

# The Avon: A “Back to Front River”

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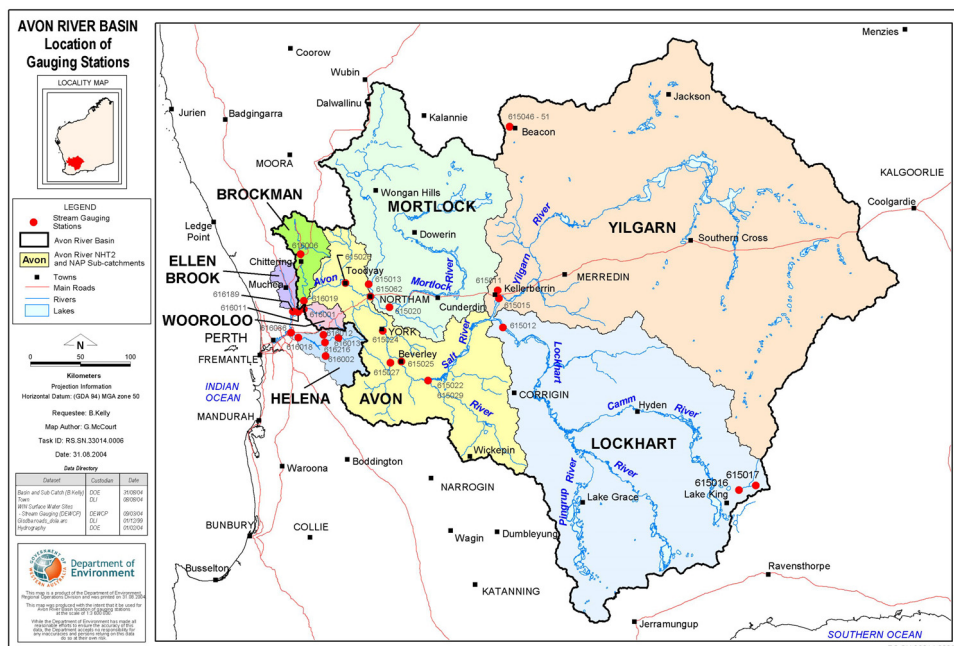
## Summary

The Avon River in the southwest of Western Australia is a large catchment of 120,000sq km<sup>2</sup>. The river is different to most rivers in the fact its source is large flat valleys in an ancient drainage system before it moves through a rejuvenated landscape and eventually reaches its estuary. Community involvement has been a major driver in any restorative processes that have taken place over the last 20+ years from the Avon River Systems Management Committee to the Avon Catchment Council of today. This paper deals with one aspect of the work carried out in the catchment in relation to the Avon River and its tributaries. It also talks about the role the community takes in prioritising and managing the future directions of that work through the Avon Catchment Council.

## Situation

The Avon is by definition one of South West Australia’s major rivers. Its name is a historical misnomer as the Swan River was already a named river prior to the discovery of the Avon by Ensign Dale in 1830, so we now have two rivers that in essence are the same. Today the Avon River is recognised as an inland river from the source of the main channel in the Shire of Wickepin (Harris 1996) to it’s confluence with Wooroloo Brook in Walyunga National Park. From this point, it is known as the Swan River as it continues to flow through the Swan coastal plain, into the City of Perth estuary and on to Fremantle where it discharges into the Indian Ocean. The Avon River is some 269 kilometres in length (Harris 1996) and starts in the broad valleys of the flat ancient landscape of the eastern wheatbelt.

The Avon River basin differs to those in other countries. The outer areas of the catchment have low rainfall and low landscape gradient. Both rainfall and gradient increase downstream. Most rivers start in mountain or hills with high rainfall, and discharge to a drier, coastal area, low gradient floodplain or delta. Hence the “Back-to-Front” title of this paper.



