



Upper Billabong Land and Water Management Plan

A plan for the management of natural resources
in the
Upper Billabong Catchment, NSW.

To be read in conjunction with an extensive set of appendices available from the contact persons listed at the back of this document.



Natural Heritage Trust
Helping Communities Helping Australia



Holbrook Landcare



UPPER BILLABONG LAND & WATER MANAGEMENT PLAN

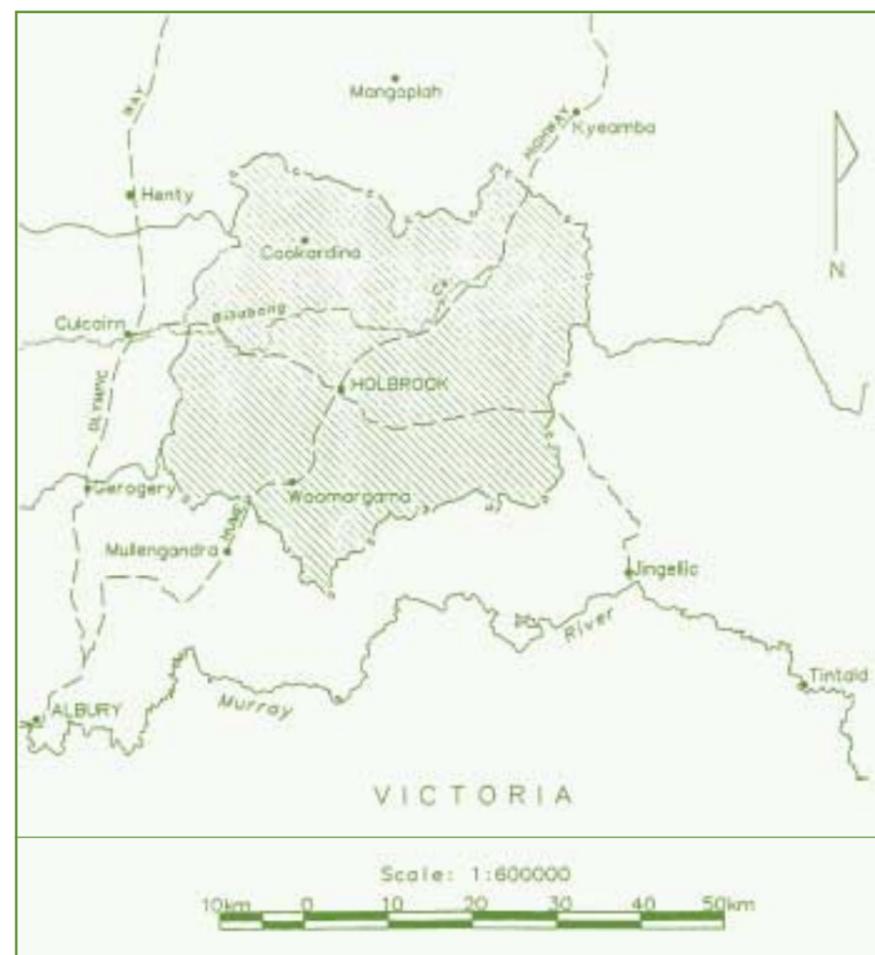
To be read in conjunction with an extensive set of Appendices available from the contact persons listed at the back of this document.

Preface

This is a plan for the management of natural resources in the upper catchment of the Billabong Creek. At all important stages of the development of the plan, the communities in the catchment were kept informed and their involvement sought. The catchment lies on the eastern part of the Murray-Riverina Region of NSW (50 kilometres north-east of Albury), with the township of Holbrook located in the centre. Ridgelines or the watershed act as the natural boundary for the catchment (refer to map).

Responsibility for developing and implementing the plan rests with the Holbrook Landcare Group Ltd, which is a non-profit community group, incorporated as a company limited by guarantee. The Group was formed initially in 1988 as Holbrook Trees on Farms Group. The Holbrook Landcare area corresponds to the Upper Billabong Catchment.

