

INTERNATIONAL IRRIGATION MANAGEMENT INSTITUTE

# **A ROLE FOR SELF MANAGEMENT IN THE MODERNISATION OF IRRIGATION SYSTEMS**

**KJ SHEPHERD**

**The Engineering and Water Supply Department**

**and**

**Sagric International**

**Adelaide, South Australia**

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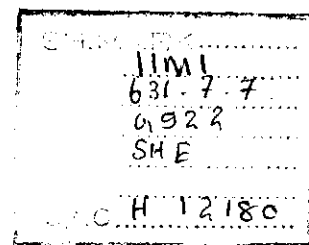
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**A ROLE FOR SELF-MANAGEMENT**

**IN THE**

**MODERNISATION OF**

**IRRIGATION SYSTEMS**

**- A SOUTH AUSTRALIAN CASE STUDY**

1993

Prepared for

**INTERNATIONAL IRRIGATION MANAGEMENT INSTITUTE**

PO Box 2075 Colombo Sri Lanka

Prepared by

**KJ SHEPHERD**

**THE ENGINEERING AND WATER SUPPLY DEPARTMENT**

State Administration Centre  
Victoria Square Adelaide South Australia 5000  
Australia

in association with

**SAGRIC INTERNATIONAL**

70 Hindmarsh Square Adelaide South Australia 5000  
Australia

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## 1. SUMMARY

This paper was prepared in the course of a consultancy to the International Irrigation Management Institute (IIMI) the headquarters of which are in Colombo, Sri Lanka. The consultancy was funded by the Australian Government and is part of IIMI's generic program of comparative assessment of turnover processes through case studies and rapid appraisals under the research theme 'Institutional Change and Policies'.

The case described in this paper is the process of development of an integrated proposal to complete a modernisation program for degraded channel-supplied small irrigation areas along the River Murray in South Australia. The elements of the proposal included:

- ° the construction of pipeline systems to replace the channel networks for four irrigation areas, thus providing water-on-order to farmers, enabling them to [REDACTED]
- ° the [REDACTED] between the farmers of those four areas, farmers of five other areas already modernised, the Government of the State of South Australia, and the Australian Government
- ° agreement that this contribution by growers will make them eligible to take over management and ownership of the irrigation system. Cost incentives are to be applied to encourage farmer groups to take over, as [REDACTED]

This package was developed through a process of negotiation between representatives of the irrigation agency and elected representatives of the growers. Growers and the South Australian Government have reached agreements and at the time of writing the agreement of the Australian Government was awaited. A major study by Kinhill Engineers, in association with financial consultants, was instrumental in the synthesis of proposals which enabled the government and grower representatives to reach agreement.

The process had some unexpected side benefits including creating conditions which helped the regional management of the irrigation agency to achieve great improvements in efficiency in operations maintenance and administration.

The experience of the negotiation process provided some insights into the prerequisites for successful negotiation between government and grower representatives, and these are also reported.

## 2. **BACKGROUND**

### 2.1 The Murray-Darling Basin

The Murray-Darling Basin is Australia's largest river catchment, some 5.5 million square kilometres in area. Rainfall varies from less than 300 mm on the western side of the catchment to over 1 500 mm in the Australian Alps in the south eastern corner. It is only that limited area which generates reliable runoff, and the catchment yields less than one twentieth of the runoff of similar sized catchments elsewhere such as the Danube and the Ganges. Annual variability is high and there are records of sequences of very low annual water yield lasting up to five years.

The catchment is divided politically, covering parts of the States of Queensland, New South Wales, Victoria and South Australia. It is managed by the Murray-Darling Basin Commission, a body formed by agreement between the Australian Government and the Governments of the States of New South Wales, Victoria and South Australia. The possible entry of Queensland is currently under discussion. The Commission acts under the broad direction of the Murray-Darling Basin Ministerial Council. The Commission manages the allocation of water between the States and is implementing major programs for salinity control and drainage, and for environmental management. The Commission and all of its constituent governments therefore have an interest in improving irrigation efficiency and minimising its adverse effects. Appendix 1 shows the Murray-Darling Basin in relation to the Australian States.

### 2.2 Irrigation from the River Murray in South Australia

The South Australian Government Highland Irrigation Areas (the GHIA's) are situated along a river section beginning below the point where the river enters South Australia, and continuing downstream a further 150 km. The area also contains a number of private irrigation areas, and one area, Loxton, which is owned by the Australian Government and operated on its behalf by the Engineering and Water Supply Department (EWS) of the South Australian Government. In this reach, the river has eroded a flood plain generally 300 to 1 000 metres wide, some 40 metres below the level of the surrounding semi-arid plain. The entire flood-plain can be inundated by floods, and the irrigation is undertaken by lifting water from the river up to the semi-arid plain, mostly using electrically driven pumps. Water is then distributed to crops generally by pressurised pipe systems, but in some older unrehabilitated systems by concrete lined channels.

The soils are silty sands with some hard limestone and soft sand ridges. The soils are free draining and other than the limestone are suitable for the major crops in the area. These are citrus, stonefruit, grapes and vegetables. Most of the semi-arid downstream half of the Basin is underlain by aquifers containing saline water averaging around 30 000 mg per litre dissolved salts. Natural salt inflows have been increased as a result of irrigation activities, and river salinity is a threat to the major tree crops.

The area irrigated along the river in South Australia is 38 000 hectares, yielding crops with an annual farm gate value of around US\$250 million per annum. This area is about equally divided between private and government irrigation areas.

Towards the downstream end of the river there are also some irrigation areas within the floodplain reclaimed from swamp land. These are below the level of the river and are irrigated by gravity. They produce feed for dairy cattle. Most are government owned and these are the subject of a separate activity aiming at production enhancement and self-management.

The South Australian Government Highland Irrigation Areas are shown in Figure 1 and Table 1 below.

