

SWAN-AVON RIVER

SAME RIVER - DIFFERENT VALUE

by Wayne Clarke

In 2004, the *Swan River* was declared Western Australia's first official *heritage icon*. It has since enjoyed millions of dollars in funding to ensure that icon is managed in a sustainable manner, to be treasured and enjoyed by all. But, not so with its upper reaches, the *Avon River* - younger in name (by maybe five years) but very much more mature (by maybe hundreds of millions of years).

Both the Swan and Avon Rivers are quite distinctly the same river. Exploration during the founding of our colony had barely begun when the different names were applied. It is now evident that different management practices are also being applied, simply because of the name.

Why should anyone be concerned with the Avon River? After all, it's only a mere tributary of the Swan. Is that not someone else's problem?

Training or Travesty

The anguish of the Avon River began when towns were built along its banks. Toodyay was the first to realise this mistake when, in 1860, a new town (Newcastle, later re-named Toodyay) was gazetted upstream, further back from the river. This town, like all the others built along the Avon, still experienced flooding, so the local authorities, as far back as 1937, sought assistance from the government to find a solution.

A report by R.W. Edwards, Irrigation and Drainage Engineer, Public Works Department - (PWD), suggested:

"if the training is done in the Brookton and Beverley Road Districts, it will in all probability mean treating the river as far as a few miles below Toodyay, a distance in all of approximately 123 miles [198km]. The cost of treating this river spread over a period of four years would be, say, £28,500...". The letter breaks up the costings in each Road Board District, with the distances and cost per mile. This ranged from £150/mile in Brookton to £300/mile in Toodyay.

Further, *"The following remarks should be borne in mind when considering carrying out the work:-*

- (a) The de-snagging will release a considerable amount of silt now held up in the river by thick scrub and debris in the river bed. Portion of this silt will travel down-stream, but a considerable portion will also be deposited in amongst the scrub and debris which it is intended to leave on the banks of the river and on scrub-covered flats adjoining the river.*
- (b) WATER HOLES:
The travelling silt mentioned above will, in all probability, fill up the water holes [natural pools] in the river bed and render it necessary for the farmers using these water holes for stock water supplies to sink spears in the sand and erect windmills and troughing for their stock.*
- (c) Silting troubles in all probability will occur in Northam above the existing weir unless the weir is remodelled so that a clear run may be given to the river during the flood periods. At some future date, when the river is properly trained, it will be possible to hold up the water at any desired spot and thus form an artificial frame by the construction of removable weirs as suggested at Northam."*

1st July, 1947.

RWE/G

ACTG. PWD HYDRAULICS

As can be seen by the above report, written by the PWD, the engineers were well aware that the River Training Scheme (RTS) would release a considerable amount of sediment into the river.

Almost two decades later, after the 1955 floods, the Avon River Training Scheme (RTS) - a government initiated and funded project and supervised by the Public Works Department, commenced.

A report by J.W. Young, Director of Works, to the meeting of the Avon Valley Development Committee, dated 8th March 1956, suggested the cost of the RTS on the Toodyay-Northam section of the river was £24,000. From a legal aspect, *“Authority can be given to the Department by the proclamation of the catchment area of the Avon River under part III of the Rights in Water and Irrigation Act.*

“Necessary agreement by the Irrigation Commission to this proposed step has already been given.

“Broadly, the Department’s proposal involves the construction of a gullet¹, where necessary, in the flat stream of the river by clearing out all trees and debris over a width of approximately 3 chains [60m]. In some places silt movement by bulldozer will be necessary.”

Work was commenced in 1958 and was continued until 1961 when it was stopped for the effects of the Scheme to be evaluated. It was resumed in 1966.²

In the 1970s, moves to halt the RTS were afoot. The damage impact on the riverine environment was quite noticeable. Local authorities were no longer prepared to contribute to the maintenance of the Scheme, and were requesting it ceases.