The Avon Catchment covers more than some 120,000 km<sup>2</sup> which is larger than the area of Tasmania. The greater catchment is divided into four main sub-catchments (figure 1) - the Avon (15,540 km<sup>2</sup>), the Mortlock (16,770 km<sup>2</sup>), the Yilgarn (55,920 km<sup>2</sup>) and the Lockhart (32,380 km<sup>2</sup>). The catchment has an annual rainfall ranging from 800mm in the western side to 300mm in the eastern extremes (Harris 1996).

Following major flooding from a cyclonic front in early 1955, many of the major towns along the Avon River suffered severe flooding. This led to the adoption by the Avon Valley Zone Development Council of a recommendation to “train” the river under the publicly-funded River Training Scheme” (RTS) (Garden 1992). This resulted in commencing a process to alleviate a perceived flood risk by straightening the river, removing all the vegetation and braided channels of the natural river system, and deepening of the channel. This process continued until the early 1970’s leaving a river devoid of any natural processes with much of its channel vegetation and natural meanders gone. This subsequently led to the infilling of the pools which prior to, and following colonisation, were major cultural and important spiritual areas for the Avon communities. The success of the scheme in ameliorating townsite flooding is unresolved. No floods of more than a 50-year magnitude have occurred since the works were completed. This may be because rainfall has generally been lower than average over this period.

#### History of Community involvement

The community partnerships established in 1995 have continued to be the major driver for the planning and action that has taken place over the past 11 years. It had its genesis in the community-based Avon River Management Authority (ARMA) which was formed in December 1992 as a statutory committee established by people from within the Avon community worried about the declining health of the Avon waterways. In 1984, representatives from a group of concerned Local Governments along the river and in the wider catchment got together amid concerns from the community on the state of the river following the completion of the RTS a decade earlier (ARSMC/Waterways Commission 1993). They formed a community committee based on local governments from the catchment to lobby for action on the river. The pressure exerted by this group and the Waterways Commission resulted in the formation of ARMA. The partnership continued with the Waterways Commission and later the Water and Rivers Commission to promote community leadership and involvement in all levels of waterways management.

This partnership proved to be dynamic under the leadership of Viv Read the Waterways Commission Regional Manager at the time. Information was sought, communities engaged in various ways to promote waterways processes, and on-ground actions were implemented. One of the results was the formation of the Swan Avon Integrated Catchment Management Group, the forerunner of the Avon Catchment Council (which is dealt with later in the paper). It was realised at an early stage that without community ownership of the projects and implementation plans, success would be very limited and short lived. In the preparation of all funding applications, River Recovery Plans and Foreshore and Channel Assessments, it has always been the community that has been the driver. In the case of River Recovery Plans (RRP) it has been the local community that has managed the proposed outcomes of their hopes and aspirations for a rejuvenated river. In forming a committee to manage the RRP process we have managed to not only to engage the community in a positive way but also the ownership of the outcomes are also theirs. This has led to projects like the Avon River Fencing Project supplying over 400km of fencing to fence the main channel of the river and its tributaries. This has been added to by landholder’s applications for funding to fence waterways as part of separate projects to manage ecosystems on their properties, in consultation with Landcare Coordinators

and Rivercare Officers. With this added component, we can easily estimate that over 600 km of Avon waterways have been fenced in total.

The results of these partnerships between the Avon community, Local, State and Federal Governments are shown below. They are the results of a lot of hard work both in planning and on ground actions.

### The Avon Rivercare Project

The Avon Rivercare Project started as a community based consultation process in 1995/6 involving Local Governments along the rivers who were asked to prioritize their actions for waterways management in their Shire. The result of this initial consultation was the formulation of an application for funding to Natural Heritage Trust. The original projects were:

1. Channel and Foreshore Survey of the main channel of the Avon River from Avon Valley National Park to the confluence with Yenyening Lakes (191 km),
2. Study of Major Pools of the Avon River,
3. Avon Community Water Quality Programme,
4. Avon Arc Land Suitability Project,

These projects gave us a solid foundation to the role the community plays in waterways management in the Avon River Basin.