FIGURE 1 - LOCALITY MAP

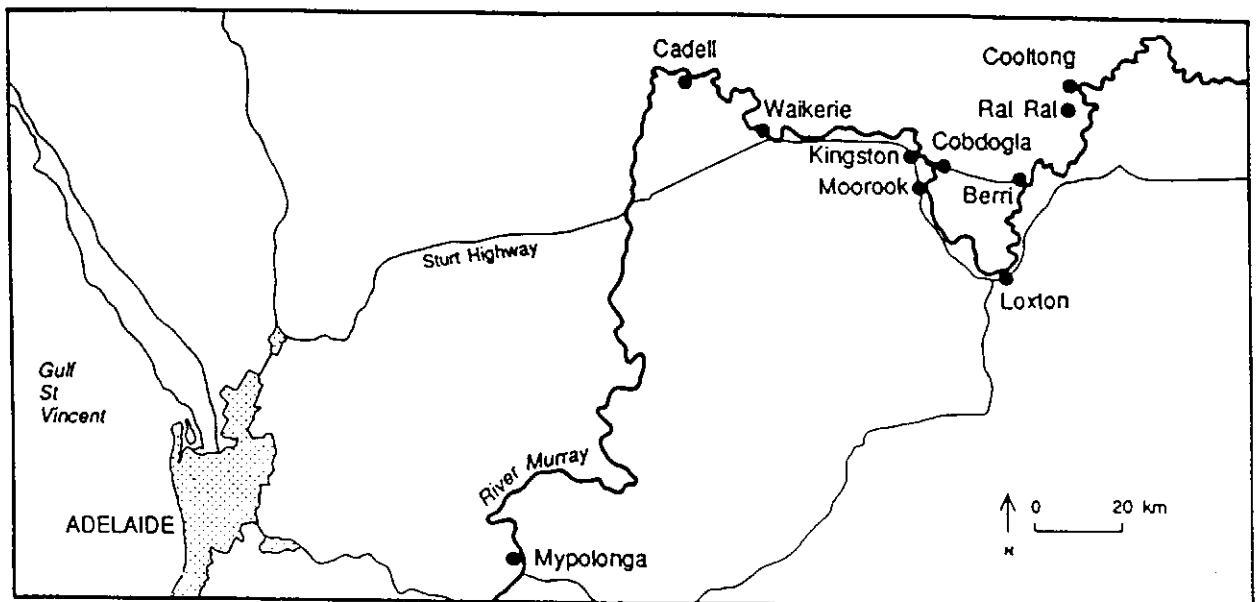


TABLE 1 - GOVERNMENT HIGHLAND IRRIGATION AREAS

Area	Hectares	Growers	Status	Construction period (years)	Cost to rehabilitate **		
					Estimate (\$ m)	Year	Estimate in 1988/89 dollars (\$ m)
Coolong	586	56	Rehabilitated	-	-	-	-
Rai Rai	425	60	Rehabilitated	-	-	-	-
Berri	2,906	442	Rehabilitated	-	-	-	-
Loxton *	2,809	263	Unrehabilitated	5	19.50	1988/89	19.50
Cobdogla	2,418	338	Partly rehabilitated	5	22.16	1986/87	25.37
Moorook	350	45	Unrehabilitated	1	2.59	1986/87	2.97
Kingsion	229	27	Rehabilitated	-	-	-	-
Waikerie	1,700	300	Rehabilitated	-	-	-	-
Cadell	378	64	Unrehabilitated	1	2.81	1986/87	3.22
Mypolonga	371	66	Unrehabilitated	1	2.45	1987/88	2.62
Total	12,172	1,661		5			53.68

\* Loxton is owned by the Commonwealth Government, all other areas are owned by the South Australian Government.

\*\* Cost to rehabilitate is for a low pressure distribution system.

Source: E&WS Department.

The authority which operates these areas is the EWS, a department of the South Australian Government. The EWS provides most public water and waste-water services for the State. Government irrigation and drainage constitutes about 5% of its business.

### 3. THE EVOLUTION OF A STALEMATE

#### 3.1 Modernisation Program Halted

It has been known for many years that the channel systems of the nine South Australian GHIA's were a major cause of poor irrigation performance. The channel systems were built up to 75 years ago and by the mid 1960s, most were in a deteriorated condition. Some sections required frequent shut-down and repair. Some overspilled during operation and losses due to leakage were excessive. The systems were expensive to operate. Their capacities were adequate only for pre-ordered supply at 7 to 10 day intervals, too infrequently for the needs of the trees and the nature of the soils. As a result of inefficient irrigation and leakage the areas contributed significantly to high saline groundwater tables, surrounding environmental damage, and increased river salinity.

Most of these effects and their causes were inadequately understood and quantified until recently. Nevertheless a major program of modernisation, by replacing the channels with pipelines, was commenced in the 1960s. By the early 1980s five of the nine GHIA's had been modernised.

The modernisation program (locally called rehabilitation) was successful in providing water-on-order and enabling farmers to install improved pressurised water distribution systems on-farm. About 85% have done so. This has resulted in increased irrigation efficiency, lower drainage quantities and generally improved productivity and product quality.

However the program was costly and resulted in a large increase in the government's financial losses on irrigation.

A review carried out in early 1983 suggested that the designs were more expensive than necessary, the efficiency of construction needed improvement, and the benefit-cost ratio appeared very low. Accordingly the government decided to halt the program, and all work ceased by 1985.

This consigned the irrigators of the four remaining channel-supplied systems to a bleak future. They seemed likely to remain for a long time relatively disadvantaged in terms of productivity, product quality and flexibility.

#### 3.2 Losses Continue

In mid 1983, the government decided to increase irrigation rates by 28%. It did this in order to attempt to greatly improve cost recovery. The farmers protested vigorously. They marched on Parliament House and demanded a reduction. The government compromised, and in addition undertook to limit the level of future rates to recovery of operations and maintenance costs only.



In the meantime the EWS was making rapid progress in cutting the costs of operation and maintenance. After taking over the operation of the systems from another department five years previously it introduced improvements to work methods and pumping systems which enabled large reductions in manpower.

It achieved reductions by natural attrition and by reallocating people to other areas such as urban and rural water supply and river operations, when workforce shortages in those areas occurred.

In compliance with government policy, the level of irrigation rates for the next few years followed operations and maintenance costs downwards in real terms. This was in spite of the fact that prices obtained for major crops held firm. Prices for wine grapes in fact increased in real terms. An opportunity to make progress in recovering the costs of administration, depreciation and debt servicing was therefore foregone, and losses on these continued.

It was clear that all three stakeholders, the government, the EWS and the growers had reached a stalemate. There appeared to be little prospect of resuming modernisation, as the financial resources were simply unavailable.

#### 4. STEPS TOWARDS A NEW FRAMEWORK

Although avenues to further progress in achieving irrigation objectives of farmer profitability and reduced government losses appeared to be closed off, in the same period the results of other work bore fruit. Initiatives in five different areas of activity would eventually contribute significantly towards a solution.

##### 4.1 Agricultural Research and Extension - The RMISIP Program

In the late 1970s the South Australian Department of Agriculture embarked on a major program of research and investigation. This was entitled the River Murray Irrigation and Salinity Investigation Program (RMISIP). It was partly funded by the EWS. The work sought to gain an understanding of the effects of applying water to crops in the River Murray irrigation areas under the conditions of elevated salinity that frequently occur, for a range of crops and for a range of water application technologies.

The work demonstrated that the most efficient water application methods were those using sprinkler or drip systems, applying water under the leaf canopy. Overhead watering led to damage and reduced yield due to the build-up of leaf salinity. The study quantified crop losses as salinity increased for different crops and different water application methods.

The use of furrow irrigation generally resulted in lower irrigation efficiency. In channel-supplied areas, where channel capacities dictated supply by roster, a frequent pattern was the application in a watering of more water than the capacity of the soil in the root zone, but before the next watering, the trees would often become stressed due to insufficient moisture.

