

# A Model For Funding Watercourse Fencing On Farms

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**Abstract:** *There is an Australia-wide need for innovative schemes for funding watercourse fencing on farms. The paper outlines a model for catchment based watercourse fencing programs involving local government, community landcare groups, land holders and other agencies. The model is based on the Wilson Inlet catchment rehabilitation program on the south coast of WA. Between 1989 and 1995, \$52,600 of fencing subsidy grants at \$400/km have been allocated to farmers. This has supported 135 km of fencing on 77 watercourse fencing projects on 45 farms. The program demonstrates a model with wide application in rural Australia.*

## 1. Introduction- The Challenge

Australia has major land care problems arising from the loss of remnant vegetation along watercourses. The cost of fencing is one of the biggest obstacles preventing the protection of watercourses on farms. With public funds for landcare already stretched to the maximum, it is vital that simple but innovative schemes for funding landcare fencing be developed as a matter of urgency. The paper presents a model for catchment based watercourse fencing and regeneration programs based on a cooperative venture between local government, community landcare groups and other Government agencies. The model is based on the experience of the Wilson Inlet catchment rehabilitation program since 1989.

## 2. The Wilson Inlet Experience

The Wilson Inlet, on the south coast of Western Australia and adjacent to the township of Denmark, is a regionally significant estuary. It is threatened by eutrophication, due mainly to excessive nutrient input from agricultural areas in the catchment. The catchment area of the Inlet covers 2363 square kilometres mainly comprising farmland and public (Crown) land. The Denmark and Hay Rivers are the two major tributaries of Wilson Inlet. (Hodgkin and Clark, 1988)

Large quantities of nutrients and sediment that discharge into Wilson Inlet each year come principally from the Sleeman, Hay and Denmark Rivers, and the Cuppup Drain. These nutrients have the potential to cause algal growth which smothers the *Ruppia* seagrass meadows of the inlet. Research has highlighted the importance of streamline fringing vegetation in attenuating

nutrient and sediment loss from farms into waterways (Apace Green Skills and Pen, 1995).

There is an increasing concern in the local rural community that rivers and other watercourses of the catchment should be fenced. This would protect these large natural biofilters and prevent erosion of the riverbanks, which occurs when the supportive and protective fringing vegetation is lost through livestock grazing and trampling.

### 2.1 The Fencing Subsidy Program

In 1989, the Denmark Environment Centre, a local community group, began coordinating a watercourse fencing and regeneration program in the Denmark Catchment. From 1990, it offered subsidies of \$400/km for land holders who wished to fence off watercourses. The distances fenced off have progressively increased (see Table 1 below).

The early stages of the catchment based program were set up as a pilot project so that problems could be identified and efficient administrative and liaison arrangements developed.

The program received a boost from 1992, when the Shire of Denmark began to allocate \$6000 a year towards the Denmark Environment Centre's program, and again in 1995, when the then newly formed Wilson Inlet Management Authority (WIMA), a statutory body serviced by the WA Waterways Commission, commenced allocating annual amounts towards fencing off watercourses on farms.

Participating organisations implementing the Wilson Inlet program have included local landcare groups, Apace Green Skills, the Australian Conservation Foundation South Coast Branch and WIMA. Smaller amounts of funding or material support have come from Greening Australia's One Billion Tree Program, the Federal Government's Save The Bush scheme, the WA Water Authority, the Department of Conservation and Land Management and local businesses. More recently the Wilson Inlet Management Authority, a statutory body serviced by the WA Waterways Commission, has provided substantial financial resources towards watercourse fencing in the catchment. The land holders have also contributed over half the cost of fencing and labour to the program.

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## 2.2 Revegetation and Environmental Training

Since 1989 landcare groups in the Wilson Inlet catchment have coordinated a revegetation program in association with the watercourse fencing projects. In some instances, there is sufficient native vegetation left along the watercourses for regeneration to occur. In other cases tree plantings have been carried out.

Table 2 provides information on the number of trees planted along stream and river banks fenced under the Wilson Inlet Catchment fencing program.

27700 local tree and shrub species and 134000 non WA species (mainly eucalypts with potential wood production value) were planted in fenced off watercourse areas between 1989 and 1995. The Denmark Environment Centre coordinated most of these plantings working with the land holders, other community groups and State agencies (ie the Department of Conservation and Land Management) to implement them. Most of the local species of trees and shrubs were provided under Greening Western Australia's Plants For Conservation Program.

