark. The majority of this investment is spent on community benefit facilities and activities including park facilities and public open space maintenance although significant funding is also invested in ecosystem health works including river wall and shoreline protection works and water quality improvement. This figure does not include complementary investments made to activities outside of the Riverpark boundary.

3.1 Urban drainage

WALGA conducted a survey of Local Government urban drainage asset management in June 2010 to determine the current funding deficits. The first notable observation was the lack of consistency in Local Government asset management systems and the lack of existing data for urban drainage networks in some Local Governments.

The drainage asset funding shortfall is estimated to be \$650 million (total upgrade cost). This assessment was obtained using replacement and existing values for assets and the current investment made by Local Government into renewal projects. Local Government renewal expenditure is estimated to be \$8.56 million per annum.

Maintenance expenditure is estimated to be \$14 million per annum, with total expenditure for renewal, maintenance, upgrade and expansion totalling \$28 million per year. This investment is largely funded through normal budgetary process, with only a handful of Local Governments receiving external funding for infrastructure upgrades in 2008/2009.

3.2 River wall and shoreline protection

The SRT's draft River Protection Strategy estimates that Local Government invests \$4.34 million in river wall and shoreline protection per annum, with agency/NRM contributions totalling \$2.89 million. River wall protection is a shared responsibility, with the State Government contributing 50% of total capital costs via the SRT annual budget. Local Government also makes significant investments into managing natural foreshore areas from the impacts of erosion, inappropriate access and weed invasion. The investment required to protect, stabilise and rehabilitate highest priority areas on the Riverpark shoreline is estimated at **\$190 million** within the next 5 years.²¹

3.3 Funding

There currently exists a major funding gap to address the issues associated with water quality and asset management. Local Governments do not charge a drainage rate despite managing significant urban drainage systems across the entire catchment area. Available grant funding is short-term, highly fragmented, ad hoc and lacks strategic focus. Below are some examples of recent water quality funding announcements:

Avon catchment

- \$150,000 State Government grant to remove sediment from Avon River channel
- \$200,000 through State NRM funding for river pool dredging, fencing, revegetation
- \$150,000 of Caring for Our Country funding to apply SQUARE model land use maps in 2011-13

Swan Canning Catchment

- \$3.4 million Federal Government funding matched with \$3 million cash and in-kind from State Government agencies, Local Governments and NRM groups for the Urban Waterways Renewal program 2010-12
- \$3.2 million from State NRM funding and \$2.5 million from Caring for our Country for implementation of Swan Canning Water Quality Improvement Plan
- \$1.15 million for Riverbank 2010, \$1.08 million to Local Government
- \$1 million from State Government for oxygenation plant in Canning River
- \$250,000 from State Government to implement the recommendations of the Chief Scientist report into the deaths of dolphins in the Swan River in 2009
- \$300,000 from State Government to implement local water quality improvement plans
- \$250,000 from State Government to undertake audits of small business
- \$100,000 State Government funding for the Swan Landcare Program
- \$100,000 State Government funding to identify sources of non-nutrient contaminants
- \$50,000 State Government funding to undertake weed eradication and planting
- \$300,000 State Government funding for River Rangers program
- \$1.1 million State Government funding for the Fertiliser Action Plan
- \$3 million State Government funding to install an underground barrier to stop contaminated groundwater entering the Helena River at Bellevue
- \$1.15 million State Government funding to rehabilitate the degraded Anvil Way drainage basin and create new wetland
- \$180,000 State Government funding for Phoslock trials
- \$600,000 State Government funding for 35 on-the-ground projects
- \$15.5 million Water Corporation investment into sewer refurbishment

Current funding arrangements are ad hoc and lack a consistent, coordinated approach. The Riverbank grants program is delivered in a more strategic way, using identified priority projects from the *Swan and Canning River Foreshore Assessment and Management Strategy 2008*, although this funding is limited to approximately \$1-\$2 million per year with a required 50% contribution from Local Government. The State Government has made considerable investment into the health of the Swan and Canning river systems, and other waterways, both through consistent budget allocations for the SRT and through grants and additional funding. It is becoming evident, however, that this investment is not leading to an overall improvement in water quality.

Federal Government funding for water quality projects has been available to Local Government for the past five years. The Community Water Grants funding was utilised by a number of Local Governments to fund small retrofitting projects. Recent funding out of the 'Water for the Future' program has targeted large scale projects, usually with a minimum \$2 million contribution from proponents. This has been out of reach for most WA Local Governments. The Department of Water has been working with Local Government to set up joint projects to raise the required minimum contribution. There may be opportunities in the future to attract Federal Government funding for water quality projects, particularly after the State has implemented water law reform.

Infrastructure Australia is also a source of funding for Local Government but does not provide a guaranteed, sustainable revenue stream. The City of South Perth coordinated an application to Infrastructure Australia for urgent foreshore infrastructure repair works for \$85 million. This project has not been funded, and notably and regrettably, the bid was not supported by the State Government.

3.4 Investment needs

As highlighted above, the SRT has estimated the total cost of addressing identified Priority 1 works for repairing or replacing currently damaged built shoreline infrastructure in the Swan Canning river system to be **\$190 million**.²² Under the existing Riverbank grants program, it would take over 63 years to complete these projects. Local Government invests \$4.34 million each year to shoreline maintenance works which includes approximately \$1.5 million for upgrade and replacement works. Under this timeframe, it is likely that Priority 2 and 3 projects will have already progressed to Priority 1 before all works are completed. It is acknowledged that the SRT is working to address some of these issues through its Asset Management Program.

It would take 76 years to meet the estimated **\$650 million** shortfall for ageing and deficient drainage infrastructure under current funding arrangements. This estimate does not take into account the significant maintenance investment made by Local Government.

The River Protection Strategy has estimated additional future resources needed for Riverpark projects to be **\$98 million** over five years. This figure does not include river wall or drainage infrastructure but does include wider Riverpark investments for cultural heritage, facilities, research etc.

Total investment needs for assets are therefore estimated to be **\$938 million over five years**.

Priority projects for drainage renewal have not been identified, so the total deficit has been used. The longer it takes to fund these infrastructure projects, the more safety risks they pose to the general public and the more environmental damage they cause. Funding needed for wetland management (external to Swan Canning river system) water quality monitoring and community education has not been included in the above figure.

The likelihood of sourcing this amount of money is low, however steps need to be taken to reduce the gap between what is currently invested and what is needed. This is a serious issue that needs to be acknowledged by key decision-makers. A collaborative solution needs to be identified.

There currently exists a major funding gap to address the issues associated with water quality and asset management.

²¹ Swan River Trust, 2010, *Draft River Protection Strategy*, Government of Western Australia, Perth.

²² Swan River Trust, 2010, *Draft River Protection Strategy*, Government of Western Australia, Perth.

4.0 Proposal Description

4.1 Proposal explanation

The lack of a holistic, integrated and funded strategy for water quality improvement and asset management has been a barrier to the implementation of best management practices and water quality improvement in receiving waterways throughout Perth. The SCWQIP has identified the priority areas and actions required to reduce nutrient loads entering the Swan Canning system but to date has only received \$3.19 million in direct funding for implementation. Project-specific funding has also been allocated for water quality improvement works. A sustainable funding mechanism is needed to ensure the implementation of the SCWQIP, management of drainage and foreshore infrastructure and other activities which contribute to improved waterway health, improved asset management and the realisation of the broader water resource policy objectives of the State Government.

4.1.1 Approach

The overall approach is based on partnership and shared 'whole of community' responsibility for protecting its greatest assets, the Swan Canning river system and the water quality of the Swan Coastal Plain.

As articulated in the Healthy Waterways Partnership program of South East Queensland, the philosophy underlying the Partnership's approach rests on two foundations:

- A commitment to working in a partnership where all partners can be heard, contribute to decision-making and implement agreed actions.
- Ensuring our strategies for managing waterways is based on sound science, rigorous monitoring and adaptive learning.²³

Local Government was the key driver in the Healthy Waterways Partnership, recognising that as major land managers, it can make a significant contribution to waterway health in partnership with relevant stakeholders and the wider community.

To make the partnership work and deliver outcomes, a key ingredient will be a sustainable funding mechanism. The approach developed here is one of 'beneficiary pays'. This approach considers that all those who benefit from the asset should contribute to its protection and remediation. There has been comment that a 'polluter pays' approach is more appropriate, where those at the source of nutrients should pay more than those at receiving waterways. A counter-argument to this is the fact that those living close to waterways will enjoy the benefits of waterway health improvement. The environment is a shared responsibility; therefore it is important that all residents and businesses contribute to its protection.

4.1.2 Objectives

The Objective of this Priority Plan is to recommend a preferred funding mechanism and institutional arrangements that will result in:

- Improved water quality in the rivers, waterways and groundwater
- Improved condition of built and natural foreshore areas through implementation of best practice
- Improved stormwater management to best practice standards
- Increased community awareness about water quality issues in the catchment
- Behavioural change influenced to reduce nutrients and contaminants reaching waterways
- Water quality considerations integrated into land-use planning processes
- Current and future development maintaining or improving water quality
- Increased trust, collaboration and understanding between key stakeholders
- Improved river resilience to manage climate change impacts
- Clarity about the roles and responsibilities of relevant stakeholders

4.1.3 Healthy Catchments Partnership Framework

A commitment to the design and delivery of a policy framework that includes the establishment of a sustainable funding mechanism and a centralised Board to collect and distribute funds would be an important step forward in ensuring the sustainable management of the catchment. This could be created in a number of different arrangements; however the Swan Canning Policy Forum preferred model is presented in Figure 1.