This work led by the mid 1980s, to the establishment of public and private agricultural extension services, to assist farmers in selecting, designing and implementing appropriate improved irrigation practices. The studies quantified the agricultural benefits of measures to control salinity. The results assisted in the quantification of the benefits of replacing the degraded channel systems in the irrigation areas with pipelines or other technology that would deliver water-on-order and enable farmers to replace furrow systems with pressurised sprinkler or drip systems. The program and other associated work also led to a better understanding of the quantities and timing of water delivery that should be provided for in the design of any system to provide water to the farm boundary.

#### 4.2 The Murray-Darling Basin Initiative

The history of Australia has been marked by disputes between the States over the sharing and management of the water of the River Murray.

From 1915 until recently, all that could be achieved was an agreement between three States and the Australian Government which provided for the operation of the main stem of the river, the sharing of water under the control of the River Murray Commission as it was then called, and very little more. Increasing problems demonstrated that these arrangements were inadequate. Groundwater tables were rising under the main irrigation areas and had already resulted in areas of land going out of production. River salinity was increasing. Although the River Murray is virtually free from industrial pollution, there was environmental degradation due to the effects of land clearing, erosion, salinisation of land and river management.

In 1986-87 the governments responded by reforming the arrangements for management of the Basin. A Ministerial Council was formed, consisting of the water, agricultural and environment Ministers of the Australian Government and of the State Governments of New South Wales, Victoria and South Australia. A new agreement was forged supported by legislation enacted by all four Parliaments. This established the Council and transformed the former Commission into a new Murray-Darling Basin Commission with a brief which permitted it to assume a basin-wide role. These arrangements brought together the range of disciplines, agencies and communities to address the wide range of problems occurring in the Basin. On most of these problems progress can only be made by this kind of concerted action.

The Council and the Commission have recognised the importance of improving the efficiency of irrigation as a prerequisite to making progress on controlling high groundwater tables and land and river salinisation. In order to permit improved irrigation practices to be implemented by farmers it is widely accepted that the older irrigation systems will need to be rehabilitated or modernised.

### 4.3 Progress in Legislative and Policy Support

#### 4.3.1 A Consultative Approach to Policy Development and Operations

In concert with changing community expectations the EWS moved in the 1970s to ensure that all policy development and operational decisions in water resources management were undertaken with full involvement of the affected community. New water resources management legislation provided support for this.

All surface and groundwater resource systems that required control to prevent over-exploitation were managed with the full involvement of local representative advisory committees, together with programs to communicate with everyone who could be affected.

After the EWS took over the government irrigation areas in 1978, it reactivated similar arrangements in these areas, through Irrigation Advisory Boards elected by growers.

The Boards became increasingly active in decision making in operational and financial management. Representatives came to a quite deep understanding of operational and financial issues and in most areas were able to communicate well with their growers constituencies. In the larger areas, however, communication with all growers was not easy, due to the number of growers and language barriers.

#### 4.3.2 First Moves to Self-Management

In the mid 1980s three of the Reclaimed Swamp Government Irrigation Areas along the lower river expressed interest in owning and self-managing their areas. After investigations supported by the EWS, growers in these areas decided not to proceed at that time. However, the growers of yet another reclaimed swamp irrigation area (the Long Flat Irrigation Area) decided to proceed.

Most communities of farmers find that the powers and obligations available under the Companies Act and related legislation are insufficient to effectively and securely manage their systems. For example powers are needed to ensure that members will pay agreed irrigation rates, and members interests must be protected against possible actions by the managing board that might be inequitable to individuals or groups of growers.

Legislation already existed (the Irrigation on Private Property Act, 1939), to provide these powers and protections for private irrigation areas. Although this was more suitable for newly establishing groups of private growers, and required somewhat archaic procedures, it could be adapted as the basis for transfer of ownership and management of existing areas. The procedures were almost completed for Long Flat at the time of writing.

A complete review of all irrigation legislation in South Australia has been undertaken (1) and this will incorporate streamlined modern procedures for areas wishing to proceed to self-management.

#### 4.4 Commercialisation of Government-Owned Business Enterprise (GBE's) in Australia

Over the last decade governments and GBE's in most western developed countries have come to appreciate that GBE's have performed poorly compared with similar sized profit oriented private sector organisations.

The performance in terms of customer service and financial results achieved by the privately-owned French water utilities, and the improvement in performance of the British water authorities over the last decade, have provided a world-wide impetus to utilities. It is now widely recognised that:

- ° Westminster and communist system bureaucracies, in which performance is measured against an expenditure target set centrally, and in which the utilisation of government-owned services is mandated, serve customers badly and achieve poor overall financial results
- ° performance is better stimulated by providing each GBE with a management environment that resembles a private enterprise competitive environment as closely as possible.

In 1987, after some years of downsizing, the EWS adopted these principles and commenced programs along these lines. As a result, it has achieved greatly improved customer service orientation, operational efficiency and financial performance. There has been a clear cultural change through much of the organisation. The management and staff of the Riverland Region, responsible for management of the GHIA's responded very positively to these initiatives, and they were therefore well prepared to assist and adopt the further changes which were to come.

#### 4.5 A Commercially Oriented Evaluation of Modernisation of Irrigation

In 1988, the EWS sought to establish whether modernisation of the channel irrigation areas could be undertaken on a basis that was economic. It commissioned Kinhill Engineers to undertake preliminary designs and estimates of pipelining the four channel systems, based on modern design principles, and assuming construction by private contractors. The study also required a re-evaluation of the benefits of modernisation.

The consultants proposed an approach to decision making which overcomes difficulties usually encountered in asset replacement situations. They first evaluated benefit-cost information on the do-nothing options. They then showed how this varied with time and evaluated the sensitivity of benefit/cost measures to variations in key assumptions. This demonstrated that the do-nothing option was economically unattractive already for three of the areas and would become so within a few years for the fourth.

They then developed benefit/cost information for the pipelining proposals for the four areas. This demonstrated that pipelining was economically attractive in three cases and marginal in the fourth. This was the largest and most complex area, and it seemed likely that a more detailed study of sub-areas of the system would demonstrate that pipelining would be economically attractive for most or all sub-areas.

The scope of the study did not extend to funding or the analysis of financial performance as distinct from economic attractiveness.

## 5. A FRESH APPROACH TO MODERNISATION

### 5.1 A First Offer - A Key Role for Self-Management

In 1988 the EWS sought an avenue to break the deadlock. The initial motivation was to seek a way to increase cost recovery with broad agreement from growers.

It was clear that modernising the remaining four irrigation areas was wanted by the irrigators of these four areas. These growers would be prepared to pay increased irrigation rates in return for modernisation. However, this presented two difficulties:

- ° the return from increased rates just from these growers would meet only a small proportion of the costs of rehabilitation, and make no headway on the recovery of the unrecovered recurrent costs of administration, depreciation and debt servicing.
- ° it would be seen as inequitable for these growers to contribute to modernisation, without also obtaining a contribution from the growers of the five areas already modernised.