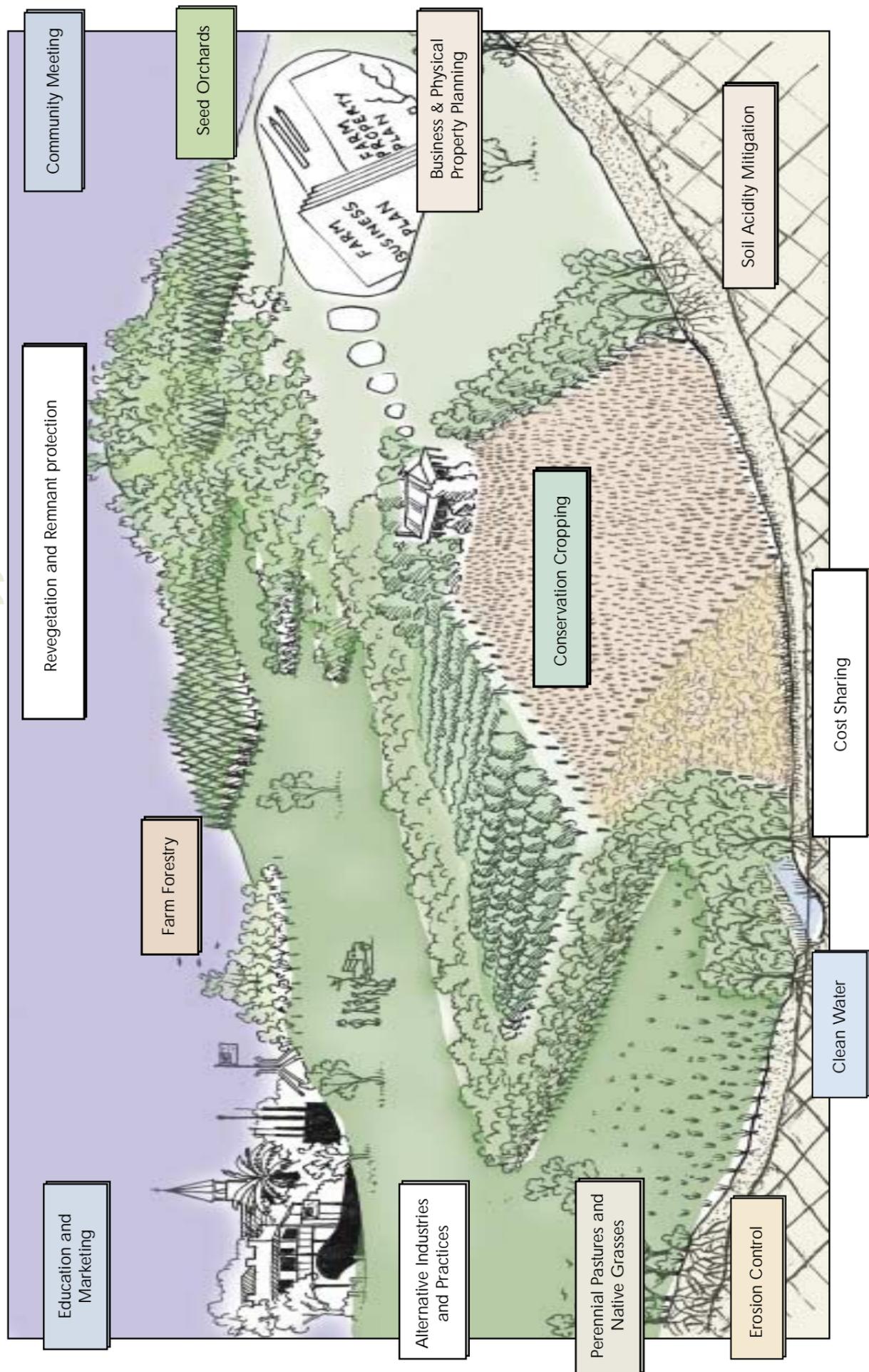
Figure (ii) Locality Map – Upper Billabong LWMP area



Upper Billabong Vital Statistics

- Headwaters of the Billabong Creek, which flows a further 1000km to the west
- Area: 171,000ha
- Population: 2,717
- Shires: 22,000ha in Culcairn Shire in the west of the catchment, 149,000ha in Holbrook Shire
- Elevation: 220-889m, with lowest point at the Billabong Creek at Morven
- Average rainfall: 600-800mm per year

Figure (i) Actions and Targets



INTRODUCTION

The *Upper Billabong Land & Water Management Plan* (LWMP) is a formalisation in print of:

- what we value
- what we know
- what we still need to learn
- what we desire
- what we need to do to fulfill these values and desires.