1. Channel and Foreshore Survey of the main channel of the Avon River from Avon Valley National Park to the confluence with Yenyening Lakes (191 km),

This project has given us the base data needed on which to progress and to relate back the work we have initiated and completed over the past 10 years. It involved the collection of data describing the condition of riparian vegetation and regeneration, channel condition, fencing status, stock access, sediment slugs, weeds and any other interesting management problems e.g. rubbish etc (Avon River Survey Vol. 1, 2, 3, 4, Ecoscape and Jim Davies & Assoc, 1996)

2. Study of Major River Pools,

The Avon has 26 major pools and a myriad of minor ones. As mentioned earlier, these pools played a major role in both Aboriginal and European cultural history. It was therefore very important to the Avon community to try and return these pools to their pre-1957 condition, when the RTS began. This report revealed the stark facts that out of the 26; all but 4 of these pools were either full or nearly full of sediment. As well as these pools on the brink of disappearing, the number of unconsolidated sediment slugs still in the channel meant that work needed to be done on stabilising these slugs before any work could commence on the pools (Avon River Survey Vol. 5, Avon River Pools Survey, Jim Davies & Associates and Ecoscape 1997)

3. Avon Water Community Quality Monitoring Project,

This project involved the establishment of water monitoring sites in 12 sub-catchments of the Avon River Basin. All sites were located in the higher rainfall Avon/Mortlock sub-catchments. This ensured regular rainfall events which produced the streamflow to assess the salinity, pH, and Nitrogen and Phosphorus exports from the catchments. The community component of the project also gave us an opportunity to assess the capacity of community groups to conduct sampling and measurement as and when rainfall events happened. In the end, the conclusion was very mixed with some groups working well and others unable to participate due to lack of involvement, or in some cases lack of rainfall. As the samples in the case of Salinity and pH were measured in-situ and further samples taken and frozen and tested again in the laboratory, it gave us the opportunity to have some QA on the results. Some of the groups who were active

continued monitoring long after the initial project finished. In these cases it was mainly due to a motivated landholder or a Community Landcare Coordinator.

#### 4. Avon Land Suitability Project

This involved the assessment of land in the Avon Arc (the shires on the eastern side of the Darling Range and closest to Perth) for the suitability for development. The project was brought about by the pressure exerted by the urban spread and the demand for life style blocks and associated needs for rural employment and infrastructure development. The project collected good data sets but failed to deliver on the original brief and recommendations of the first stakeholder meeting.

#### Other Projects 1995/6

Other projects that identified the way the community could be involved progressed with Western Australia's push for waterways management with the "Million Dollars Package for Waterways" Management" in 1995/6. This resulted in the initiation of the Avon and Moore River Fencing Projects. This project became the forerunner of the Avon River Fencing project which has become our flagship project over the past 11 years.

The development of a "Principles of River Management" by Jim Masters (AO) was a publication by a local landholder who had observed and studied the river since the early 1920's. The five principles discussed in the publication gave others a local view on river management through his experiences on the Avon River (The Principles of River Management ARMA 1996)

The development of the first Yenyening Lakes Management Strategy (YLMG 1996) was the result of community conflict in regard to sustaining high levels of saline water in the lakes for water skiing by means of surface water control gates. The result of this in the eyes of some landholders further up the catchment was inundation of the lakeside paddocks and a rise in hypersaline groundwater.

The Burlong Pool Sediment Management Plan was produced in 1996 to gauge the effects of using the pool as a sediment trap by removing larger amounts than had been done in the past. Prior to the plan, approximately 10,000 cubic metres were being removed in an ad-hoc manner per annum. It was the opinion at the time that the removal of large amounts of coarse sediments at Burlong could reduce the amounts overflowing into Northam Town Pool some 2km downstream.