In a letter to the Director of the PWD from Mrs Judy Hamersley, of the WA Country Party, one of the questions asked was:

Question: “What effect is this cleaning likely to have on the Swan River apart from that already apparent viz. more rapid and frequent flooding in the upper reaches?”

“Answer: I am advised that the Irrigation and Drainage Branch PWD have estimated that most of the material moved by the river water will be held in the bed of the river between Toodyay and the coastal plain. “Should this not be so, some saltation in the upper stretches of the [Swan] river can be expected which can cause flooding problems in the upper reaches of the river. The Harbours and Rivers Branch has for many years operated a dredge in the upper waters of the river on programmes involving flood abatement.”³

Dr O’Brien goes on to say:

“Dead trees, logs and debris, which would impede the flow of water, should be removed from the watercourse if required for flood abatement but riverbeds should not be ripped.”⁴

This virtually sealed the fate of the RTS, undoubtedly the worst engineering disaster in Western Australia during the twentieth century.

The issue of management of the river has been addressed by a number of Governments over recent years. The formation of the Avon River Management Authority (ARMA) in 1993 gave some hope. Fired up at the beginning (with an excellent and innovative Executive Officer), it did not address the issues in the long term. The appointments to ARMA were politically motivated rather than skills based, and the Authority languished through lack of competent leadership, and departmental direction. This ensured its eventual demise in December 2001.

An incorporated community group, the Avon Waterways Committee, was formed in 2002, and was made a committee of the board (of the *Water and Rivers*

¹ A drainage channel

² Brian O’Brien, Director [PWD] June 20 1973, in answer to a letter from Mrs. J. Hamersley, Country Party of WA.

³ Ibid

⁴ All the above transcripts can be collaborated by copies of the original documentation.]

Commission). The following years saw a number of changes in agency name but again, the skills to achieve, and support required, were not evident.

When the government of the day abolished small committees, the Avon Waterways Committee was dissolved. This was the last committee to provide any coordinated advocacy from a community perspective on the Avon River.

During 2011, the Department of Water began scaling back its activities in the region. A number of staff members were made redundant, and others transferred to the city. The Northam office has a part-time receptionist, working mainly on administrative matters for the regional office in Perth. Once the lease of that office expires, there is little doubt it will close. [*n.b. It closed in 2014*]

The Avon is now looking for some equity with its lower reaches, the Swan River. The sediment issues discussed have escalated considerably, and removal of these deposits over the past ten to fifteen years has cost the taxpayer many hundreds of thousands of dollars. However that will all be to no avail, unless the sediment removal programme continues. Other funding bodies (like Wheatbelt NRM) can assist with managing the riparian vegetation, but there needs to be a legally empowered government body to dredge the pools.

The Swan and Canning Rivers Management Act (2006) defines the *Catchment area* as being the boundary of the combined Swan/Avon catchments. There are a number of references in the Act that relate to the catchment area, and its management, with specific references to the Swan River Trust (SRT). Section 23. of the Act relates to the functions of the Trust, and 23. (f) reads:

to coordinate and promote the activities of other bodies that have functions in relation to the catchment area, insofar as those functions may affect the Riverpark, including the implementation of any strategic documents applicable to the catchment area.

Included in the Act are targets for the catchment area (Section 47 (b)), objectives and performance standards (Section 51. (2) (a), recommending a 'river protection notice be issued' (Section 90. (1) (a), and legal proceedings (Section 119. (3)).

The Swan Riverpark will surely be threatened by sediment, nutrients, high salinity levels, and other pollutants from the Avon River, particularly with the changing weather pattern Western Australia is currently experiencing.

In Toodyay, Long Pool, where some 6,000 tonne of sediment has been removed, is already filling. Cobbler Pool, a few kilometres downstream, has sandbars in it never seen before. These Avon Gorge pools are the last sumps for the river prior to it descending the scarp, and into the Swan. The words of Dr Brian O'Brien, in 1973, need to be heeded, viz:

I am advised that the Irrigation and Drainage Branch PWD have estimated that most of the material moved by the river water will be held in the bed of the river between Toodyay and the coastal plain.