It was therefore proposed to offer the opportunity of self-management to growers of all nine areas. If all nine contributed an agreed amount towards modernisation, this would be regarded by the government as sufficient payment to transfer ownership and management of the irrigation assets to farmer-managed Boards to be established under already available legislation.

This was agreed by the Minister, and a more detailed proposal was prepared. This was based on the proposition that the South Australian State Government and irrigators would contribute half the cost each. The State Government was able to accept this on the basis that its capital contribution would eventually be offset by elimination of ongoing deficits on recurrent expenses and of future calls on the government to fund further rounds of rehabilitation.

Using a financial model developed with spreadsheet software, a financial plan was prepared. This demonstrated that the necessary return could be generated with an annual real increase in rates of 3 to 5%.

The plan was presented to a meeting of the combined Irrigation Advisory Boards and was given a positive reception. At subsequent presentations to open meetings of irrigators in each area the reception was initially mixed. At the last few meetings much concern was expressed about affordability, as farmer confidence in future crop prices and market opportunities was low. By the end it was clear that growers were not prepared to accept the package.

## 5.2 Steps Towards a Negotiated Solution

A deputation of grower representatives discussed their position with the Minister. It was agreed at the meeting that growers would nominate a Negotiating Committee to work with EWS representatives towards a mutually acceptable solution.

Growers consulted staff of the Riverland Development Corporation (RDC), a government sponsored organisation directed by respected community leaders. The RDC's brief is aimed at economic development of the region and includes helping the agricultural, industrial and service industries towards improved long-term viability. The RDC assisted growers by preparing for them options which further improved the proposal. From that time the Director of the RDC attended negotiation meetings with the agreement of all parties.

It was agreed that a major study should be carried out by independent consultants on options for rehabilitation and management of the GHIA's. A Brief was prepared and agreed, and consultants Kinhill Engineers in association with financial consultants Touche Ross Services and Tilley Murphy Hughes were contracted to undertake the work. The project was funded jointly by the EWS and the RDC.

The study was directed by a group consisting of the EWS negotiators, the growers' negotiating committee, and the Director of the RDC. Australian Government observers also attended most meetings.

The consultants developed the following concepts:

- ° a modernisation program over five years with equal cash flow over each year,
- ° cost sharing between the growers of all 9 areas, and both the State and Australian Governments. Based on growers maintaining a competitive position with respect to similar private areas, this led to a 20:40:40 sharing ratio. Based on the State Government contributing no more than the operating deficit at the time, an equal sharing arrangement (33 1/3% each) would apply,
- ° a provision for future asset replacement to be collected from all growers. This is to be the annual provision necessary, if deposited in an interest bearing account, that would cover the replacement of all asset components at the end of their agreed lives, over a 120 year period,
- ° areas may choose between low pressure supply (3m minimum pressure) or high pressure (35m minimum pressure). Those areas choosing high pressure supply would be required to pay the whole of the difference between the costs of a high pressure and a low pressure system.

The study incorporated business plans for continued ownership and management by the government, and business plans for self-management. The results of the two were then compared.

The negotiations and the study stimulated a strong and positive effort by the EWS regional management to produce an ambitious cost saving business plan. The environment of potential competition and good management produced a high level of performance and acceptance of change by staff, which enabled the first steps of the planned savings to be achieved. The business plans of self-management versus government management therefore unexpectedly produced operating costs that were very similar.

The main remaining differences identified by the consultants were :

- ° different attitudes by growers
  - as a landlord under self-management
  - as a tenant under government management
- ° different treatment of interest on past debt
  - likely to be forgiven under self-management
  - unlikely to be forgiven under government management

For this latter reason it is likely that after modernisation, growers under government management will face higher costs than under self-management. This is likely to be the main stimulus to areas to choose self-management.

Analyses of the revenue and expenditure plans for the two different cost sharing proposals prepared by the consultant are given in Appendices 2 and 3.

The development of the consultant's proposals were assisted by continued interaction with the growers and government representatives and continued negotiations between them. For example growers indicated strongly that due to high interest rates construction should not be funded out of borrowings but only out of raisings from growers and governments, applied direct to construction in the same year.

Broad agreement was reached on the consultant's 20:40:40 sharing option. The consultants report and the recommendations were publicised by a pamphlet mailed to all growers containing a summary of the proposals and inviting growers to respond. Publicity was assisted by a media event, and by a series of public meetings in the irrigation areas.

### 5.3 An Integrated Package

The response of the grower community to the new package was initially warm due to the more favourable terms for growers but again quickly ran into opposition. This was a demonstration of the difficult task that representatives have in leading their communities onto new ground by continual communication with them, while ensuring that as representatives they do not agree to proposals too far removed from the decision space that their communities can accept.

The representatives had continued to communicate with their Area Advisory Boards, but wide communication with the majority of growers in the larger areas cannot be achieved easily on an informal basis.

The difficulty stemmed from the fact that during the study and the negotiation process, the prices obtainable for the major crops of oranges and stone fruit dropped to such low levels that most growers were operating at a loss. Wine grape prices also fell. Growers felt that the significant real rise in the price of water embodied in the proposal was not affordable.

The EWS responded by modifying the proposal so that most growers received no real rise in irrigation rates. The only rises were to be for the minority who do not pay drainage rates. Their rates would rise to the same level as that for those with drainage systems. This was considered equitable as those without drainage are in fact contributing to rising groundwater tables or to flow in neighbours' drainage systems.

Spreading the construction program to 7 years, utilising income from water supply services provided from irrigation systems to industrial and domestic customers, and relying upon reduced operating costs due to cost reduction programs and modernisation itself, resulted in a viable plan without requiring a real rise in rates for most growers. This is illustrated in Appendices 4, 5 and 6.

The EWS negotiator made it clear to the grower representatives that the price of water would not follow expenses down to the low level shown in Appendix 4 at the end of the construction program, for Areas that stayed under government management. He indicated that if debt servicing costs were included, the cost to the government of the government irrigation systems was much higher than the income received from growers. The government therefore needed to set irrigation rates at the highest level that growers could afford. By paying rates for several years at the level given in Appendix 4, growers will have demonstrated that rates at that level are affordable. Most or all areas would therefore choose self-management, as they could operate their areas at a lower cost to growers than the government irrigation rate.

Ultimate self-management is a part of the benefit to the State Government in return for part funding modernisation, as it enables the State to avoid any future operational deficits from irrigation and further rounds of rehabilitation or modernisation. A strategy which leads to self-management is therefore important to the State.

The package gained strong acceptance from all areas and in the local media, and was agreed by the negotiating representatives both of the growers and of the South Australian Government.