The idea for developing a plan was endorsed by an open public meeting in 1996.

A community-based Working Group was charged with the responsibility of developing the Plan and reporting back to the community. This document and accompanying appendices are the results. The Working Group had Holbrook Shire Council, Culcairn Shire Council, farmer, Landcare and urban representation. It had no chairperson, so that responsibility and knowledge could be shared throughout the group. Community feedback directed the Working Group's deliberations. The feedback was received via 16 public meetings, numerous surveys, 7 presentations to local community groups and councils, 8 presentations to groups outside the Catchment, 7 newsletters and numerous newspaper and radio items, field days, workshops, seminars and farm walks, as well as a 12-month period for comment on a draft plan. The community of the Upper Billabong has been and will continue to be involved in determining the values, vision, aims, objectives, issues, actions, targets, cost sharing arrangements, and monitoring and evaluation requirements of the LWMP.

The Plan is a dynamic document that will always be open to changes, as the cyclical process of continuous monitoring and evaluation provides feedback and new ideas for the achievement of our aims.

The Plan will be consistent with planning in the wider environment, by integrating aims and strategies from such documents as the Murray Darling Basin Commission's *Basin Sustainability Program* and the Murray Catchment Management Committee's vision statements (at the time of writing, the new Catchment Management Board's plan was not complete).

For convenience, the plan discusses the relevant matters in the following order: Values; Issues; Actions; Costs and Benefits; Monitoring and Evaluation.

1. THE VISION, VALUES and OBJECTIVES THAT SUPPORT THE PLAN

The Plan is based on the realisation that landuse change across the landscape is required. It will act as a catalyst to obtain resources to ensure that we can instigate these landscape changes.

A Shared Vision

The 30 year vision for the Catchment developed by the community is:

To improve the economic, social and physical environment of the Upper Billabong Catchment by the implementation of a viable Land and Water Management Plan through education, participation and community ownership.

The Values That Underpin the Vision

(a) The things we value

The people of the Upper Billabong Catchment have shared values that guide us in the use of the catchment's resources. These values are:

- Freedom to pursue our own agenda for the management of the catchment
- Control over our physical, social and economic circumstances
- Care for each other and our physical environment
- Change that improves the nature of the community and the life of its members
- Continuous learning
- Aesthetic considerations relating to both the natural and built environment

(b) Necessary conditions

To enable us to live by these values, the following conditions need to be met:

- Profitable enterprises and occupations for the urban and rural sectors of the catchment
- Skills in the management of land and other resources
- Understanding of ecological and social processes at work in the catchment
- A Catchment Management Plan "owned" by the community
- Encouragement and support for individuals who are learning to improve natural resource management in their part of the catchment
- Continuing dialogue within the community on the subject of the Plan
- Other forms of production that will enhance the future resource base

(c) Future Resource Base

The resource base needed for the future, to support these necessary conditions and to enable our values to be realised, will look like this:

- The community will be vibrant, dynamic, well educated, and in touch with its surrounding natural environment. It will encourage its members to take up opportunities wherever they may find them, and to seek enjoyment in their lives, and will ensure that adequate social services are provided where necessary.
- The landscape and its ecosystems will be healthy, with improved and improving biodiversity, clean streams of surface water, optimum ground cover, and a stable or improving water cycle. There will be a variety of aesthetic environments, to satisfy as many tastes as possible.
- The community and individuals within it will have access to a wide range of expertise in natural resource management, and access to all appropriate government and private agencies concerned with resource management and social development.