This model is based on the principle that the community should share the responsibility of protecting high-value receiving environments. A healthy catchments rate would be paid by the community for waterway health and asset management projects which would be collected by the Water Corporation, as is currently done for 40% of the urban area. This model is an expansion of the current system, yet will ensure that rates collected will be invested in both water quality and water quantity management. These funds would then be administered by an independent Board, as directed by the Minister for Environment; Water. Funds will be distributed to the relevant policy, planning and service providers and the asset manager, to undertake water quality improvement works including stormwater management, shoreline protection, community education, monitoring, scientific research and other activities which contribute to improving the health of receiving waterways. Institutional arrangements for drainage management will be defined and agreed to as part of this process. The Healthy Catchments Board will be made up of Local Government, Swan River Trust, Water Corporation, Department of Water and the Department of Planning as well as community, industry and research representatives.

The Technical Advisory Panel will provide support and advice to the Board on the technical opportunities and constraints, particularly in terms of asset management. The Panel will be made up of experts from engineering and other related disciplines. A key focus of this group will be to ensure implementation of cost-effective

and strategic investment in assets and innovative engineering (hard and soft) solutions.

The Scientific Advisory Panel will also provide support and advice to the Board, and will consist of scientific and research experts who will ensure the adoption of research and science into evidence-based policy outcomes and program design. This Panel will be instrumental in centralising current research around waterway issues and ensuring that the benefits of investment are quantified and well communicated. Providing the empirical base rationale for investment will be a key focus of the Scientific Advisory Panel.

4.1.4 Investment model

The Healthy Catchments investment model has been proposed because it has worked successfully in other parts of Australia and elsewhere. Similar models have demonstrated water quality improvement and are now widely accepted by their communities (See Appendix 6.3).

It is estimated that a Healthy Catchments rate could generate an additional **\$54 million** from the current drainage rate revenue, based on the current Water Corporation cost structure of a minimum of \$75 per rateable property. This would be generated by expanding the collection area to the entire metropolitan area. This approach will require legislative change to allow the rateable area to be expanded and to allow the Water Corporation to collect the rate on behalf of the Board.

The exact funding that could be generated has not been calculated due to lack of data on the number and lot sizes of residential and non-residential properties in the metropolitan area. An indicative cost estimate has been provided in lieu of further investigations.

There are an estimated 653,349 residential dwellings in the Perth metropolitan area. Water Corporation currently charges a minimum rate of \$75.45 in 260,000 residential properties. Applying a rate to the remaining 393,349

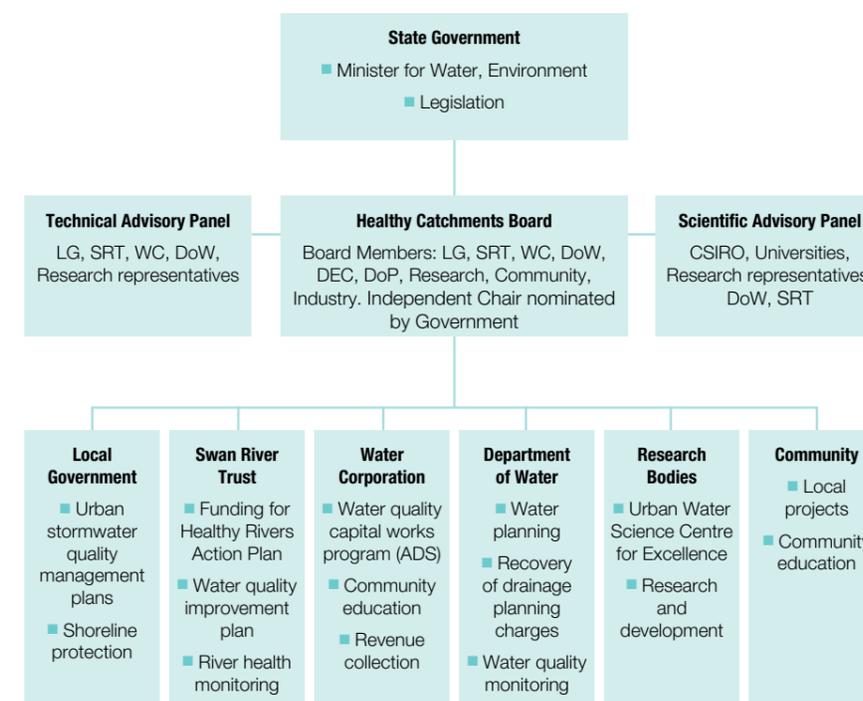
residential properties at the minimum charge of \$75.45, would generate well over \$30 million annually. With consideration for higher GRV properties and the inclusion of industrial and commercial, this would be expected to generate over \$54 million annually under the current costing structure

This funding stream, in addition to nutrient offsets (headworks) charges and potential leveraging from federal and private sector investment would add considerably to the current level of investment made by management agencies to the water quality improvement and infrastructure shortfall.

All funds raised through the healthy catchments rate would be quarantined for the specific purposes for which it is raised and the Healthy Catchments Board would develop a funding allocation mechanism. While a detailed allocation plan for the funds raised would be developed as phase 2 of this plan, the basic principle is to establish a mechanism that allocates funds across a range of priorities based on sound research and policy priorities. The allocation would address the key issues facing land managers in the metropolitan area by providing consistent and appropriate levels of funding to address both emerging and legacy concerns strategically to improve the overall health of waterways.

For example, given Local Government's role as statutory land-use planners, drainage service providers and managers of public open space, an initial investment could be allocated to assist Local Governments in dealing with legacy issues and to create a consistent and accredited urban stormwater management planning process across the metropolitan area. Priorities identified in these plans would then be used to allocate a negotiated percentage of the funding received through the healthy catchments rate.

Figure 1: Indicative architecture for Healthy Catchments Expenditure



²³ <http://www.healthywaterways.org/aboutus.aspx>

4.0 Proposal Description

Below is an indicative allocation of the funds against some key program areas.

Healthy catchment rate Indicative allocations by Program

Program	Eligible Recipient(s)	Allocation (\$m)				
		Year 1	Year 2	Year 3	Year 4	Years 5-10
Urban water capacity building	New Waterways	0.2	0.2	0.2	0.2	0.2
Water Quality and Ecosystem Health monitoring, evaluation and reporting framework	DoW, SRT, Research	9	7	6	5	5
Waterway health management	LG, SRT, DEC, Community, Private sector	2	3	3	3	3
WQIP, Healthy Rivers Action Plan, RPS	SRT	10	10	10	10	10
Riverbank Program (\$5 SRT:\$1 LG)	SRT	10	10	10	10	10
Urban Stormwater Quality Management Plan development (\$1:\$1)	LG	1	1	1	0	0
Urban Stormwater Quality Management Plan implementation	LG	4	8	8	8	5
Strategic land acquisition	DoW, LG, WAPC	3	3	3	3	3
Investigation into impact of disused landfills and remediation if required.	LG, DEC	4	5	6	8	8
Community support and competitive grants	Community organisations, LG	2	3	4	4	4
Research grants	Independent research bodies	2	2	2	3	2
Administration costs for Board	Independent Board	3	2.5	2.5	2.5	2.5
TOTAL ANNUAL INVESTMENT (\$m)		\$50.20	\$54.70	\$55.70	\$56.70	\$52.70
TOTAL INVESTMENT (YRS 1-5) (\$m)						\$270

This funding would be provided in addition to current investment and would leverage additional contributions from service providers and other stakeholders. It imposes no additional cost to government, apart from any initial investment commitments and matched contributions from agencies. Once established, the program is self-funding and provides a sustainable mechanism to assist land managers improve the health of the river system, its catchment and waterways. This provides an incentive to improve service provision, asset management, ecological health, public amenity, water resource management, and community engagement.

The investment priorities would be identified through sound scientific data and research outcomes and would be reviewed every five years. This program would also be accompanied by a rigorous monitoring, evaluation and reporting 'learning' framework which can be used to demonstrate the effectiveness of

investments based on quantified economic, social and environmental benefits. This framework will be accessible to the general public, as investors, so that they can see their contribution to the program. This would allow for greater accountability and ensure that only evidence-based activities are implemented.

An example of a benefit of this program is as follows: A \$10 million investment per year, generated from the healthy catchments rate and allocated to the existing Riverbank Program, matched with combined Local Government expenditure of \$2 million per year, will reduce the time needed to address Priority 1 projects to 16 years. Compared to the projected 63 years under the current Riverbank program, this will vastly improve river wall infrastructure and natural foreshore areas management, in addition to the water quality dividend. It will also assist land managers to adapt to the impacts of climate change by enabling them to address issues as they arise.

Under the plan, Local Government will receive \$33 million over five years, matched \$1:\$1, for Urban Stormwater Management Plan implementation. This investment will help facilitate the implementation of best management practices, leading to an increased adoption of water sensitive urban design and stormwater harvesting opportunities. In-kind contributions would also be accepted as matching contributions.