#### Avon Rivercare Project "On with the Job"

While all these projects were continuing it was essential to ensure a continuation of the community momentum that was driving these projects. An application was put together with the help of community groups and local Government supported by the Water and Rivers Commission. "Avon Rivercare Program "Avon River - On with the Job" (WRC 1997) was an ambitious program of a suite of projects over a three year period to take us up to the new millennium. These projects were endorsed by Local Government in consultation by Ms Judi Moylan, Federal member for Pearce which resulted in the chair of ARMA going to Canberra to brief the Federal Minister for the Environment Senator Robert Hill.

The projects that were submitted for funding to the Natural Heritage Trust in 1997 are listed below, along with a summary of the outcomes achieved.

#### Project 1 Management of the Avon Riverine Environment

##### Component 1 "Avon River Riparian Zone Rehabilitation"

- This comprised of 155km of river fencing offset by landholders erecting and maintaining the fence,
- Revegetation and regeneration of fenced areas by Revegetation Officer.
- Establishment of a riparian plant herbarium collection for the Avon River Basin as both specimens and electronic data
- Construction of demonstration waterway “riffles” for sediment control at Burlong Pool, Gwambygine, Bolgart, York, Toodyay and Beverley
- Monitoring and evaluation

#### Component 2 *“Rehabilitation of Natural Avon River Pools”*

This involved the preparation of Sediment Management Plans for 4 major River Pools

- Katrine Pool
- Boyagarra Pool
- Northam Town Pool
- Beverley Town Pool

Management Plans for 2 Major Pools

- Gwambygine Pool and Boyagarra Pool

Ongoing monitoring and evaluation on sediment inflows

This project also involved the removal of approximately 71,600 cubic metres of sediments from

- Boyagarra Pool
- Gwambygine Pool
- Railway Pool
- Katrine Pool
- Northam Town Pool
- Balladong Pool
- Beverley Town Pool

#### Component 3 *“Management Surveys of Major Tributaries”*

This was to conduct Foreshore and Channel surveys of the tributaries including management options. Surveys have been completed for:

- Toodyay Brook, approx 45km long (WRC,WRM 22)
- Mackie River, approx 46m long (WRC,WRM 26)
- Spencers Brook, approx 29km long (WRC,WRM 28)
- Talbot Brook, approx 35km long (WRC WRM29)
- Magnolia Creek, approx 10km long (WRC WRM 38)
- Mortlock River North, approx 76km (WRC WRM 39)
- Mortlock River East, approx 82 km (WRC WRM 41)

#### Component 4 *“River and Associated Towns Salinity Risk Survey”*

This was to include airborne surveys and ground based assessments to accurately determine the rise of salinity by rising groundwater. The project was overtaken by other projects in particular the “Rural Towns Project” and “Liquid Assets” with Department of Agriculture and Food WA. The money was returned to NHT.

## Component 5 “River Section Management”

The primary output from this project was the production of “River Recovery Plans” (RRP). The Avon River was divided into 19 management sections, this allowed local landholders to focus on the river closest to their properties. These section plans each started with the establishment of a group of landholders with properties in the section and other interested people to form the group to drive the planning over a period of 6 to 12 weeks along with the consultant. The planning included river walks and one on one interviews with landholders. The resulting publication was reviewed by the group prior to publication and alterations negotiated with the project team. The results gave us an action plan for future work by either the community or government. The results of this project also tied in with other projects mentioned above e.g.: fencing, revegetation and sediment management.

- Section 1 & 2 “Avon Gorge ‘ and “Deepdale (WRC, RRP7)
- Section 3 Toodyay Townsite (WRC, RRP1)
- Section 4 & 5 Northam to Toodyay (WRC,RRP8)
- Section 6 Northam Townsite (WRC,RRP2)
- Section 7,8 & 9 Mile Pool to Spencers Brook (WRC,RRP9)
- Section 10 York Townsite (WRC,RRP3)
- Section 11 & 12 Gwambygine to Edwards Crossing (WRC,RRP6)
- Section 13, Beverley Townsite to Edwards Crossing (WRC,RRP4)
- Section 14 ,15,16 Beverley to Qualandary Crossing (WRC, RRP5)
- Section 17 Yenyening Lakes Management Strategy 2002-2012 (WRC, WRM32)
- Section 18 Avon River South Branch (unpublished)

## Component 6 “Communication Strategy for the Avon River and Associated Land Management”

It was considered a strategy specifically designed to set out actions of how to enthuse and engage the Avon community would add value to the work being undertaken. This also gave guidance to how the extension of the results of the projects could take place. The output was the Communication Strategy and 8 Rivercare workshops to expose the community to waterways management techniques including how implement them.