The Objectives of a Planning Process

The Working Group determined the reasons for undertaking the development of the *Upper Billabong Land & Water Management Plan*, as follows:

- To allow us to have our own say with regard to our values, visions, concerns and solutions for the catchment; ie: to control our own agenda
- To achieve a better understanding of catchment issues and how bad they might become
- To develop a Plan that has input from the entire community
- To educate ourselves and others
- To develop our own realistic and achievable solutions based on the best information currently available
- To develop the ability to make positive change
- To determine priority actions in priority locations with set targets of achievement
- To develop a resource library/inventory of best practices
- To develop a Plan that may have cost sharing arrangements with government and/or other bodies
- To have monitoring and review processes set in place to assess the impacts of our landuse practices

2. THE ISSUES

Identifying the Issues

The Upper Billabong community identified and ranked a total of 42 issues that were of significance to their vision for the catchment's future. The highest ranked issues are shown in the table and diagram below. The community also determined the extent to which the issues could be controlled; those issues that can be controlled are given priority in developing the 'Actions'. More detailed information regarding each issue is provided in the appendices, in which some issues are grouped together where convenient.

Figure (iii) Catchment Issues and Potential Impact

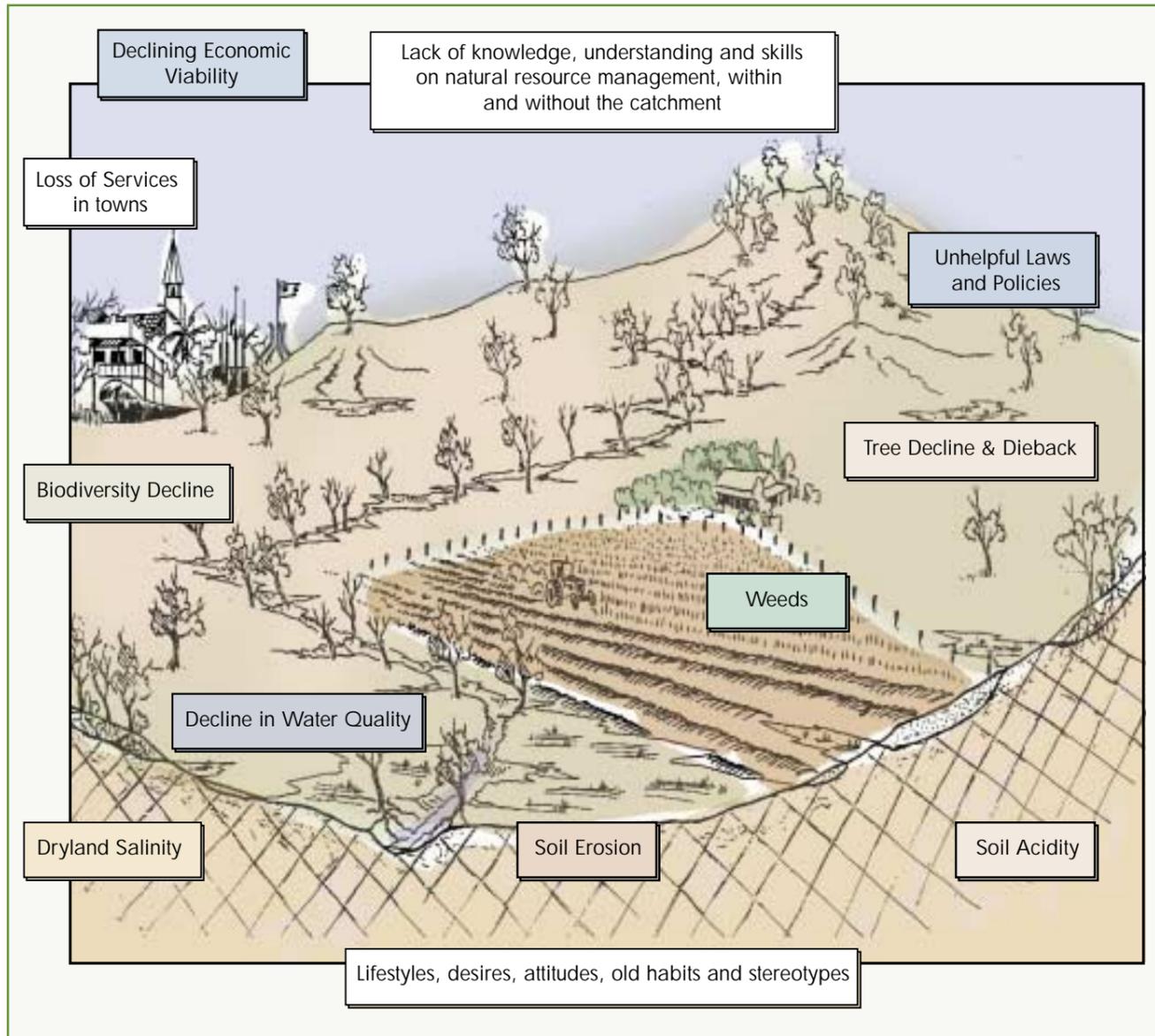


Table (i) Catchment issues in order of priority as determined by members of the community, and the relative level of control by community

Prioritised Issues	Level of control by community	Relevant Appendix	Relevant On-Ground Action - see table (ii)	Relevant Marketing/Education Action - see table (iii)
A Declining economic viability of both the rural and urban sectors in the catchment	Low	App. 2: The People	4, 5, 6, 7, 9, 11, 12	2, 4, 5, 7, 13
B Lack of knowledge, understanding and skills on natural resource management both within and outside the catchment	Medium	App. 2: The People	1, 2, 3, 4, 5, 6, 7, 9, 10, 11, 12	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18
C Increasing tree decline and dieback	Medium	App.3: The Natural Environment	1, 2, 3, 10	15