Disused landfill sites adjacent to the Riverpark is a potential source of contamination that is not currently being addressed. \$31 million over five years will assist in remediation, monitoring and research. Disused landfill sites is a legacy issue that needs to be addressed with appropriate investment via appropriate instruments. The Association does not consider the Landfill Levy as the appropriate instrument to deal with legacy issues from previous generations.

The Healthy Catchments Board would be responsible for designing and developing the overall investment program and its sub-themes (in effect, its business plan), submitting it to the Government for ratification, and upon approval, administering these to land managers, catchment and community groups. The investment program will be based on identified priorities determined through rigorous research to ensure funding is allocated to where it is most effective. The Technical Advisory and Scientific Advisory Panels will play a critical role in ensuring Board decisions are evidence-based. Recipients of funding will include Local Government, the Swan River Trust, industry, catchment groups and the wider community.

4.1.5 Costing structure

The preferred costing model for the healthy catchments rate is an area-based charge determined by land-use zonings (residential, non-residential), with each category tiered on land area. Indicative land area categories are provided below:

Residential less than 1000m ²	minimum residential rate
Residential 1000m ² – 10,000m ²	median residential rate
Residential more than 10,000m ²	maximum residential rate
Non-residential less than 1000m ²	minimum non-residential rate
Non-residential 1000m ² – 10,000m ²	median non-residential rate
Non-residential more than 10,000m ²	maximum non-residential rate

This is at variance with the current Water Corporation drainage rate calculation, which uses the rateable value of properties. The rateable value is the Gross Rental Value of the property (or estimated gross annual rent) which is determined by the Valuer General. In 2010-11 the tariff is 0.791 cents for each dollar of the rateable value, with the minimum charge applied being \$75.45 per residence.²⁴

A move to a new pricing methodology is compatible with ACIL Tasman consultants' advice on the Water Corporation's drainage charges made to the Economic Regulation Authority²⁵ in relation to overall pricing mechanisms, and the move away from Gross Rental Value. By relating charges more closely to the costs imposed by different properties, land area-based charging would improve equity and reduce the subsidisation from high GRV non-residential properties.

The exact costs have not been determined because of the lack of data available at the time of publication on land areas for each category.

Through the existing model the Water Corporation receives a Community Service Obligation (CSO) payment of \$2.1 million per year to allow them to subsidise seniors and pensioners. This ensures the rate is collected in an equitable way and it is recommended that this continues with the expansion of the rate.

The proposed model bears little additional cost to the Government, although there is an expectation that it will contribute to the programs developed. An increase in the CSO payment to the Water Corporation will be required, which is estimated to be an additional \$3.1 million per year based on current payments for 40% of the metropolitan area. Once established, the program is self-funding and provides a sustainable mechanism to assist land managers improve the health of the river system, coast and waterways throughout the catchment, providing an incentive-based framework to improve service provision, asset management, the ecological health and public amenity in and around the Swan Canning system, as well as water resource management opportunities and community engagement.

4.2 Scope

4.2.1 Proposal area

The proposal is for the rateable area to be defined as the Perth Metropolitan Regional Scheme (MRS) area, comprising 30 metropolitan Local Governments. It includes the Swan Canning catchment, covering 2126 kilometres and the coastal catchments north and south of the Swan Canning river system. This area is also covered by the *Metropolitan Water Supply, Sewerage and Drainage Act 1909* and the *Metropolitan Water Authority Act 1982* which gives head of power to the Water Corporation to carry out drainage works. These Acts will be consolidated into the Water Services Act. Water Corporation declared drainage areas would need to be expanded under the proposed scheme. There is also future scope to extend the proposal area to include the Peel-Harvey catchment, and other priority catchments at a later date.

The proposed area includes the entire MRS because this will be the easiest to administrate and communicate to the community. Expenditure would be confined to the catchment in the first instance because all Perth residents benefit from a healthy river system with expansion to the entire MRS area, as guided by research priorities. The timeline for this will be determined by the Healthy Catchments Board, following advice from the Technical and Scientific Advisory Panels.

4.2.2 Timeframe

The program development and inter-agency arrangement components of the proposal will begin once government in-principle support and funding has been secured. It is envisaged that the sustainable funding mechanism component will be established once all key stakeholders have entered into a partnership agreement and required changes have been made to current management arrangements. This could potentially coincide with the proposed introduction of licensing to Local Government for urban drainage services. Once established, this project will be self-funding.

²⁴ http://www.watercorporation.com.au/A/accounts_rates_metro_res.cfm

²⁵ ACIL Tasman (2009) *Advice on Water Corporation's Drainage Charges*, Prepared for the Economic Regulation Authority Perth, WA: ACIL Tasman, Perth.

4.0 Proposal Description

4.3 Benefits

An outline of the benefits is presented in the table below:

Benefit	Economic	Social	Environmental
Water quality improvement	Supports tourism and recreation enterprises on the river	Increased use of river system for passive and active recreation Improved amenity, health and wellbeing	Healthier habitat for organisms, reduce algal blooms and fish kills
Stormwater Management	Opportunity for self-funding – return on investment	Better connection with waterways, improved amenity and opportunities for local 'features'	Reduction in nutrients and sediment entering waterways, habitats for waterbirds
Asset management	Facilitates strategic investment, future cost savings	Safer, reliable infrastructure services	Improved water quality management
Catchment Management	Productivity of agricultural land increases	Improved health and wellbeing of community	Reduction in nutrients applied to catchment through reduction in use and behaviour change
Foreshore Restoration	Supports tourism and recreation enterprises on the river	Increased use of river system for passive and active recreation. Improved amenity, health and wellbeing	Provides habitat for birds and other organisms, improves water quality and prevents erosion
Climate Change Adaptation	Reduces future costs to fix problems. Protects infrastructure	Builds climate-resilient communities Protects community assets	Protects natural assets
Stakeholder relationships	Opportunity for better collaboration, streamlining of processes	Consistent messages, increase in trust of agencies	Opportunity for better collaboration and partnerships for environmental projects, communication improvements will lead to better data management and information sharing
Integration of existing projects, plans and policies	Prevents duplication, waste of resources	Consistency of key messages	Improved management of natural resources, diversity of projects
Improved access and use of waterways	Tourism and commercial opportunities	Improved health and wellbeing Spiritual connectedness with waterways	Community stewardship to protect waterways
Protection and enhancement of Indigenous heritage	Tourism opportunities	Improved understanding and awareness of indigenous heritage	Protection of waterways through community stewardship
Protection and enhancement of cultural heritage	Tourism opportunities	Improved understanding and awareness of cultural heritage and history	Protection of waterways through community stewardship

4.3.1 Community benefits

The funding model proposed is based on a 'beneficiary pays' approach. The wider community has been identified as the major beneficiary of a healthy and functioning river, wetland and coastal system. Many of the benefits of this program will be long-term. Water quality, in particular, will take time to show improvement so the community will be kept well informed on progress in this area.

However, there will be short-term local benefits for the community. On-ground projects at local sites will increase amenity and improve the ecological function of waterways. Community engagement and education are a strong focus and it is hoped that the community will have more opportunities to get involved in the program.

Assets will be maintained appropriately to ensure improved safety, amenity, water quality outcomes and resilience to climate change; providing the community with more certainty about the quality of services provided to them. This program will ensure that urban landscapes and drainage systems are better equipped to deal with natural disasters including flooding, to protect our communities and infrastructure. By ensuring ongoing, sustainable funding for catchment management, which is invested according to rigorous scientific rationale, the community will enjoy the integration of urban and natural landscapes in their local area and other places they visit within the catchment.

4.4 Relationship with other projects

This proposal will support statutory stakeholders and complement many existing projects. SRT initiatives including the SCWQIP, River Protection Strategy and the Swan and Canning Rivers Foreshore Assessment and Management Strategy will be complemented through the provision of funding for the implementation of recommended management actions. These documents have been used to develop this Priority Plan and will provide guidance for the implementation of the overall program.

The proposal also complements the Department of Water's efforts in developing an Arterial Drainage Scheme (ADS). A strategic approach to drainage will ensure that priority areas are identified and improved. This proposal will assist to collect data needed to develop an ADS. The New WATERways program will provide support and resources for stakeholders who are involved in this project.

This proposal also aligns with the following strategic documents:

- State Planning Policy 2.9 Water Resources
- Better Urban Water Management
- Stormwater Management Manual
- State Water Plan 2007
- State Water Strategy 2003
- *Environment Protection and Biodiversity Conservation Act 1999*
- *Local Government Act 1995*
- Local Government Strategic Plans
- WA Local Government Association Strategic Plan

This proposal will also support work already being undertaken by Local Government including local water quality improvement plans, stormwater management plans and integrated water management plans.

4.5 Impact of not proceeding with the Proposal

The major impact of not proceeding with this proposal is the continuation of water quality decline in the Swan Canning catchment. This will result in more toxic algal blooms, fish deaths and possible impacts to the resident dolphin population in the Swan River. The more time it takes to address these water quality issues, the more difficult and costly future remediation efforts become.

The existing backlog of Local Government drainage works will continue to increase, providing less opportunity for the sector to adopt best management practices. Furthermore, the levels of service provided for the community will decline and the frequency of failures in the drainage system will increase.