When presented in complete form to a combined meeting of all the GHIA Area Advisory Boards, a number of improvements to the pricing structure and billing arrangements were also agreed.



## 6. AN AUSTRALIAN GOVERNMENT CONTRIBUTION

### 6.1 Australian Government Interests

The Murray Darling Basin Ministerial Council which is chaired by the Australian Minister of Primary Industries and Energy has recognised the need for rehabilitation and modernisation of irrigation systems and included programs of this nature as integral components of its Salinity and Drainage Strategy. Inefficient irrigation is the major contributor to avoidable river salinity, waterlogging and salinisation of land, and environmental degradation of land within and surrounding the irrigation areas, and an outcome sought under the Strategy is more efficient irrigation. The Australian Government has therefore been made aware of these issues through its involvement in the Council and the Commission.

Over a longer period the Australian Government has assumed a role of ensuring that adverse external effects of development are prevented or corrected through expenditure on 'public good' measures or activities.

For both these reasons the Australian Government has an interest in providing financial assistance to ensure that irrigation rehabilitation or modernisation proceed so as to lead to beneficial outcomes. It had already provided some assistance to small stand-alone pipelining projects in South Australia.

### 6.2 Reducing Australian Government Losses in Modernising its own Irrigation Area

One of the government highland irrigation areas, the Loxton Irrigation Area, is owned by the Australian Government and operated by the EWS Department of South Australia. The Loxton Irrigation Area is supplied by a channel system although the channels are in better condition (and newer) than the South Australian Government's GHIA's. Rehabilitation and modernisation is proposed for Loxton, but this time by providing automated channel level controls.

Under the existing Agreement between the Australian and South Australian Governments, made in the late 1940's Loxton growers pay only for operations and maintenance. Administration costs are borne by the EWS, and the Australian Government will need to provide funds for modernisation, unsupported by any revenue from the Loxton growers. The basis of calculation of Loxton irrigation rates could be changed to provide revenue to cover EWS administration costs and Australian Government debt servicing costs only if the Agreement is amended by both governments, and this can realistically only be achieved if the proposals for change are seen as equitable by the Loxton growers.

The Loxton growers would remain competitive only if their rates did not rise any higher than the GHIA rates. GHIA rates can be retained at present levels only if the modernisation program proceeds. Therefore by contributing financial assistance to modernise the South Australian GHIA's, the Australian Government will be creating conditions which will ensure that it can generate an income from the growers in the Loxton Irrigation Area.

## 7. STATUS AND BENEFITS TO DATE

This paper has reported progress towards modernisation and self-management of South Australian GHIA'S up to June 1991. At that stage, although notification of support from the Australian Government was still awaited, it seemed reasonably likely that modernisation and self-management would become a reality.

The process even to that date had already resulted in some benefits. Certainly the process has resulted in the following:

- ° A management environment has been created which has stimulated highly competitive performance on the part of the Riverland Region, the section of the EWS that provides irrigation services to the GHIA's.
- ° Further progress has been made in participation by farmers in the management of the systems.
- ° Some leaders of the farming community in the GHIA's have moved to a more self-sufficient independent outlook.
- ° Ministers of the South Australian Government and senior management of the EWS have come to share a vision of efficient irrigation served by efficiently managed water delivery systems, ultimately to be owned and managed by the farmers themselves.
- ° Ministers, EWS management and grower leaders have a shared understanding of the objectives that should be sought for irrigation. These are in simple form:
  - maximise farm profitability while ensuring sustainability
  - minimise government subsidies to irrigation
  - minimise adverse external effects of irrigation.

## 8. LESSONS LEARNT

These experiences suggest that an understanding of these objectives and the major changes necessary to achieve them, in this case modernisation and self-management, cannot simply be forced upon farming communities. A true negotiation process in which all stakeholders jointly seek solutions which are of benefit to all, is by far the most productive approach.

### 8.1 Determining the Measures Needed for Improved Performance

To move towards the above three objectives in the context of most existing irrigation systems requires knowledge of the water needs of the crops grown, and the combination of crops to be supported in each system for the foreseeable life of the system, to provide optimum production.

From this information, one can assess the ability of the existing system to provide water to the farm to meet this requirement, given proper operating methods.

One then seeks to synthesize a proposal, that is, an integrated set or package of measures, to achieve the required value-for-money water services to farmers. The set will generally include most or all of the following:

- ° modernisation - the incorporation of the technology, not at present in the system, to achieve new levels of performance
- ° rehabilitation - construction work to replace degraded system components
- ° maintenance - repairs and preventive maintenance aiming to keep the system in as-new operating condition
- ° operations - getting the best out of the physical facilities to meet customer needs.

## 8.2 Turnover to Self-Management

The lesson learnt daily over the last 20 years or more is that the traditional stark division of responsibility between a government agency which provides and operates a system to get water to the farm, and the farmer who takes over at the farm boundary, guarantees that the three objectives will not be achieved. Some degree of turnover to self-management, somewhere along the spectrum from consultation with the agency, to full privatisation, will ensure at least that operations and maintenance and possibly all four of the above types of activity will better achieve the three objectives. The potential for turnover to improve operations and maintenance performance seems to be well understood in a number of countries. The experience reported here suggests that the turnover process, integrated into a comprehensive upgrading proposal can help get a better result for upgrades incorporating not only operations and maintenance but also rehabilitation and modernisation.

## 8.3 Negotiating a Solution that Involves Turnover

There are major cultural shifts involved in many of the possible elements of an integrated proposal:

1. A move along the turnover spectrum will change what people do, and will require a change in organisational culture for all stakeholder groups.
2. Any new technology incorporated as part of modernisation, rehabilitation or operations and maintenance, must be understood, accepted and fully incorporated into what people do.

3. Certainly formal commitment of resources by government, the agencies and farmers, will represent a new requirement for most.

If the synthesized package is to have a chance, these shifts have to be permanent.

This means that prior to the synthesis of a proposal, the stakeholders need to be identified and each has to broadly understand the interests and motives of the others. The development of a proposal should be approached so as to meet the identified priority needs of the major stakeholders. The major stakeholder groups would ordinarily include:

- ° farmers (in the South Australian case they consisted of two groups with somewhat different interests)
- ° agency staff whose jobs or roles could be threatened by turnover, or for that matter by modernisation
- ° agency management, sometimes torn between the conflicting needs of farmers, staff and Government
- ° decision makers at Government level, who may need to seek and obtain the support of the highest decision-making person or body of the Government.

Since the broad objectives are in conflict and some players have interests served by non-achievement of one or other objective, a negotiation is inevitable. In negotiation situations perceived equity is paramount. No player may be seen by the other as gaining while giving nothing. This also means that initial proposals must have a degree of flexibility.

There is a greater chance of acceptance if the final proposal presents a complete outlook giving:

- ° what is to happen on the ground
- ° who is responsible
- ° the full financial effects short and long term.