## 2.3 Examples of Projects

Fencing and revegetation projects have been carried out on the Denmark Agricultural College farm, within 2km of Denmark. High profile projects now established on the College farm include revegetation along the Denmark river and associated wetlands.

Other projects have been carried out on farms in the Upper Denmark catchment from whole farm plans have been designed by research officers from the Department of Agriculture. These projects are also being used for demonstration and education purposes in this section of the catchment, which has been given a high priority by the WA State Government for rehabilitation for water resource purposes.

Fencing and revegetation work has also been carried out along the lower reaches of the Sleeman river, a significant contributor of nutrients into the inlet. Some of this revegetation work is readily visible from a major highway, serving as a demonstration site.

There has been significant input into implementing many of the fencing and revegetation projects from community groups. Trainees from Apace Green Skills programs for longer term unemployed have carried out many projects while training on the job.

These have included 3 Commonwealth funded LEAP (Landcare Environment Action Program) courses for 15 unemployed youth, 1 NWO (New Work Opportunities) program for 11 unemployed adults and several other labour market programs. Thus the Wilson Inlet fencing program has tied in with other activities that assist with social and landcare development.

## 2.4 River Foreshore Surveys

To assist with rehabilitation of the watercourses in the catchment the Wilson Inlet Management Authority commissioned a botanical inventory of sites along the Denmark and Hay Rivers by B.G. Janicke in 1994 and a survey by Green Skills to assess the condition of the foreshores of the two rivers. The survey ran from April 1995 to June 1995. The resulting reports (Janicke, 1994; Apace Green Skills and Pen, 1995) aim to assist government agencies and community landcare groups to cooperate with land holders to assist in protecting the health of a much valued south coast estuary and its associated waterways. These surveys provided the next step in enhancing the effectiveness of the fencing subsidy program for the Wilson Inlet, as they provided the data base for more effective targeting and evaluation of watercourse fencing grants to land holders.

This work graded the condition of sections of foreshore of each river bank into three categories: (A) pristine to slightly disturbed, (B) degraded, (C) erosion prone to eroded and (D) eroding ditch or weed infested drain; on the basis of weed infestation, soil exposure and erosion. This classification system is being widely adopted in South West WA and is based on the work of Luke Pen (Pen, 1994; Pen and Scott, 1995). The extent of riverbank fencing and revegetation, river valley form, and the general quality of the fringing vegetation were also assessed.

Foreshore condition and fencing status were assessed in detail and results for specific sections and subsections are reported, along with fencing and rehabilitation needs and other information.

The 80 km of the Denmark River was surveyed, having a farm river length of 37km and 39km along the left and right banks, respectively. Of the total 76km of farm river length, about 49% was already fenced. Of the total river length about 62% of the riparian zone was A grade, about 25% B grade and 13% C grade. About 49ha of river valley embankment and foreshore requires revegetation to stabilise the embankments, maintain the ecological corridor and protect river pools.

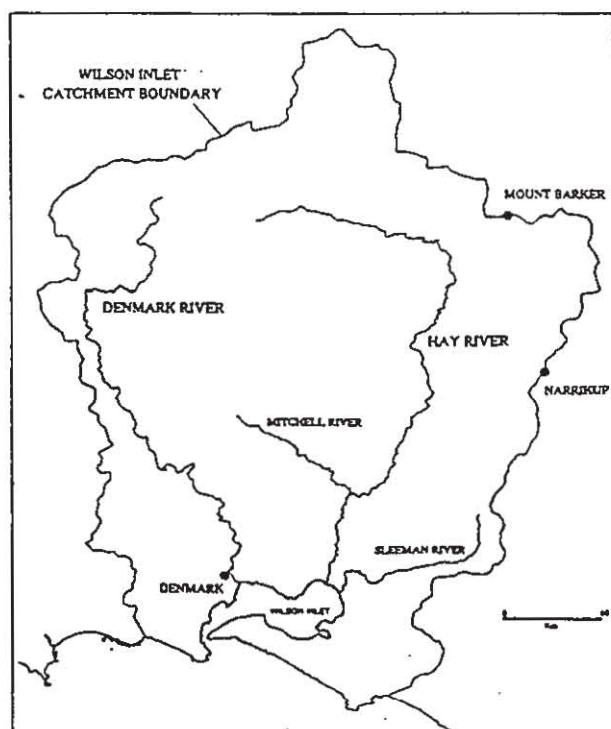
The 77 km of the Hay River was surveyed, having a farm river length of 65.6km and