The *Swan Canning Foreshore Assessment and Management Strategy (2008)* noted that half of the structures along the Swan River require immediate maintenance. This report identified a number of foreshore areas vested with Local Government as Priority 1 areas for action. These included a number of significant structured foreshore projects and revegetation/foreshore management projects. Just 20% of the vegetation surveyed was considered in good condition, with another 50% in moderate condition. Without sourcing additional funding to address these issues, the health and useability of waterways in the Swan Canning catchment will continue to decline.

As identified in the Swan River Trust's draft River Protection Strategy (RPS) (July 2010), the economic value of the major receiving environments is dependent on maintaining ecological health. A Curtin University study used in the RPS examined the total economic value (TEV) based on annualised revenue generated from the use of the Riverpark. This is conservatively estimated to be \$28.54 million. Indirect use values based on capital value of river related assets and residential property premiums are estimated to be \$11.94 billion.²⁶

²⁶ Swan River Trust (2010) *Draft River Protection Strategy*, Perth, WA: Swan River Trust, p. 135.



5.0 Conclusions and Recommendations

These figures do not consider the economic values outside of the Riverpark area which would also be threatened if the health of waterways continues to decline.

Without an appropriate framework to manage the Swan Canning system and other high-value receiving environments, the economic benefits that are generated from these waterways will be impacted.

If additional funding is not sourced, Local Government and other statutory stakeholders will continue to work in isolation in efforts to improve water quality throughout the catchment. Stakeholders will compete for funding which will build distrust and poor working relationships.

The community will be dissatisfied at the level of commitment from all levels of Government to invest in the future of the Swan and Canning rivers and catchment. An appropriate level of understanding in the community about potential impacts on water quality will not be achieved and poor water management practices will continue. The use of the rivers may change if water quality continues to decline and poor management of assets reduces the amenity and potential safety of foreshore areas.

The use of the rivers may change if water quality continues to decline and poor management of assets reduces the amenity and potential safety of foreshore areas.



5.1 Conclusions

'Business as usual' is no longer an option when it comes to the health of the Swan Canning catchment. Despite commendable investment from a number of land managers and agencies, the water quality of the system continues to decline and the state of foreshores, river walls and drainage infrastructure remains a serious issue.

Local Government has identified the need for a strategic, integrated approach to fund-sourcing and delivery in the catchment. This Plan has prioritised the need for a sustainable funding mechanism to aid this process and proposes the development of a 'healthy catchments rate' as the most viable option.

The proposed model will require the commitment and support of a number of agencies but if implemented will lead to collaboration and stronger relationships and between key stakeholders.

Local Government has taken leadership on this issue through the formation of the Swan Canning Policy Forum and ultimately through the development of this Priority Plan. Local Government cannot be the primary driver for this initiative – what is required is cohesive support from the State Government to further develop this model or other options for increased investment in the river system.

5.2 Recommendations

1. The State Government works with key statutory stakeholders to develop an equitable and on-going funding mechanism to improve the health of the Swan Canning Catchment and river assets,
2. Local Government develops stormwater quality management plans to improve asset management and implement current best practice for integrated water management,
3. Water Corporation develops stormwater quality management plans and reports on water quality within main drains and capital works programs as well as implements current best practice for integrated water management,
4. The State Government increases funding for the Swan River Trust in future State budgets,
5. A partnership agreement is signed by all statutory stakeholders to commit to water quality improvement and to clarify roles and responsibilities,
6. Water quality targets/guidelines are established for new development and enforced through the planning system or Department of Water,
7. A compulsory nutrient offset scheme be considered and applied to future urban land development within the Metropolitan Regional Scheme,
8. The State water reform agenda to include water quality management provisions for drainage service providers as well as mechanisms to reduce transfer of nutrients and contaminants to water bodies, and
9. Expand the Infill Sewerage Program to include industrial areas and currently unsewered urban areas.

'Business as usual' is no longer an option when it comes to the health of the Swan Canning catchment. Despite commendable investment from a number of land managers and agencies, the water quality of the system continues to decline and the state of foreshores, river walls and drainage infrastructure remains a serious issue.

6.0 Appendix

6.1 Identifying Options

There are a number of opportunities to develop a sustainable funding mechanism for water quality improvement. A combination of methods could be used to help achieve the stated objectives. Three approaches can be adopted for dealing with contaminated waterways. The 'polluter pays' approach considers that those who contribute most to the problem should pay for any remediation. The 'beneficiary pays' approach considers that all those who benefit from the asset should contribute to its protection and remediation. A 'user pays' approach considers that those using the waterways should contribute more to its protection. Some proposed revenue streams using all three approaches are summarised below.

Healthy catchments rate

A term for 'drainage rate' yet can be used for an array of activities which will achieve water quality improvement. The drainage rate can be calculated, collected and administered in a number of ways. Collected by the Water Corporation and then administered by a central body who distributes to Local Government, Water Corporation, Swan River Trust, catchment and community groups is the preferred model.

Developer contributions

To be calculated using the average cost of remediation for nutrient concentrations.

Stakeholder Investment

It is envisaged that stakeholders will contribute up to 50% of the total costs for this project, including Local Government.

Boat Levy

An additional levy for boat owners which is used to improve water quality. Collected by the Department of Fisheries and administered by the Department of Water.

Speeding fines for boats

Revenue raised through enforcement could be put towards water quality and foreshore rehabilitation works.

Business as usual

Low levels of investment are leading to continuing water quality problems as well as ageing and deteriorating shoreline and drainage infrastructure.

Within each option are sub-options for implementation. Many of these are outside the jurisdiction of Local Government and have therefore been included as suggestions only. All options would require further investigation. This proposal supports a combination of solutions to address our serious water management issues. The implementation of the healthy catchments rate, with developer contributions and up to 50% stakeholder investment, will ensure a robust, sustainable model for urban water management.

There are a number of opportunities to develop a sustainable funding mechanism for water quality improvement.

6.2 Analysis of Impacts on Stakeholders

Stakeholder	How could this stakeholder ...		How will we engage this stakeholder?
	Impact the proposal?	Be impacted by the proposal?	
Local Government	Support and participation Communication networks	Access to funding – asset management, water quality improvement works Policy/practice changes	Swan Canning Policy Forum Partnership Agreement
Department of Water	Support and participation Information sharing Target setting for WQ	Improved data on drainage networks and waterways Achieve Department 'purpose' and goals	Swan Canning Policy Forum Partnership Agreement
Swan River Trust	Support and participation Policy development	Access to additional funding – asset management, water quality improvement works	Swan Canning Policy Forum Partnership Agreement
Water Corporation	Support and participation Information sharing Communications network	Policy and practice shift Potential increased investment in drainage Revenue collection	Swan Canning Policy Forum Partnership Agreement
Department of Environment and Conservation	Support and participation Information sharing Communications network	Improved data on drainage networks and waterways Achieve Department 'purpose' and goals	Swan Canning Policy Forum Partnership Agreement
Development Industry	Support and participation Demonstration sites	Compliance and costs Nutrient offsets	Swan Canning Policy Forum - UDIA
Main Roads	Support and participation Communication networks Demonstration sites	Compliance and costs	Swan Canning Policy Forum
Department of Planning	Regulation through Planning Provisions	Legislative change Enforcement	Swan Canning Policy Forum
Catchment/Community Groups	Support and participation Communication networks	Access to funding – water quality and community education projects	Swan Canning Policy Forum Communication Strategy
Indigenous Community	Support and advocacy	Access to funding Increased awareness and protection of heritage sites	Communication Strategy
Wider Community	Support and participation	Costs and benefits	Communication Strategy

6.0 Appendix

6.3 Existing drainage rate models

Throughout the modern world, governments and water boards raise fees and charges to implement stormwater management and water quality improvement works. While the mechanisms and institutional arrangements vary considerably, the common theme is the levying of funds from the public, on the premise that waterway health is a shared responsibility.

Western Australia

In Perth, a drainage levy is collected by the Water Corporation for water quantity protection works and does not contribute to water quality improvement. This is a missed opportunity, contributing to the decline in waterway health in the Swan Canning river system and leaving a major funding gap for water quality improvement initiatives.

Local Government funds local drainage works through the collection of rates and sometimes through developer contributions or 'special area' rates where considerable works are required. In 2004, the City of Swan Council endorsed a special area drainage rate in the Midland District Drainage Area at the same rate levied by the Water Corporation. Most Local Governments, however, fund drainage works through normal budgetary expenditure which is subject to a consideration of competing priorities, including the expenditure needs of other services and the income available for drainage service provision in a given year.²⁷ The collection of a drainage rate by individual Local Governments is not supported because it greatly restricts investment and precludes a strategic approach to urban water management investment. A further complication is that Section 6.37 of the *Local Government Act 1993* states that special area rates must be raised on rateable land within a specific area where ratepayers will benefit, have access to or contribute to the need for that work service or facility.²⁸

Following are some examples of how water utilities and governments collect funds for stormwater management in Australia and around the world.