The essential point is that there should be no latent surprises, and that the deal will stick for all parties. Desirably, trusting personal relationships should evolve.

This also means that the representatives should be able to deliver the commitment of their constituencies to agreements reached between representatives. The major stakeholder groups therefore have a vital interest in the strength and unity of the other major stakeholder groups, and must do everything possible to help develop that strength and unity.

The group for whom this would seem normally to be most in doubt would probably be the farmers, and this presents a further rationale for formal incorporation of turnover elements, providing on-going strengthening roles for farmer organisations.

Turnover however, threatens agency staff at least at lower levels. Farmers and others benefiting from turnover should be brought to understand this and the ultimate role or destination of potentially threatened staff can be an issue resolved as part of the evolution of the package of proposals.

## 9. CONCLUSION

The perception of how far along the turnover spectrum is appropriate, from consultation to full farmer ownership and management, will naturally vary depending upon local conditions.

However, the South Australian experience suggests that turnover to self-management can be an important component of an integrated package of measures to upgrade an irrigation system, perhaps making all the difference between whether or not the package in practice can be implemented in a way that achieves objectives of improved profitability for farmers and reduced long term funding requirement from Government.

## 10. ACKNOWLEDGEMENTS

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The vision and leadership of Tony Read, Manager Agribusiness, of Kinhill Engineers, was also a vital ingredient to its success.

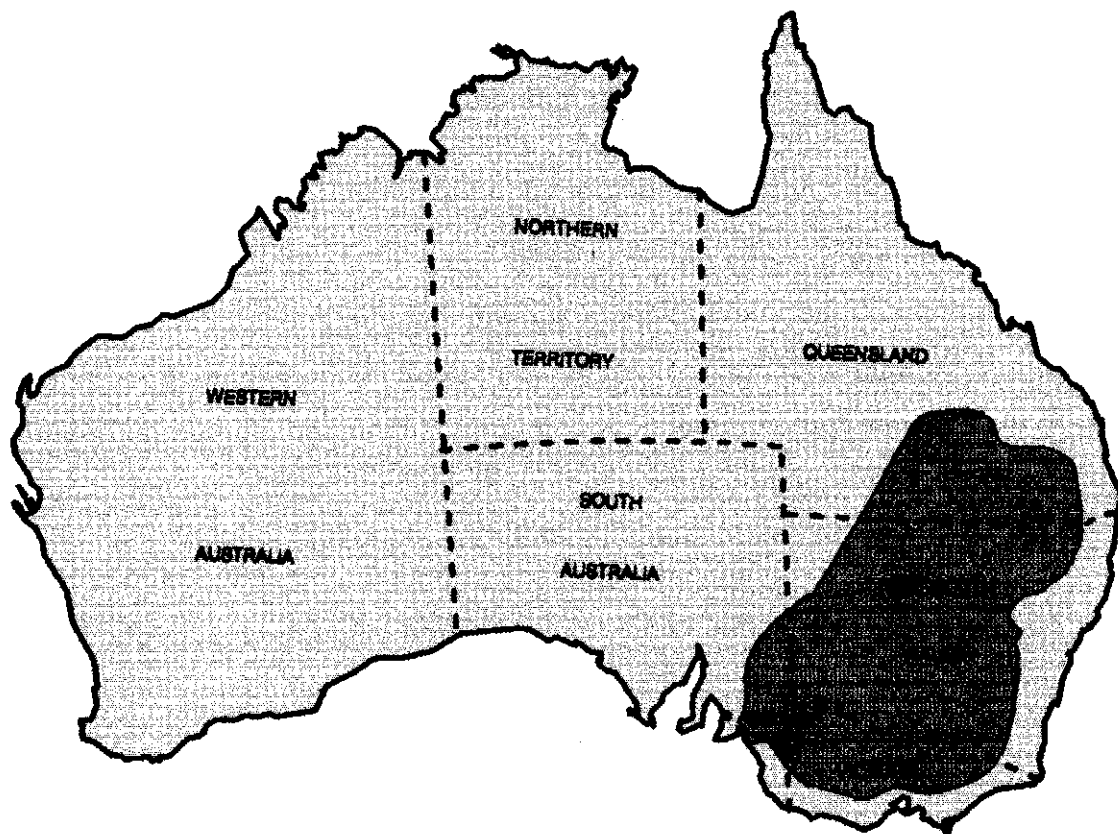
I must also pay tribute to a remarkable group of growers, who as members of the Growers Negotiating Committee, chaired by John Petersen of Kingston, bore the heavy burden of negotiation and leadership of their communities through difficult times.

The manager of the consultancy through which this paper was prepared, Dr Douglas Vermillion of the International Irrigation Management Institute (IIMI), assisted me greatly during my all too short time at IIMI headquarters.

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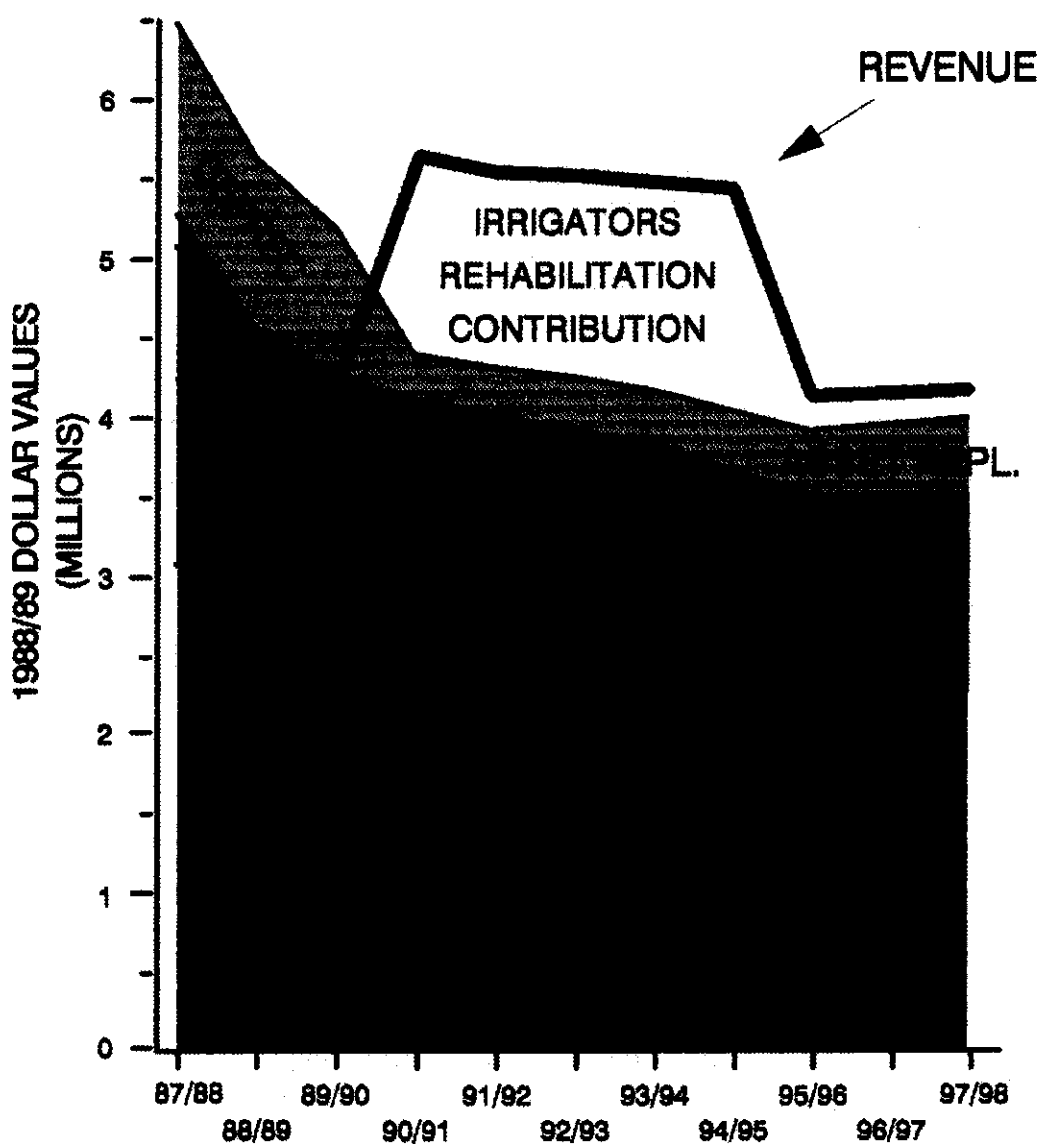