- Avon River Communication Strategy ( WRC, WRM3)

Following the completion of this project and the delays in the implementation of NHT 2, further projects were entered into to enable community momentum to be sustained. This involved applying for interim funding for two projects - Priority Projects, and an extension to the “Avon Rivercare- On with the Job” project. This enabled us to continue with all the previous projects and achieve completion of a lot of the work we started. During this time we produced River Recovery Plans for:

- Dale River (including Foreshore and Channel Assessment) (DoE,RRP10)
- Section 19 Aldersyde to Kweda(including Foreshore and Channel Assessment)(DoW, RRP11)
- Section 20 Yealering Lakes (DoW, RRP 12)

Foreshore and Channel Assessments for:

- Mortlock River and Mortlock River South, approx 75km (DoE, WRM 42)

Plant Identification Book:

This book was the result of the electronic herbarium collection and the opportunity to give access of the herbarium to the wider community. The book was produced in an A5 ring binder of a 59 plants on plastic coated pages. This book is on a cost recovery basis and NHT funded the distribution of the book to 80 Avon community organisations and individuals.

- Riparian Plants of the Avon Catchment (DoE 2004)

Other works to have taken place include the removal of 2000 cubic metres of sediments from Long Pool.

The above projects demonstrate the opportunities the Avon community have developed for themselves in the management of the waterways of the Avon River Basin and the actions they have taken.

Avon Catchment Council

Originally formed in 1994, the Swan Integrated Catchment Management Group, as the Avon Catchment Council (ACC) was known at the time, was developed to encourage and coordinate local community rivercare and landcare efforts in the Avon and Swan Regions (Avon Catchment Council, 2005). The formation of this group was the first step in recognizing that these rivers were in fact the same and management of one required the management of the other. In 1996 the Avon Working Group (AWG) evolved through a process driven by community and government to guide the beginnings of integrated catchment management in the Avon. Under the umbrella of the AWG, the Avon Catchment Network was officially launched in 1997 and aimed to provide the Avon Community with a one-stop shop to access information on managing land and water resources. In early 2001 the AWG took an increased management role rather than just developing concepts and strategies and became the Avon Catchment Council.

Today, the ACC envisages that the future will be *“to enjoy a socially, environmentally and economically sustainable rural lifestyle within a healthy and beautiful landscape, including land, water, biodiversity and built infrastructure, which is characterised by innovation, co-operation, the use of local wisdom and skills, strong social engagement and democratic processes, and a willingness to share our rural culture with others both inside and outside the region in a manner that contributes to global sustainability and celebrates our “sense of place” within our unique landscape.”* (Avon Catchment Council, 2005).

Natural Resource Management Regional Body

The Avon is one of 56 Natural Resource Management (NRM) Regions found throughout Australia. Of these, 6 are located in Western Australia, with the Avon Region being the second largest covering an area of 120,000km<sup>2</sup>, bigger than the size of Tasmania, with a population of approximately 46,000.

Managing natural resources in the Avon is very important to many individuals and organisations representing a range of social, economic and environment values to protect assets with local, national and international significance. The key role of the Avon Catchment Council is to coordinate these interests for NRM within the Region. This role is recognised and supported through Bilateral Agreements between the Commonwealth of Australia and the State of Western Australia to deliver the Extension to the Natural Heritage Trust (NHT2) and the National Action Plan for Salinity and Water Quality (NAPSWQ) investment initiatives (Avon Catchment Council, 2005).