New South Wales

In 2006 the New South Wales Government made amendments to its *Local Government Act 1993* and *Local Government (General) Regulation 2005* to allow Local Government to raise a stormwater management service charge, recognising the key role of Local Government in stormwater management and the need for a sustainable funding mechanism. This supported the Waterways Package and Urban Stormwater Program initiative of the 1990s in which \$82 million worth of funding was provided for local programs over a five year period, administered by the Stormwater Trust. This program was highly successful in motivating Local Government to improve stormwater quality and demonstrated significant environmental gains. It also identified the need to establish a sustainable funding source to provide for improved stormwater management.²⁹

Sydney Water manages 25% of 'trunk drains' in the Sydney metropolitan area to protect people and property from flooding, improve waterway health and appeal and to provide for growth. It raises a stormwater service charge of between \$40.00 and \$100.00 per household per year.³⁰ Byron Shire Council's stormwater management charge is levied at a flat charge of \$25.00 for residential and business and \$12.50 for strata titles.³¹ Marrickville Council also charge this rate which helps to raise an average of \$700,000 per annum for stormwater management activities.³²

Victoria

Like the Waterways Package and Urban Stormwater Program in NSW, the Victorian Stormwater Action Program (VSAP) kick-started Local Government into addressing water quality through stormwater management. VSAP ran from 2000 - 2006 and marshalled \$50 million for projects which assisted Local Government to develop Stormwater Management Plans and funding for implementation. The strategic framework also gave other agencies and organisations access to funding.

Melbourne Water developed its own funding mechanism to ensure the continuation of water quality improvement. Melbourne Water is responsible for providing waterway management, regional drainage and floodplain services to about 1.7 million property owners within the Port Phillip and Westernport region. It currently has an annual waterways charge of between \$85.00 and \$56.00 per property. This money funds: grants for the community to improve their rivers and creeks; river health improvements and investigations; stormwater management and WSUD; urban development planning and approvals to ensure sustainable growth; flood protection and; flood warning systems and drainage maintenance and improvements.³³

South Australia

SA Water collects a *Save the River Murray* levy on behalf of the Department for Water, Land and Biodiversity Conservation. The levy ranges from \$120 per year for non-residential customers to \$35.20 for residential.³⁴ The levy raises an estimated \$18.5 million, indexed per annum that is directed towards restoring the health of the Murray River.³⁵

Queensland

Brisbane City Council charge an Environmental Management and Compliance Levy which raises funds for the protection of waterways from toxins, trash, sediment and effluent discharge and landfill gas control, specifically remediation of former and existing landfills. The amount is calculated using the average rateable value multiplied by the rate in the dollar as determined by the differential general rating category into which the property would fall into for General Rates.³⁶

Tasmania

Hobart City Council charges a Stormwater Service Rate which is based on property values. The Council has a number of projects which have been completed or are underway that have been jointly funded by the Council and the Federal Government's Natural Heritage Trust and National Water Initiative.³⁷

In Perth, a drainage levy is collected by the Water Corporation for water quantity protection works and does not contribute to water quality improvement. This is a missed opportunity, contributing to the decline in waterway health in the Swan Canning river system and leaving a major funding gap for water quality improvement initiatives.

Europe

In the United Kingdom, drainage Boards have been established which are responsible for maintaining and improving land drainage to prevent flooding under the *Land Drainage Act 1991*. To carry out this work, they set drainage rates based on the yearly rental value of agricultural land and buildings in their area. Lindsey Marsh Drainage Board charge a drainage rate at 13.50 pence in the pound.³⁸

Regional water authorities (*Watershappen*) have been established in the Netherlands to undertake water management. Their work includes managing water barriers; protection against flooding through dunes and dikes; water management for quality and quantity; combating water pollution by purifying sewage water and improving surface water quality and the management of waterways and roads. These activities are funded by Regional Water Authority charges and a water pollution levy. Regional Water Authority charges cover the costs of the flood protection and water management, whereas the costs of wastewater treatment are financed by a water pollution levy. The pollution levy is based on the principle that a polluter must pay for the pollution they cause. Every household in the Netherlands pays pollution tax. Companies and organisations pay at a rate determined by the quantity and composition of their wastewater. The revenues from these taxes provided a budget of € 1.9 billion in 2004.³⁹

United States

Most local authorities in the United States charge a water quality fee based on the amount of impervious surface area on each property. Lexington, Kentucky introduced a water quality management fee in 2010 to improve storm and sewer infrastructure management. The fee also provides funding for projects to improve water quality in creeks and streams. The fee is charged through the Kentucky American Water Company.⁴⁰

The City of Chattanooga recently tripled its water quality fee which covers the costs of managing the City Water Quality Program, responsible for reducing stormwater runoff pollutants. The City is required to implement a stormwater management program under legislation enforced by the Tennessee Department of Environment and Conservation. The underlying premise of the charge is that the operation, maintenance, and improvement of the city's stormwater system are borne by the users of the system in relation to their contributions of water quality to the system.⁴¹ Montgomery County, City of Titusville and the City of Greensboro also have a water quality protection charge based on the amount of impervious surface of a property.

Perth

Perth is very similar to other urban cities which feature a major, iconic waterway system. Yet what separates Perth is a sustainable funding mechanism for water quality improvement and as such is lagging behind other Australian capital cities and indeed the rest of the first world in adopting sound environmental/economic practices. Western Australia is neglecting an invaluable and recognised natural asset by not addressing water quality through an adequate and sustainable funding source.

²⁷ ACIL Tasman (2009) *Advice on Water Corporation's Drainage Charges*. Prepared for the Economic Regulation Authority, Perth, WA: ACIL Tasman

²⁸ *Local Government Act 1993* (WA) ²⁹ <http://www.environment.nsw.gov.au/stormwater/usp/index.htm> ³⁰ <http://www.sydneystormwater.com.au> ³¹ <http://www.byron.nsw.gov.au/rates/info>

³² <http://www.marrickville.nsw.gov.au/environment/stormwatercharge.htm> ³³ <http://www.melbournwater.com.au> ³⁴ <http://www.sawater.com.au> ³⁵ <http://www.dwlbc.sa.gov.au/murray/save/index>

³⁶ www.brisbane.qld.gov.au ³⁷ http://www.hobartcity.com.au/content/InternetWebsite/Environment/Stormwater_and_Waterways/Conservation__Stormwater_Quality.aspx

³⁸ <http://www.lmdb.co.uk/drainagerate.html> ³⁹ <http://www.uvw.nl/engels/index.html> ⁴⁰ <http://www.lexingtonky.gov/index.aspx?page=1963> ⁴¹ http://www.chattanooga.com/articles/article_160446.asp

6.0 Appendix

6.4 Marketing and Communications

A Swan Canning Communications Taskforce was created to develop a Communication Strategy to reconnect the Perth community with the river system. This Strategy consists of a 'Discover your Rivers' awareness campaign, utilising local publications to communicate the key messages of the Policy Forum. Highlighting the importance of the river system and educating the community about current and future threats will help build a consensus about how best to improve its health. Communication will also be increased within and among Local Government to maintain support from senior officers and Elected Members.