D Increasing soil acidity	High	App. 4: The Land	1, 2, 3, 4, 5, 6, 7, 9	
E Increasing soil erosion	High	App. 4: The Land	1, 2, 3, 4, 5, 6, 7, 8, 9, 11	
F Increasing weeds	Medium	App. 4: The Land	2, 3, 5, 7, 11	15
G Increasing dryland salinity	Medium	App. 5: The Water	1, 2, 3, 4, 5, 6, 7, 9	
H Lack of political vision and understanding, ineffective laws and policies	Medium	App. 2: The People		10, 14
I Loss of services in town, declining rural population	Medium	App. 2: The People	5, 6, 9	5, 7, 11, 14
J Decline in water quality	Medium	App. 5: The Water	1, 2, 3, 6, 7, 8, 11	
K Biodiversity decline	Medium	App. 3: The Natural Environment	1, 2, 3, 7, 10, 11, 12	15
L Lifestyles, desires, attitudes, old habits and stereotypes	Low	App. 2: The People	All actions	6, 10, 14, 16, 18

“To improve the economic, social and physical environment of the Upper Billabong Catchment by the implementation of a viable Land and Water Management Plan through education, participation and community ownership.”

The “Do-Nothing” Scenario: outcomes in the catchment if there is no intervention

We provide here an overview of the future outcomes if we do nothing regarding each of the issues. No single catchment issue should be viewed in isolation; all of the issues within the Upper Billabong Catchment interrelate and will affect the economic, social and environmental well-being of the catchment and beyond.

Declining Economic Viability

Of greatest concern to the community is declining economic viability. The average return on assets for landholders within the catchment in 1996/7 was 2% with the surplus available for reinvestment being \$1225. ABARE figures show this to be a worsening trend particularly as input costs continue to increase and commodity prices continue to decrease. Landholders' financial ability to uptake Landcare practices, therefore, is very low.

Increasing Tree Dieback

Dieback is most prevalent in trees on the flats and slopes within the catchment (as opposed to hills and ridgelines). Blakely's Red Gum is one of the main species being affected by dieback. Lack of shrubs has resulted in reduced numbers of insectivorous birds, the normal predators of the insects eating the eucalypt leaves. If allowed to continue there is a strong likelihood that insect-induced dieback will progress from the Red Gums into other eucalypt species. Very few remnant eucalypts will survive on the flats.