## NRM Strategy

The Australian Government has been working in cooperation with State and Territory Governments to help regions across Australia develop Natural Resource Management Strategies. Such strategies have been formulated using the best scientific knowledge available to deliver regional NRM outcomes and are supported by local communities.

The Avon NRM Strategy provides a strategic context for investment in the natural resources of the Avon River Basin. The intentions of the Avon NRM Strategy are ambitious; they set targets for the condition of natural resources that are acceptable at national, state, regional and local scales (Avon Catchment Council, 2005). The Strategy also provides a blueprint for partnership arrangements between communities and government, between government agencies and with many others. It also provides a framework for integrated management at a landscape scale. The Avon NRM Strategy has been prepared with leadership from the ACC and with extensive consultation through community processes and with partner organisations (Avon Catchment Council, 2005). Development of the regional strategy is considered to be an on-going process as resources management information is developed. This 'living document' is focused on regional outcomes 50 years into the future, and uses medium targets set for 20 years (Resource Condition Targets(RCT's) and provides direction for management action (Management Action Targets(MAT's) over 5 year periods (Avon Catchment Council, 2005).

## Avon Investment Plan

The Avon Investment Plan (AIP) identifies investment opportunities for the Avon Region from prioritisation of targets in the Regional Strategy and was developed in consultation with the Avon community, government agencies, non-government agencies and other key stakeholders. The plan targeted investment for the 2005 – 2006 period from NHT and NAPSWQ funding totalling \$13.79 million. The large volume of RCT's and 'MAT's in the Strategy and the limited funding available meant that a detailed prioritisation process of targets was required. This enabled a realistic and achievable Investment Plan to be developed (Avon Catchment Council, 2005).

Three Delivery Programs were identified within the AIP to streamline investment delivery; Integrated Water Management, Sustainable Industries and Natural Diversity. From these, 15 projects have been developed and are based around the prioritised Resource Condition Targets and Management Action Targets.

These projects are all currently being delivered across the Avon region.

AIP2 has recently been developed and is in the process of attaining ministerial endorsement. This document identifies opportunities for 2006 – 2008 investment. A review of the first investment plan has been undertaken and areas that were inadequately addressed in AIP1 have been identified. One such area was Indigenous engagement.



Investment for 06-08 will be delivered through a series of projects under four Delivery Programs, with a Stakeholder Engagement and Partnership Development Program added. AIP2 has built on Investment Plan 05-06 and supports the continuation of the existing 15 projects as well as the development of an Indigenous NRM project.

## Community Involvement

The ACC has a strong ethos of involving the local community in the development and delivery of NRM projects. This inclusive approach has been an ongoing process and has been integral to the development of the NRM Strategy and Investment Plans and a call to the local community for Registers of Interest (RoI) for all 15 AIP projects.

The RoI process allows those in the community that have an interest in NRM to highlight how they are able to support and contribute to the delivery of Investment Plan projects in their local area. 102 RoI's were received by the ACC for AIP1 covering all 3 delivery program areas. Of these, 41 were accessed and 30 used by delivery organisations. These included catchment groups, individuals, Local Government Authorities, production groups, Land Conservation District Committees, and farmer groups. This ensures that such activities as soil health work, remnant vegetation protection, revegetation of locally significant reserves and surface water management within the region are delivered with community involvement.

A second RoI, calling for a more targeted project-focused interest, will be called for later in the year and is expected to enhance the involvement of the community in projects where, without this process, their involvement may have been limited.

## Conclusion

The Avon community, with its key stakeholders and partners, are making visible improvements to the region's natural resources through a strong collaborative effort.

The Avon Catchment Council Regional Delivery Programs have allowed for targeted investment throughout the Avon River Basin. Development of Resource Condition Targets and Management Action Targets with both community and scientific input has allowed the Avon Catchment Council to tackle some of the more urgent NRM issues faced by the region. Natural Resource Management is a dynamic and ever-changing process which will require ongoing and substantial funding well into the future. However, the successful process developed by the ACC and other regional groups will ensure there is a solid foundation for effective ground investment in NRM into the future.

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