Communication Strategy

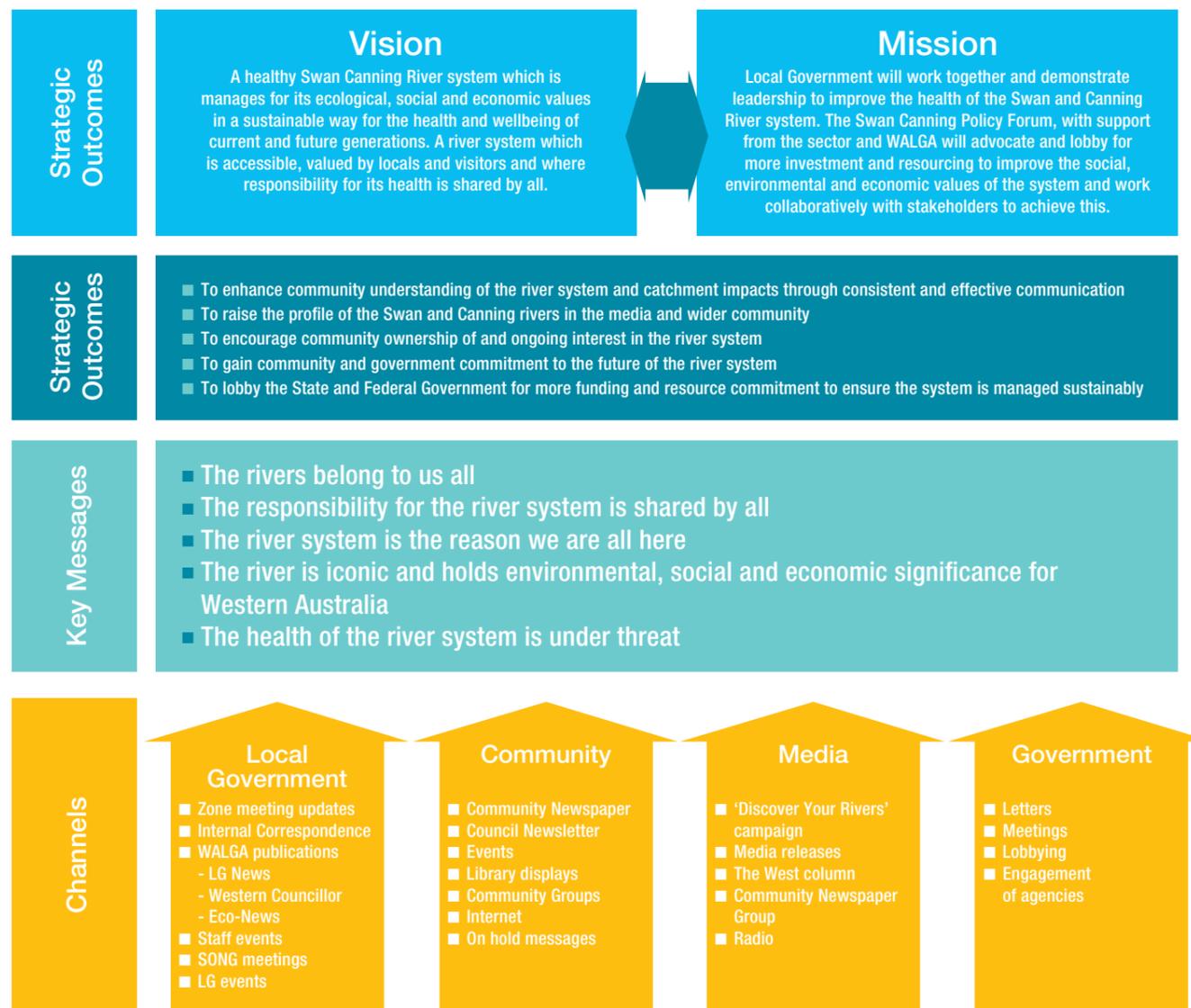


Figure 3: Communication Strategy for the Swan Canning Policy Forum

6.5 Partnership Agreement: Protecting our Swan Canning System

Protecting our Swan Canning System
A Partnership Agreement between the Swan River Trust, the Department of Water, the Water Corporation and WALGA
for urban stormwater management in the Swan Canning catchment.

FOREWORD

i. Background

Water quality in the Swan Canning river system is declining due to a number of pressures in the catchment. Land-use, population increase, urbanisation and uncertainty around the roles and responsibilities for water quality management are all contributing factors impacting the health of the Swan Canning river system. Nutrient loads and pollution which are reaching the system through drainage networks, creeks, groundwater and overland flows are now a serious concern and have culminated in frequent algal blooms as well as fish kills and are likely to have contributed to the death of six dolphins in 2009.

- The Swan Canning Water Quality Improvement Plan revealed that double the acceptable amount of nutrients is currently entering the river system. These are predominantly from rural sources but urban areas are increasingly contributing to the problem.
- In recent years, the Department of Water has undertaken a number of studies to investigate nutrient and non-nutrient contaminant levels in the metropolitan rivers, drains and beaches. All of these studies revealed levels of nutrients and pollutants above recommended levels in at least one study site.

The State Government recognised this serious issue when it approved the Environmental Protection Policy (Swan and Canning Rivers) in 1998. The Government of the day affirmed:

“its commitment to restore, enhance, preserve and protect water quality and the environmental value of the Swan and Canning Rivers and to prevent further pollution and degradation of the Swan and Canning River ecosystem and acknowledges that this cannot be achieved independently of the catchment with which the rivers interact” (*Environmental Protection Policy (Swan and Canning Rivers) Approval order 1998*)

The protection of the environmental quality and the beneficial uses of our water environments, such as those associated with the Swan, Canning and Helena Rivers, will depend upon improved management of urban stormwater. We must reduce the levels of contaminants carried to our creeks, rivers and estuaries. Indeed, with Perth’s population predicted to grow by more than half a million people by 2031, a general and continued deterioration in water quality and aquatic health can be expected unless there are significant efforts made to improve the management of diffuse sources of pollutants.

The Swan River Trust, in consultation with the Department of Water, the Water Corporation and Western Australian Local Government Association (WALGA) and Local Government, has explored various approaches that could be adopted to improve the quality of urban stormwater. The establishment of a cooperative approach was considered essential, and therefore a Partnership Agreement between the Swan River Trust, the Department of Water, the Water Corporation and Western Australian Local Government Association (WALGA) and Local Government, has been prepared. The Agreement covers environmental outcomes for improved urban stormwater management and the means to achieve these, which includes an ongoing ‘partnership’ approach.

ii. Why have a Partnership Agreement?

The purpose of the Agreement is to set out the accountabilities of each of the parties who have a responsibility for stormwater management and engender their commitment to improving the management of urban stormwater quality.

Perth’s traditional urban stormwater systems are no different to those of most cities in the world. They have largely evolved from natural drainage patterns that have been progressively modified to reduce the risk of flooding and to drain land for development. With hindsight, the environmental consequences of urban drainage system development can be recognised, however, our existing drainage system represents a major component of urban infrastructure. Other infrastructure has grown around it and this poses significant restrictions on what can be achieved to implement contemporary urban drainage techniques in existing urban areas. The improved understanding of the environmental implications of urban drainage systems can be more readily applied to new urban developments to avoid similar impacts in the future. Additionally, opportunities to retrofit new treatment technologies into existing urban drainage infrastructure can also help to address the environmental impacts associated with urban stormwater runoff in receiving environments.

This Partnership Agreement puts in place arrangements for opportunistic and strategic improvements to the environmental performance of existing urban stormwater systems and for changing the approach to urban stormwater management in new urban developments.

Individually, SRT, DoW, the Water Corporation and Local Government have specific roles, responsibilities and powers with respect to particular aspects of stormwater management. This Agreement aims to bring these together in a coordinated manner to achieve an outcome that in many ways is greater than the sum of the parts.

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The strength of the partnership, reflected by the Agreement, lies in recognising and applying the complementary roles and powers of the partners in managing urban stormwater as a system rather than as disjointed segments, and working in partnership towards common goals.

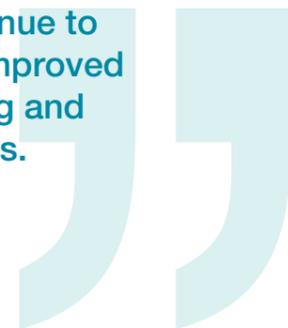
One of the key strengths of this Agreement is that it establishes a common and holistic approach to urban stormwater management across the metropolitan catchments. This creates some logistical challenges for individual municipalities and for areas where there is no regional/arterial drainage authority. These challenges have been addressed by structuring the Agreement as a “global” statement where the WALGA provides generic representation of municipalities within these catchments. Individual municipalities can sign up to become participants to the Agreement at any time, bringing them into partnership with the SRT, the DoW and/or the Water Corporation.

The key to the Agreement is the commitment to action by the participants. These are broadly:

- Working with common, contemporary and agreed principles of urban stormwater management.
- Establishment of performance objectives to guide planning and design of urban stormwater systems.
- Strategic application of the best practice tools, in the context of agreed principles and performance objectives, through urban stormwater management planning.
- Monitoring of best practice environmental management practices for urban stormwater management.
- Review and refinement of financial and administrative arrangements to deliver the required outcomes in the most cost-effective manner.
- Resolving disputes or other problems before they become impediments to improved environmental outcomes.

This Agreement is seen as a part of a dynamic process that will continue to evolve with improved understanding and circumstances. The Agreement represents a key stage in this process. Beyond this, it will be important for the signatories to monitor the application of the Agreement to ensure that it continues to meet the needs of the participants and achieve improved environmental outcomes.

This Agreement is seen as a part of a dynamic process that will continue to evolve with improved understanding and circumstances.



Memorandum of Understanding on the environmental performance of Perth’s urban stormwater systems

“Partnership Agreement”

Definitions and interpretation

The short title for this memorandum of understanding is “Partnership Agreement” or “Stormwater Agreement.”

‘Best practice’ means the most cost-effective means for achieving required environmental outcomes.

‘SRT’ means the Swan River Trust

‘WALGA’ means the Western Australian Local Government Association, an incorporated local government association

‘Water Corporation’ means the water corporation of Western Australia

‘DoW’ means the Department of Water

‘Stormwater system’ means drains and other works for the collection, storage, treatment and transport of rainfall-derived runoff.

Purpose

This Agreement establishes the principles of partnership between the Water Corporation (within its drainage jurisdiction), the Swan River Trust, the Department of Water, the Western Australian Local Government Association and individual municipalities, for:

- establishing environmental performance objectives for urban stormwater systems; and
- achieving inter-agency and inter-governmental cooperation in urban stormwater management within the metropolitan urban catchment areas.

Basis for the Agreement

Historically, Perth’s urban stormwater systems have been developed to protect properties from flooding, to develop land, and to safely convey stormwater runoff downstream. In recent years the community has expressed strong desires for the protection of the environmental quality of urban waterways, estuaries and beaches leading to an additional emphasis on improving stormwater quality. To achieve this, urban stormwater must be managed such that environmental impacts on receiving waters are minimised. For example, improving the environmental performance of urban stormwater systems is a recommendation of the Swan Canning Water Quality Improvement Plan, and has also been identified in the River Protection Strategy. This Agreement provides a robust framework for coordinating urban stormwater management to achieve Swan Canning Water Quality Improvement Plan objectives.

The Swan River Trust, the Department of Water, the Water Corporation and Local Government are key stakeholders who, between them, have the statutory powers to deliver improved environmental outcomes for the management of Perth’s urban stormwater system, and therefore contribute to the high-value receiving environments they discharge into. Responsibility for operational management of Perth’s systems is divided between the Water Corporation and Local Government. While this Agreement applies available powers and resources of existing statutory bodies to improving the environmental performance of urban stormwater, it also recognises that there may be a need for both specific legislative and regulatory instruments and complementary measures to overcome current shortcomings. In such cases, this Agreement provides the foundations for further review of statutory or regulatory arrangements.