**Table 1. Funds Allocated Under the Wilson Inlet Catchment Fencing and Regeneration Program 1989 - 1995.**

Year	Monies Allocated \$	Distance Fenced km	No. of Watercourse Fencing Projects	Number of Different Farms Involved (Cumulative)
1989	900	0.8	1	1
1990	500	1.2	1	1
1991	2250	6.2	4	4
1992	13100	32.7	17	16
1993	11850	30.3	19	28
1994	10400	31.0	15	35
1995	13600	32.8	20	45
<b>Totals</b>	<b>\$52600</b>	<b>135km</b>	<b>77</b>	<b>45</b>

**Table 2. Tree and Shrub Plantings along watercourses carried out within the Wilson Inlet Catchment Fencing and Regeneration Program 1989 - 1995.**

Year	Local Native Tree and Shrub Species planted	Non-WA species (mainly Eucalypt) plantings (No.)	Total number of plants
1989	3000	35000	38000
1990	600	3000	3600
1991	2600	5000	7600
1992	3200	31000	34200
1993	7700	15000	22700
1994	5100	45000	50100
1995	5500	-	5500
<b>Totals</b>	<b>27700</b>	<b>134000</b>	<b>161700</b>

**Map 1 - The Wilson Inlet Catchment and the Denmark and Hay River systems.**

72.8km along the left and right banks, respectively. Of the total 138 km of farm river length, about 39% was already fenced. Of the total river length, about 42% of the riparian zone was A grade, 22% B grade, about 36% C grade and a small section (0.5%) was D grade. About 173ha of river valley embankment and foreshore requires revegetation.

The findings and recommendations of the survey were designed to provide advice and encouragement to land holders and managers to carry out measures which protect and restore river foreshore condition. The survey reports are being actively used to allocate fencing subsidies for the 1995/1996 financial year, and to plan revegetation work along the two rivers for the 1996 planting season.

Following on from the surveys of the two rivers, the Shire of Denmark's Revegetation Nursery is propagating 20,000 local endemic trees and shrubs for stream and river bank revegetation in the 1996 planting season, with the prospect of greatly increased production of plants for subsequent years.

### 3. The Model

Based on the Wilson Inlet experience, it is possible to recommend a model for how water course fencing can be implemented in other catchments around Australia.

The model involves Local Government Agencies (LGAs) allocating annual funds towards catchment based watercourse fencing programs. Under the model these funds are matched where possible from Federal and State Government Agencies. The funds are distributed by a local landcare organisation which advertises the availability of the watercourse fencing grants at a rate of around \$400 per km for projects judged to be of high priority in terms of catchment rehabilitation. (The figure of \$400/km represents about half the material cost of conventional fencing. Providing any less may represent insufficient subsidy for most landholders.) Land holders participating in the scheme are required to construct the fence within six months of receiving the grant. The primary aim of the fencing is to keep grazing stock out of the riverine bush so permitting it to regenerate.

#### 3.1 Administration of the Program

Forms outlining the program are mailed to each land holder in the catchment. These forms invite participation and seek basic information on the length and location of proposed fencing. The form is returned by post. The landcare group then prioritise the fencing projects according to criteria that are developed to meet local requirements. This process normally involves

site visits and inspection of catchment resource maps. In the case of the Wilson Inlet catchment, the WA Department of Agriculture has produced catchment maps showing areas prone to salinisation and nutrient loss. Criteria used to prioritise project sites include the quality and area of riverine forest to be protected, eutrophication and or salinisation risk of that sub-catchment, the rate of vegetation decline in that locality, and the suitability of the site for demonstration/promotional purposes.