"Should this not be so, some saltation in the upper stretches of the [Swan] river can be expected which can cause flooding problems in the upper reaches of the river."⁵

As the Toodyay Friends of the River (TFOR) is an incorporated entity, it has binding objects that relate to functions in the catchment area. There could be some question as to the role of the Swan River Trust over the activities of the TFOR; and similarly other community groups in the Avon. Without the guidance of the current managers of the river - the Department of Water - our community groups feel deserted, frustrated, and even threatened. The logical answer to this issue is for the SRT to take management control of the Avon River.

⁵ Brian O'Brien, Director [PWD] June 20 1973, in answer to a letter from Mrs. J. Hamersley, Country Party of WA

CYCLONE IMPACT

When the cyclone season approaches, it is important to understand what affect this may have on the Avon/Swan River system. The following information is from the Bureau of Meteorology on cyclones that have impacted on Perth (a full transcript can be found at the following site):

<http://www.bom.gov.au/cyclone/history/wa/perth.shtml>

Although cyclones do not frequently occur as far south as Perth [or its hinterland] they have been the most significant of weather hazards, with their destruction including erosion from storm surges with large waves, and the spread of wildfires. Cyclone *Alby* (April 1978) resulted in five deaths, including one in Toodyay.

The vast majority of cyclonic storms lose their intensity and are downgraded as they move south. Occasionally however a decaying cyclone interacts with a cold front, and evolves into an intense, fast-moving system. These systems can produce a range of destructive forces, from intense rainfall, storm surges and large waves through to damaging winds and hot, dry conditions - conducive to the spread of bushfires.

The following should be well noted:

*Cyclones affecting the southwest can move at speeds greater than 70 km/h in contrast to the average 10-15 km/h speeds in the north. As they accelerate, the structure of the cyclone changes so that the regions of dense cloud and heavy rainfall are displaced towards the right quadrants of the system (when looking along the direction of the track) leaving the left quadrants largely free of significant cloud. As a result the heaviest rainfall for example, would occur when a cyclone crosses the coast near and to the north of Perth as in March 1934. [Perth recorded 77 mm and Toodyay 191 mm as flooding caused damage across Perth and the Wheatbelt. The Swan River rose **5.8 m in less than eight hours** at Guildford causing considerable damage to unharvested grapes.]*

The change in structure described above is known as extra-tropical transition. This process is observed in other tropical cyclone basins around the world and can result in a re-intensification of the system even though it loses tropical cyclone characteristics.

In the period 1910 to 2004 there were 14 tropical cyclones that either caused gales or wind-related property damage in the Perth region (this does not include decaying cyclones that caused heavy rain). Between 1992 and 2004 no cyclones have impacted on Perth, possibly leading to an increased level of complacency in the population.

When the heavy rains associated with a cyclone move inland to river catchments, water levels in the outlet rivers rise significantly, even in a small catchment area.

The Avon however is not a small catchment, at 120,000 square kilometres. Even if a cyclone only impacts a small proportion of an Avon sub-catchment, it can cause local flooding. A large cyclone impacting both the Avon and Mortlock sub-catchments has the potential to cause major flooding of the Avon River.

With the strong river flows associated with these events, the potential for sediment movement increases, particularly in the area below Toodyay (where hundreds of thousands of tonnes are currently locked up). As this area has a higher gradient, it will move faster, over the Darling Scarp.

This will lead to the achievement of Dr Brian O'Brien's answer to Mrs Judy Hamersley in June 1973. This reactive approach will be at the cost of many millions of dollars, and possibly lives. The 'upper reaches' that Dr O'Brien talked about now have housing estates adjacent to them.

Don't let us live with that on our conscience!