The Agreement establishes a partnership between stakeholders in stormwater management to implement the most cost-effective strategies for achieving improved environmental outcomes. Arrangements developed through this Agreement will ensure that investment in stormwater management will be targeted where the best outcomes can be achieved rather than being constrained by jurisdictional boundaries.

Objectives of this Agreement

Through this Agreement the participants wish to establish co-operative arrangements for improving the environmental performance of urban stormwater systems that will:

- i. determine environmental performance goals for urban stormwater systems and the means for achievement of these goals
- ii. clarify the roles and responsibilities of participants in the management and operation of urban stormwater systems
- iii. ensure commitment of participants to actions to fulfil their roles and responsibilities
- iv. establish a process for resolving residual issues of role or responsibility.

Goals

The goals of urban stormwater management agreed by the participants are to:

- i. improve the quality of stormwater from urban areas in accordance with agreed performance goals
- ii. manage stormwater quality on a catchment level through co-operative programs across municipal boundaries
- iii. promote source-control measures to minimise the generation and transport of stormwater pollutants at, or near to, the sources
- iv. improve, protect and maintain in a healthy condition, a diverse range of water environments in the urban landscape
- v. involve local residents and business communities in programs to improve stormwater management and water quality.

Statement of roles and responsibilities

The participants agree that their roles and responsibilities in the management of urban stormwater systems are broadly as follows:

SRT is responsible for the protection of the quality of the Swan and Canning Rivers by application of the statutory powers of the *Swan and Canning Rivers Management Act 2006*.

Swan River Trust

- establishes environmental objectives for the Swan Canning systems through the *Swan and Canning Rivers Management Act 2006* and associated policies,
- develops environmental performance objectives for stormwater management,
- acts as a key agent in the coordination of initiatives to improve urban stormwater management to achieve the objectives of the Swan Canning Water Quality Improvement Plan,
- ensures that environmental quality is monitored and assessed to identify responses to changes in the management of the catchment and stormwater system.

The Department of Water

- facilitates the implementation of a consistent strategic direction for stormwater management at a statewide level,
- facilitates the achievement of goals using regulatory and non-regulatory (eg best practice, public education and awareness campaigns) means and enforcement where necessary,
- facilitates the development of tools, such as best practice environmental management guidelines, to assist in the achievement of environmental objectives through the control of sources of pollution,
- develops strategies for stormwater management in conjunction with local government in developing areas,
- identifies best practice and sets standards and targets for stormwater management at a state-wide level,

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- participates in, and supports the development of, stormwater management plans by local government,
- provides overall direction and strategy for stormwater management in Western Australia,
- monitors and reports on the state of water environments,
- supports research to identify best practice, develop new technology, evaluate performance and assist management decision making,
- will assist municipalities to establish best practice stormwater management,
- provides floodplain management, flood protection and flood warning services to the people of Perth.

Water Corporation

- responsible for the management of the regional/arterial drainage network (main drains as defined in section 100 of the Metropolitan Water Authority Act 1982) within its drainage jurisdiction,
- designs, constructs and maintains regional/arterial stormwater systems,
- has a shared responsibility with Local Government for stormwater management.

Local Government

- has a shared responsibility with Water Corporation (within its drainage jurisdiction), and sole responsibility outside this jurisdiction, for stormwater management within municipalities,
- participates in urban stormwater policy development and practice with Department of Water and the Swan River Trust,
- leads the development and implementation of local stormwater management plans within the regional context established in co-operation with the Department of Water and the Swan River Trust
- undertakes local urban drainage works in accordance with agreed best practice standards and guidelines developed by Department of Water, Swan River Trust, Water Corporation and Local Government,

- incorporates best practice guidelines in local planning policies,
- undertakes community awareness and participation activities to encourage adoption of best practice by individuals and businesses.

Participation to this Agreement by individual municipalities

Individual municipalities may become participants to this Agreement by completing the declaration set out in Schedule 1. Participating municipalities are listed in Schedule 2 of this Agreement.

Participants to this Agreement are expected to commence implementation of this Agreement, as far as their responsibilities go. If a participant considers its ability to fulfil its obligations under this Agreement is jeopardised by the inaction of another participant, it may seek a determination to address this situation by the process outlined in **Dispute Resolution** below.

Actions agreed by the participants

Principles

- All participants agree to cooperate and work in partnership with other participants in the implementation of this Agreement.
- All participants agree to manage stormwater on a catchment basis by engaging relevant stakeholders (eg adjoining municipalities where stormwater systems transcend municipal boundaries).

Performance Objectives

- DoW will, in partnership with other participants in this Agreement, establish environmental performance objectives for urban stormwater management and aquatic environments (receiving waters) to guide the planning and design of stormwater systems.
- As a key agent for urban stormwater management, SRT will, in partnership with other participants to this Agreement, facilitate development of performance objectives including the achievement of the Swan Canning Water Quality Improvement Plan goals.

Stormwater Manual

- DoW, Water Corporation and local government will continue to document best practices for stormwater quality management and provide guidance for the adoption of these practices by municipalities and other stakeholders to ensure continuous improvement.
- SRT and DoW will recognise adoption of best practice through appropriate environmental management systems as a benchmark of acceptable environmental performance.
- Water Corporation and participating municipalities will incorporate best practice, as defined by the Stormwater Manual, into drainage strategies, operational practices and procedures and statutory instruments (eg municipal strategic statements, local laws, planning and building permit conditions, etc).

Stormwater Management Planning

- Participating municipalities will complete a Stormwater Management Plan, in consultation with Water Corporation, SRT and DoW, for their urban stormwater catchments. Stormwater management plans may review existing drainage systems and their management to identify and prioritise:
 - sources of pollution;
 - opportunities to prevent pollution from these sources;
 - opportunities for inclusion of stormwater treatment measures in existing drainage systems; and
 - strategic planning of future urban development and drainage requirements to minimise adverse environmental impacts;

- Participants agree to engage the community in the development and implementation of stormwater management plans to:
 - develop broad understanding of issues;
 - gain support for investment in measures to improve environmental performance; and
 - encourage individuals to adopt best practice in actions that affect stormwater quality.

Financial and administrative arrangements

- Participants agree to explore financial strategies for ensuring cost-effective approaches to improving stormwater quality.
- State Government, through the DoW and the SRT will provide financial incentives for participating municipalities to assist in the development of stormwater management plans.
- DoW, Water Corporation and the SRT and participating municipalities will seek the most cost-effective means of achieving environmental performance goals for urban stormwater management. These will be established through Stormwater Management Plans and may include:
 - transfer by contract of operational responsibility of some drainage assets between Water Corporation and participating municipalities, and;
 - strategic positioning of stormwater treatment measures within drainage systems, with costs apportioned by criteria other than location within the drainage system (ie location in regard to drain asset ownership does not confer responsibility for stormwater treatment measures).
- Participants agree to investigate and pursue funding assistance options that may be available from time to time to assist in improving stormwater quality.

- Participants agree to monitor and review legislation and statutory provisions, as required, ensuring arrangements are appropriate for achieving the goals of this Agreement.

Dispute resolution

- In the event that a dispute arises between the participants as to the responsibility for particular actions that may affect the environmental performance of a stormwater system, DoW will convene a panel comprising a nominated representative of SRT, Water Corporation, DoW and WALGA, to review submissions from the aggrieved participants and recommend an outcome consistent with the goals and objectives of this Agreement.
- In the event of the panel being unable to resolve the dispute, the panel may recommend that the participation in the Agreement of either or both parties be suspended in whole or part.

Savings

- Nothing in this Agreement shall derogate from SRT's responsibilities under the Swan and Canning Rivers Management Act 2006.
- Nothing in this Agreement shall derogate from Local Government's responsibilities under the Local Government Act 1995.
- Nothing in this Agreement shall derogate from Water Corporation's obligations under the Metropolitan Water Supply, Sewerage and Drainage Act 1909 or the Metropolitan Water Authority Act 1982.

Monitoring reporting and review of this Agreement

Participants to this Agreement will monitor their activities with regard to this Agreement. Performance measures of this Agreement may include, but are not limited to:

- Environmental quality of urban stormwater water and receiving waters.
- Implementation of commitments contained within this Agreement.
- Implementation of activities established as a consequence of this Agreement.

Participants will report the outcomes of this monitoring through their organisation's annual reports.

This Agreement will be reviewed within three years following the commencement of the Agreement. A consolidated report of performance will be published as part of this review.

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6.6 Local Government Charter for the Swan and Canning river system

DISCOVER YOUR RIVERS
Swan Canning Policy Forum

Local Government Charter for the Swan and Canning river system

VISION
A healthy Swan Canning river system which is managed for its ecological, social and economic values in a sustainable way for the wellbeing of current and future generations. A river system which is accessible, valued by West Australians and visitors and where responsibility for its health is shared by all.