#### 3.2 Benefits

*Some of the environmental benefits of watercourse fencing include:*

- reduction of erosion and siltation
- provision of wildlife corridors
- provision of a bio-filter reducing nutrient run-off (Howard-Williams and Downes, 1984.)
- protection of riverine bio-diversity (Hussey and Wallace, 1993)
- rehabilitation of saline valley areas

*Community Benefits include;*

- Shelter belts for adjacent farmland
- protection of scenic landscapes along waterways
- rehabilitation of polluted estuaries (see Prout and Weaver, 1992 or Weaver, Pen and Reed, 1994)
- water quality improvement

#### 3.3 Sources of Additional Support

The model can work with Local Government Agency support alone. However financial contributions from State and Federal agencies, as well as corporate sponsors can make limited fencing funds go much further. State and Federal Governments could make a major contribution to implementing the proposed model on a regional or national scale by offering to provide matching funds to any local shire that commits fencing funds as outlined in this program. This would have a major effect in expanding watercourse fencing and regeneration programs in Australia.

#### 3.4 Performance Indicators

The model allows community groups and shires to set clear goals and to precisely monitor progress towards these goals over a set time period. Precise performance indicators can be specified and monitored. The capacity to set quantifiable goals can provide a motivating incentive to all concerned, because they know the scale of the problem, and how to realistically address it.

Progress of individual catchment based shire programs can be judged from obtaining such quantifiable data as:

- Number of participating landcare groups

- Number of participating land holders
- Length of watercourses protected
- Area of remnant vegetation protected
- Distance of watercourse fencing completed each year
- Number of trees planted in fenced off area
- Water quality sampling

### 3.5 Monitoring and Evaluation

Monitoring of fenced off riverbanks can be carried out by the participating land holders and landcare groups. This should be done to assess regeneration success, for improving the targeting and administration of the program. Photographic documentation of monitoring sites provides useful information. Individual farms can be revisited to assess the ongoing status of areas. Priorities for allocation of fencing grants can be reviewed and refined.

### 3.6 Community Education

Community education activities can be closely integrated with each step of the program. Educational information can be included in promotional material advertising the availability of grants. Field-days can be held and media releases and articles can promote the scheme. Signs can be put up on road reserves adjacent to prominent sites providing information and inviting participation from other land holders.

## 4. Conclusion

This paper presents a proposal for a simple, but effective mechanism for funding watercourse fencing for important river catchments. It involves cooperative funding arrangements between LGAs, landcare groups and custodians and any number of contributing agencies. The scheme requires a low level of administration and can be readily modified to suit local needs.

The model does not place onerous administrative burdens on land holders yet ensures public funds are spent directly on projects of lasting community benefit. The program lends itself well to evaluation and associated community education programs. The program has additional advantages in that watercourse fencing on farms has multiple environmental and social benefits, representing a cost-effective way for achieving multi-objective landcare goals.

## 5 References

- Apace Green Skills and Pen, L.J. (1995) Condition of the Foreshore vegetation of the Denmark and Hay Rivers. Wilson Inlet Management Authority, Waterways Commission Report, Denmark WA.
- Hodgkin, E.P and R.Clark (1988) Wilson Inlet, Irwin Inlet and Parry Inlet: Estuaries of the

Denmark Shire. Estuarine Studies Series Number 3, Environmental Protection Authority, Perth, WA.

- Howard-Williams, C. and Downes, M. T. (1984) Nutrient removal by streambank vegetation. In: Land treatment of wastes: proceedings of a seminar. Wilcock, R. J. (Ed.) Water and Soil Directorate, Ministry of Works and Development for the National Water and Conservation Authority, Wellington. Water and Soil Miscellaneous Publication No. 70: 409-422.
- Hussey, B. M. J. and Wallace, K. J. (1993) Managing Your Bushland. Department of Conservation and Land Management.
- Janicke B.J. (1994) An Inventory of plant species found at six locations along the Denmark and Hay Rivers. Wilson Inlet Management Authority and South Coast Estuaries Project, Denmark WA.
- Pen, L. J. (1994) Condition of the Foreshore vegetation of the Kalgan River 1992. Albany Waterways Management Authority, Waterways Commission Report, Albany WA.
- Pen, L. J. and M. Scott (1995) Stream Foreshore Assessment in Farming Areas. Blackwood Catchment Co-ordinating Group. Western Australia
- Prout, A. L. and Weaver, D. M. (1992) Agricultural catchments of the Albany Harbours: past, present and future. In: Cleaning up Albany Harbours. Australian Water & Wastewater Association and The Institution of Engineers Australia Seminar Proceedings.
- Weaver, D. M., Pen, L.J. and Reed, A.E.G (1994) Modifying the phosphorus cycle to achieve management objectives in the Oyster Harbour catchment. WATER Olv 21, 1:28-32.

## 6. About the Author

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