**THE MURRAY - DARLING BASIN**



# HIGHLAND IRRIGATION BUSINESS PLAN

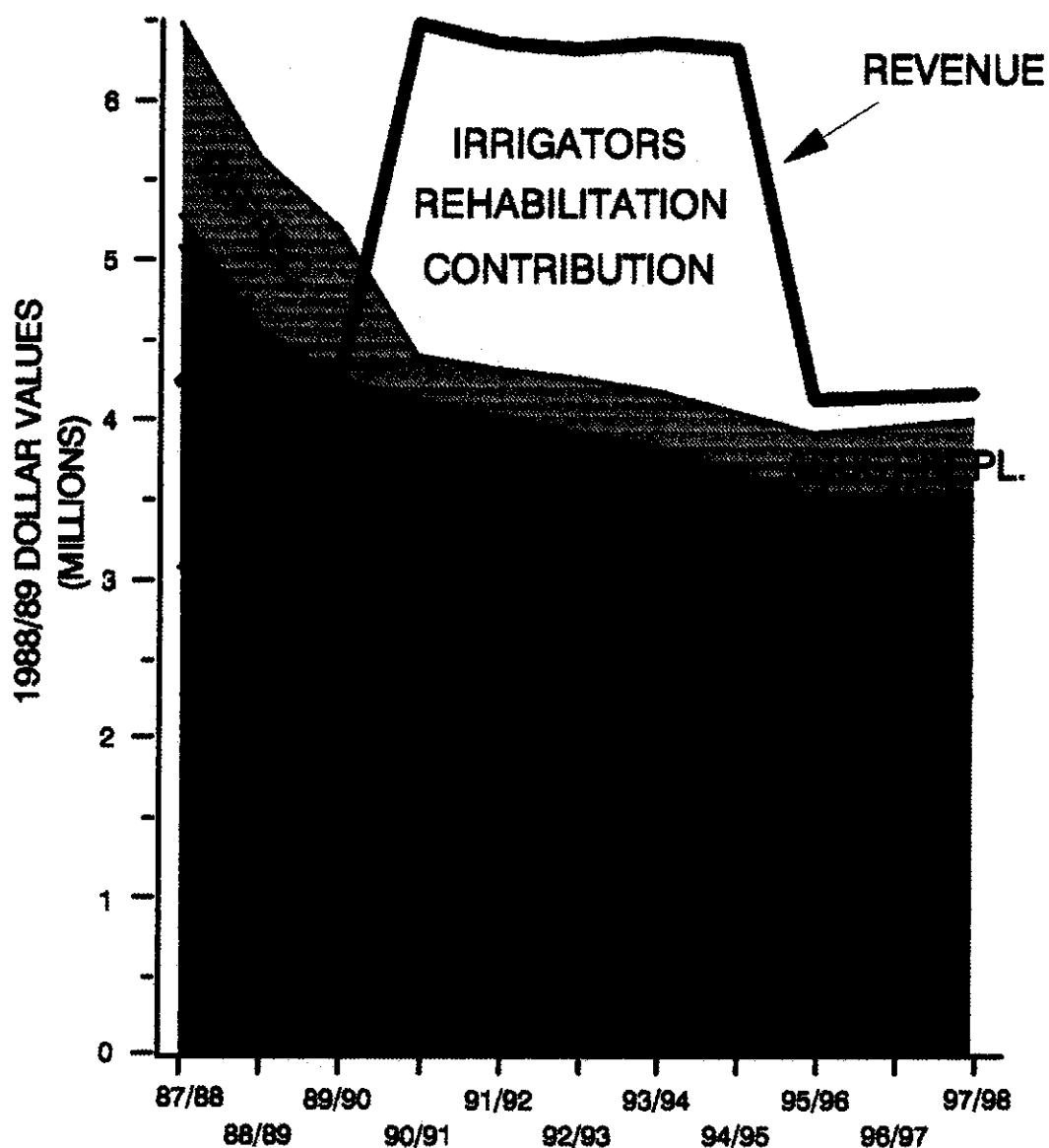
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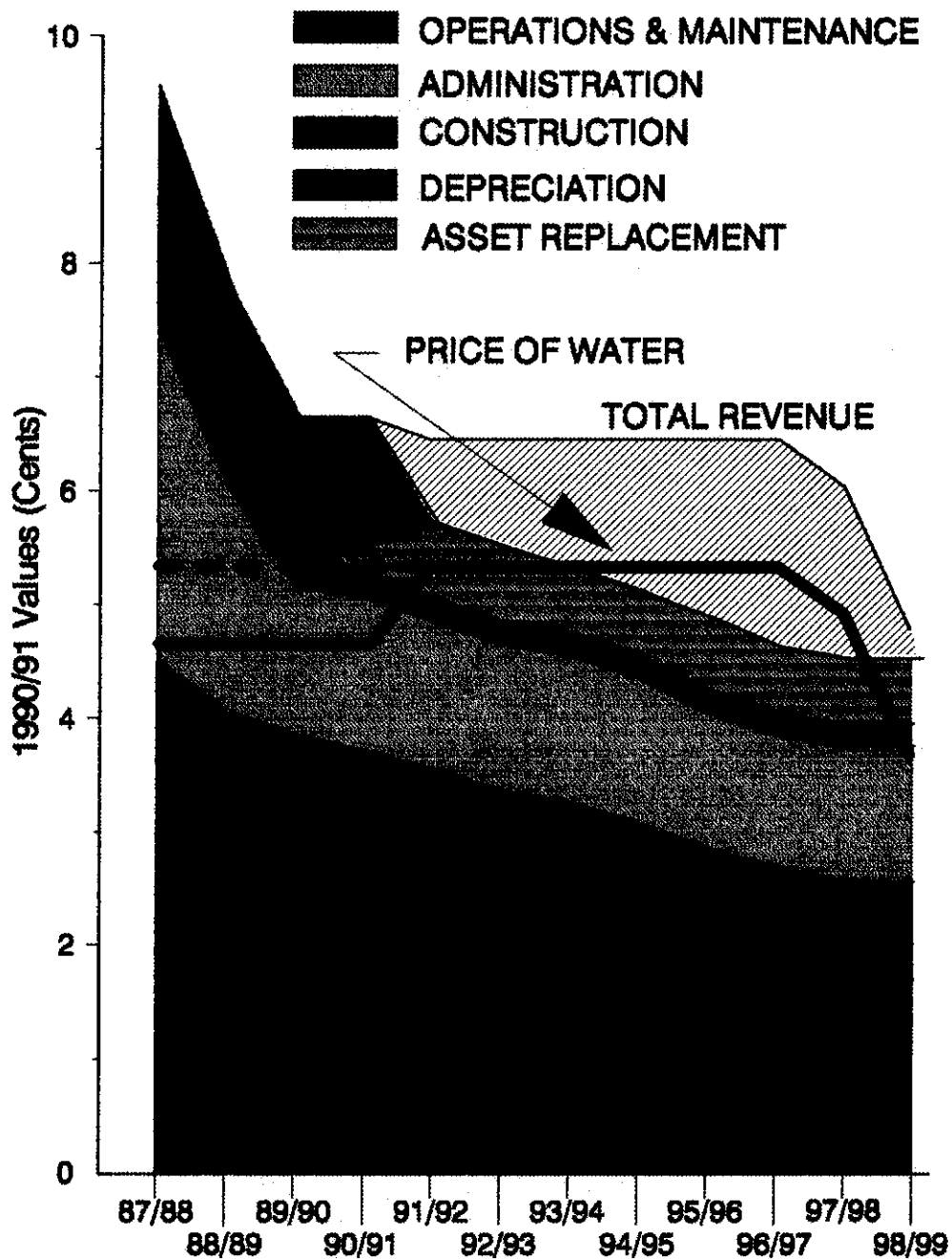