Increasing Soil Acidity

Soil surveys of the catchment have found the average pH (CaCl) to be 4.6 (0-10 cm) and 4.4 (10-20 cm). This is an increasing problem, particularly associated with clover-based annual pastures. If current landuse practices are maintained, most soils within the catchment will have a pH of 3.9 or lower in less than 50 years' time, dramatically reducing the landuse potential of the soil.

Increasing Soil Erosion

There are 466 km of streambank and gully erosion with the catchment. Sheet/rill erosion has impacted on 11% of the catchment. Gullies are now acting as a release point for groundwater flows carrying salts, causing increased salt loads within tributaries. It is predicted that gully erosion may increase to over 700 km by 2030 if certain landuse practices are maintained.

Increasing Weeds

There are 18 noxious weeds currently recorded within the Shires. Noxious weeds currently of greatest concern include Blackberry, St John's Wort and Noogoora burr. To do nothing will lead to a proliferation of weeds.

Increasing Dryland Salinity

Over 130 ha within the catchment are showing the visual symptoms of salt: bare areas and salt tolerant plants. As watertables continue to rise so will salinity. Breaks of slope and wet phases of the plains are the areas most likely to be influenced by salinity in the future.

Rural Economic Decline

Social issues of concern include lack of education on natural resource management, population decline and the loss of rural services. Without strategic planning of education programs, improved landuse practices, alternative marketing practices, alternative enterprises and industries these social issues will remain a concern.

Water Quality Decline

Preliminary hydrogeological investigations show that watertables within the catchment are rising. Salinity, turbidity and total phosphorus levels within the Billabong Creek have all at varying times been high. Salinity readings in the Creek at Walbundrie have shown the fastest rising trend in the NSW Murray-Darling system.

Biodiversity Decline

9% of fauna once common within the catchment are now endangered, vulnerable or threatened. Yellow Box, White Box and Blakely's Red Gum vegetation communities have been extensively removed (99% cleared) with the greatest impact being on their shrub and grass layers. If this continues our natural assets will be lost and the natural checks and balances will be reduced.

3. ACTIONS, RESPONSIBILITIES, TIMELINES

The goal of developing a plan and implementing it is to reverse the negative effects of the issues outlined above. That goal will be realised by implementing 'actions' that further the community's vision, values and objectives regarding the catchment.

The process of determining actions and specific targets will be the most dynamic components of the Upper Billabong LWMP - they will be in a continuous state of assessment and change. Two categories of action have been collated below, namely: *On-Ground Actions* - Table (ii), and *Education & Marketing Actions* - Table (iii).

Members of the Holbrook Landcare Group and Upper Billabong LWMP Working Group ranked and prioritised the actions. They were asked: "Rank the 'On-Ground Actions' and 'Education and Marketing Actions' according to those you feel will best meet the community vision, best meet your personal values, best address the community's issues of concern, and minimise energy/resource expenditure". The results represent the 'cumulative' thinking of the Working Group and Landcare Group. This has been done purely to provide some guidance to the Groups and their employees on the actions of greatest interest at this point in time. All of the actions are important and all need to be undertaken as time and opportunity allow. Figure (i) (Page i of this document) provides a summary of some of the actions and targets of the Plan to the year 2030.

The Appendices available from the contact persons on the back page of this document provide detailed analysis of the actions (including 30 year timelines), as well as priority areas for targeting actions dealing with protection and management of existing remnant native vegetation, farm forestry and establishment of perennial pastures. Refer to Appendices 6 and 9 (Map 5) in this regard.