OBJECTIVES

1. To work collaboratively with river catchment Local Governments, communities and other stakeholders to protect and enhance the health of the Swan Canning river system
2. To enhance community understanding of the river system and catchment impacts through consistent and effective communication
3. To advocate to the State and Federal Governments to recognise the significance of the river system by means of increased and ongoing investment
4. To raise the profile of the Swan and Canning rivers in the media and wider community

This Charter for the Swan and Canning river system will be reviewed regularly to ensure it reflects new issues, developments and opportunities for Perth's waterways.

6.7 Model Nutrient Offset Scheme for the MRS

A nutrient offset scheme is seen as an important market-based instrument to ensure that future urban development does not adversely impact upon receiving environments. A proposed model detailed below is based on the scheme developed in Victoria. Many of the principles within the Swan River Trust's (SRT) draft Nutrient Offset Policy are supported in this model.

The objective of this proposed Nutrient Offset Scheme expands on the SRT's draft voluntary policy, which is to "enable development and land-use changes to occur in the Swan Canning Catchment without causing deterioration in the ecological health and community benefit of the Swan Canning Riverpark due to nutrient inputs."⁴²

The objective of this model Nutrient Offset Scheme is:

- to ensure that development and land-use changes in the Metropolitan Regional Scheme area do not contribute to the deterioration of the ecological, social and economic values of receiving environments, and;
- to encourage the integration of water sensitive urban design into urban landscapes for improved water management, ecological, amenity and community benefit outcomes.

The key components of this model Swan Canning Nutrient Offsets Scheme would be that:

1. The scheme is **compulsory**
2. **Water quality targets** are established, based on rigorous science specific to the Swan Canning
3. The scheme is **enforced under state legislation** through *State Planning Policy 2.9 Water Resources* (2006) or other legislative mechanisms
4. **Financial offsets** are provided where targets cannot be met on site
5. The **Department of Water** administer and oversee the scheme

6. **Nutrient offset opportunities** (sites) are identified through Urban Stormwater Management Plans and District Water Management Strategies
7. Offsets are provided as a **last resort** and contributions consider **whole-of-life** needs of offset sites.

1. To be effective, this scheme must be compulsory.

That way all new development and redevelopment is managed to ensure it does not contribute to water quality decline in the catchment. A compulsory scheme will elevate urban development in Perth to become more innovative and to deliver better environmental and community outcomes.

2. As a first step, water quality targets will need to be established.

These will be based on rigorous, locally-based scientific research. In Victoria, these are detailed in *Urban Stormwater: Best Practice Environmental Management Guidelines*.

The objectives for environmental management of stormwater in Victoria are:

Suspended solids (SS)	80% retention of the typical urban annual load
Total phosphorus (TP)	45% retention of the typical urban annual load
Total nitrogen (TN)	45% retention of the typical urban annual load
Litter	70% retention of typical urban annual load
Flows	Maintain discharges for the 1.5 year ARI at pre-development levels

These guidelines were developed by the Environmental Protection Authority (EPA), Department of Natural Resources and Environment, Melbourne Water, Municipal Association of Victoria and Local Government and were the product of considerable research and technical review of a range of urban stormwater management issues and measures.⁴³

Similar objectives would need to be developed in Perth, specific to the local soil, climate and hydrological conditions.

3. The Victorian objectives for environmental management of stormwater are enforced under state legislation.

They were developed to determine the level of stormwater management necessary to meet the *State Environmental Protection Policy (SEPP) – Waters of Victoria* objectives. SEPP Waters of Victoria is a statutory policy under section 16 of the *Environment Protection Act* (1970), which identifies the beneficial uses of Victoria's waterways. These objectives are therefore enforced through the Victorian Planning System.

"The SEPP sets out a series of environmental quality objectives and indicators to measure whether beneficial uses are being protected. It is recognised that some objectives will take longer to meet than others. In these cases, the SEPP provides a framework to develop targets that will help to drive environmental improvement so that we can ultimately meet the objective. It is important that the SEPP includes both objectives (i.e. the goal posts) and targets (i.e. interim milestones) to both provide the ultimate objective and to encourage and drive continuous improvement, towards that objective."⁴⁴

⁴² Swan River Trust 2010, Draft Policy SRT/D20 Nutrient Offset Policy for the Swan Canning Catchment, Swan River Trust, Perth. Retrieved 22/03/11 from http://www.swanrivertrust.wa.gov.au/planning/policies/Documents/srt_d20_nutrient_offset.pdf ⁴³ http://www.epa.vic.gov.au/water/stormwater/stormwater_BEPMG.asp ⁴⁴ EPA Victoria, 2003. State Environment Protection Policy. Retrieved 21/03/11 from [http://epanote2.epa.vic.gov.au/EPA/Publications.nsf/2f1c2625731746aa4a256ce90001cbb5/f788251d888479b7ca256d9400213c26/\\$FILE/905.pdf](http://epanote2.epa.vic.gov.au/EPA/Publications.nsf/2f1c2625731746aa4a256ce90001cbb5/f788251d888479b7ca256d9400213c26/$FILE/905.pdf) ⁴⁵ Melbourne Water, Stormwater Quality Offsets – A Guide for Developers. Retrieved 21/03/11, from http://www.melbournewater.com.au/content/library/wsud/stormwater_quality_offset_scheme.pdf

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4. Where these targets cannot be met onsite, financial offsets are paid to the catchment manager so the targets can be achieved elsewhere in the catchment.

In the Port Phillip and Western Port catchments, Melbourne Water manages a *Stormwater Quality Offsets Program* where financial contributions are provided for regional water quality works.

“Offsets provide flexibility for developers where best practice performance objectives cannot be achieved on-site, or where water quality works are planned as part of a drainage scheme.”⁴⁵

Stormwater quality offsets are calculated on a sliding scale according to the percentage of best practice that is achieved on the site. Nitrogen is the currency for the contribution as it is typically the limiting pollutant in the Port Phillip and Westport catchments. The offsets are based on the costs of remediating nutrients (nitrogen) through the establishment of nutrient stripping wetlands. Calculations depend on a number of factors including density, total size of development and lot size.

A standard contribution rate is calculated based on rainfall and is expressed in \$/ha. Each area within the catchments has its own standard contribution rate. A simple example taken from the *Stormwater Quality Offsets – a Guide for Developers* is detailed below:

Standard contribution rate (ie for lots from 450m² but less than 1000m²) = \$3000/ha

Development density factor = standard residential = 1.0

Development size = 1 ha

Percentage of nitrogen reduction achieved onsite = 36% (80% of target)

Offset contribution = \$3000/ha x 1ha (development size) x 1.0 (development density factor) x 20% (shortfall in best practice)

Amount payable = \$600

In the Swan Canning it would be more appropriate to use phosphorous as the currency when calculating financial contributions.

This model supports a financial contribution from developers where targets cannot be met, rather than requiring the developer to partner with land managers to create offset sites. This way, a central agency can make determinations about where those contributions should be invested for the best water quality and value for money outcome.

5. This model proposes that the Department of Water administers the scheme.

In the absence of a single water service provider who has responsibility for waterway and catchment management in Perth, the **Department of Water** is best placed to administer the scheme and essentially be the ‘banker’ for financial contributions. The Department would work in closely with land managers and water service providers to develop nutrient offset sites.

Funds received through the scheme would be quarantined for the purposes of nutrient offsets only which would then be given to land managers or drainage service providers to undertake remediation works.

6. An important component of the scheme would be the identification of suitable nutrient offset opportunities within the catchment.

These should be identified at a local scale through Local Government and Water Corporation Stormwater Management Plans and District Water Management Strategies. An action required at the district planning stage is to ‘Define catchment objectives and design objectives for water quality, quantity and conservation for local planning and subdivision.’⁴⁶ This could, by definition, include identification of potential nutrient offset sites.

7. Nutrient offsets would be available as a last resort option only to ensure that nutrients are managed on-site where possible and that urban landscapes adequately integrate water management and water sensitive urban design principles.

A sliding scale of where offsets could be located is provided below:

Option	Scale	Responsibility	Considerations
1	Development/ Subdivision	Developer	Targets must be met on-site where possible
2	District	DoW/ land managers	To be considered as a first option when targets cannot be met in development – financial contribution triggered
3	Regional	DoW/ land managers	To be considered when targets are not met at development or district scale – financial contribution triggered

Calculations of financial offset contributions and site selection would need to consider **whole-of-life** needs for the site from construction to ongoing maintenance requirements. Offsets should be located in areas which have a security of land-use, tenure and a commitment to maintenance. The Department of Water would oversee the program and enter into partnership with land managers to create and maintain sites in perpetuity.

The development of a nutrient offset scheme for the Swan Canning would require collaboration among a number of key stakeholders. The need for rigorous research around water quality guidelines and targets has been identified as an essential first step in this process. This model has been used as an example to demonstrate how a nutrient offset scheme could be developed for the Swan Canning, and the essential components that would make it effective in improving water quality and ecological health of high-value receiving environments.



⁴⁶ Western Australian Planning Commission 2008, Better Urban Water Management, Western Australia Planning Commission, Perth.



Local Government has identified the need for a strategic, integrated approach to statutory investment, operations and community engagement in the catchment.



WALGA

Local Government House
15 Altona Street, West Perth WA 6005
PO Box 1544, West Perth WA 6872
Tel (08) 9213 2000 **Fax** (08) 9322 2611
Email info@walga.asn.au
www.walga.asn.au