# HIGHLAND IRRIGATION BUSINESS PLAN

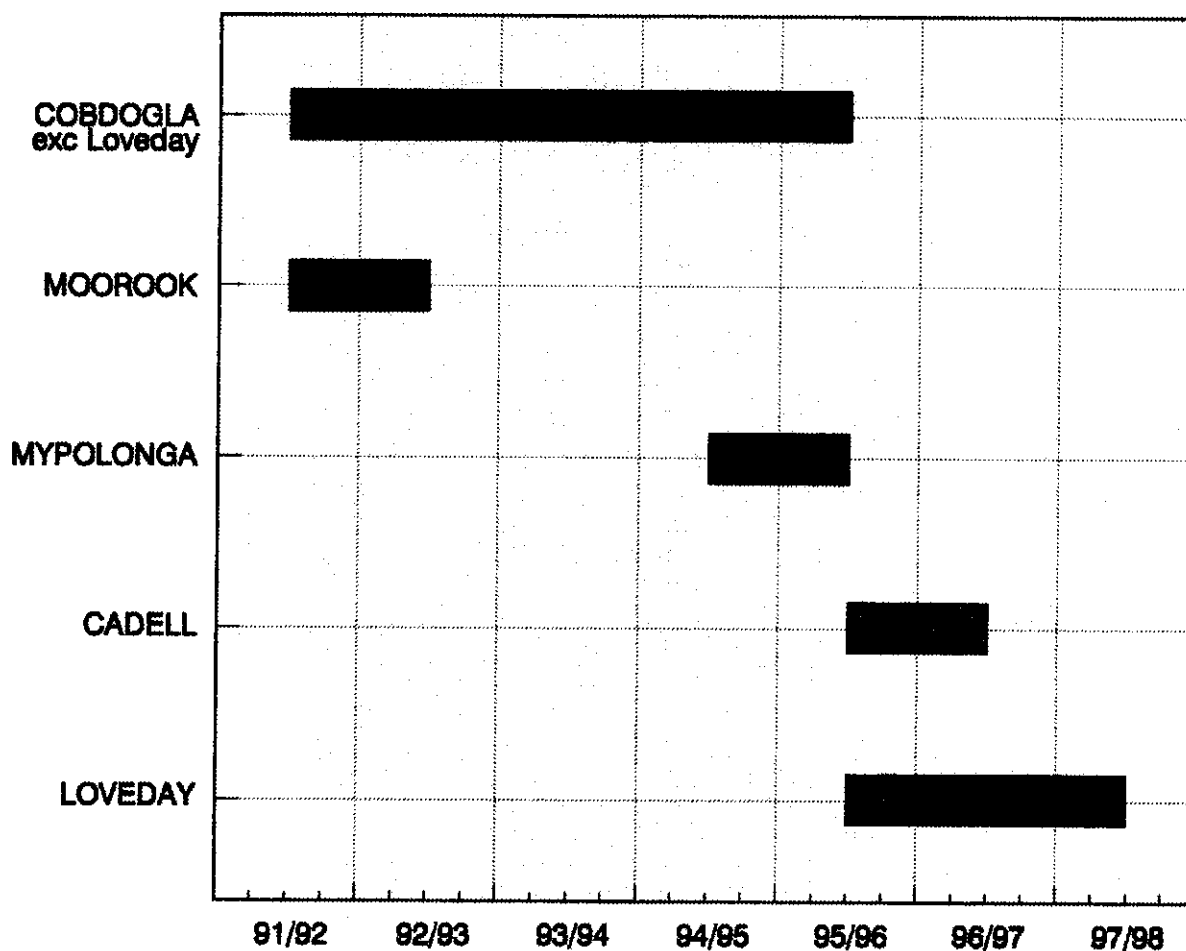
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## PROPOSED PRICE OF WATER (LP) C/KL HIGHLAND IRRIGATION BUSINESS PLAN



**GOVERNMENT HIGHLAND IRRIGATION AREAS**  
**REHABILITATION PROGRAMME - 1990/91 VALUES**  
**CONSTRUCTION PROGRAMME**



# GOVERNMENT HIGHLAND IRRIGATION AREAS

## REHABILITATION PROGRAMME - 1990/91 VALUES

### EXPENDITURE PLAN