Table (ii) On-Ground Actions

Rank	Action	Priority	Relates To issue In table (i)	Persons Responsible For Assisting Community To Achieve Action	2005 Performance Indicators (ha and % of catchment)
1	Revegetation of predominantly cleared country with emphasis on the use of local natives	High	B, C, D, E, G, J, K	Rebirding Project Officer, Landholders, Greening Aust. catchment) by 2005.	Increase by 1,525ha (1% of catchment) from 1998 estimate (1895ha or 1% of catchment) to 3,420ha (2% of
2	Improved management of remnant native vegetation	High	B, C, F, K	Rebirding Project Officer, Landholders, Greening Aust.	For Actions 2 and 3 combined:
3	Enhancement of remnant native vegetation areas that have been degraded	Medium	B, C, D, E, F, G, J, K	Rebirding Project Officer, Landholders, Greening Aust. catchment) by 2005	Increase by 5,130ha (3% of catchment) from 1998 estimate (8550ha or 5% of catchment) to 13,680ha (8% of
4	Soil Acidity Mitigation: <ul style="list-style-type: none"> Promote the uptake of landuse practices that reduce the reliance on ameliorates (eg: farm forestry, revegetation with local natives and perennial grasses). Ongoing encouragement of soil testing and periodic application of ameliorants (eg: lime) to pastures and crops. Encourage the use of acid tolerant crops and pastures. 	Medium	A, B, D,	South West Slopes Community Acid Soils Project Officer, Implementation Officer	Undefined: await Murray Catchment Management Board targets
5	Perennial Pastures (eg: phalaris, cocksfoot and lucerne): Provide for the improved establishment and management of perennial pastures.	Medium	A, B, E, F, G	Implementation Officer, Landholders, NSW Ag. & Private Agronomists	Increase by 6,840ha (4%) from 1998 estimate (29,070 ha or 17% of catchment) to 35910ha (21% of catchment) by 2005
6	Farm Forestry With emphasis on proven pine and eucalypt species	Medium	A, B, D, E, G, I, J	Implementation Officer, Landholders, Farm Forestry Extension Officers.	Increase by 3282ha (2% of catchment) from 1998 estimate (2540ha or 1% of catchment) to 5822ha (3% of catchment) by 2005
7	Perennial Native Pastures: Investigate objectives and options. Develop guidelines for the improved management and establishment of native perennials.	Medium	A, B, D, E, F, G, J, K	Implementation Officer, Landholders, Greening Aust., NSW Agriculture and Private Agronomists	Increase by 5130ha (3% of catchment) from 1998 estimate (3420ha or 2% of catchment) to 8550 ha (5% of catchment) by 2005)
8	Erosion Control Works <ul style="list-style-type: none"> Emphasis will be placed on reduction of erosion through the maintenance of adequate ground cover Subcatchment farm walks and planning exercises will assess, determine the level of activities and maximise the integration of erosion works. The funding requirements for structural works will be determined on a subcatchment basis to maximise the cost effectiveness. The use of permanent (concrete) structures will be a low priority. 	Medium	E, J	Landcare Subcatchment leaders, DLWC and Catchment extension staff, Farm Planning Extension Staff, Landcare Support Officer.	Instigate new planning and works in 1-2 subcatchments per year
9	Establishment of Alternate Industries (eg: aquaculture, olives, bush foods persimmons, loquats, specialist farm forestry)	Medium	A, B, D, E, G, I,	Implementation Officer, Landcare Support Officer, Landcare Executive & LWMP Working Group, regional research and development groups	Increase by more than 400ha from 1998 estimate (less than 100 ha) to 500 ha by 2005
10	Establishment of Local Seed Production Areas: To provide seed for species difficult to obtain (eg: most shrubs)	Medium	B, C	Greening Aust, Landholders, Landcare Support Officer	20 sites
11	Provide for the increased uptake of conservation cropping practices.	Low	A, B, E, F, J	NSW Ag , DLWC, Private Agronomists, Landholders, Catchment Extension Staff, Implementation Officer	Increase by 3420ha (2% of catchment) from 1998 estimate (5130ha or 3% of catchment) to 8550ha (5% of catchment) by 2005
12	Establishment of Wildlife Sanctuaries: To protect threatened species currently on the site or reintroduce species once present. The sites need to be assessed for their sanctuary value and objectives, works and management guidelines determined.	Low	A, B, K	Landholders, Fauna & Flora Specialists, Landcare Support Officer, Greening Aust, National Parks, DLWC	One sanctuary

Table (ii) On-Ground Actions cont...

Rank	Action	Priority	Relates To issue In table (i)	Persons Responsible For Assisting Community To Achieve Action	2005 Performance Indicators (ha and % of catchment)
13	Adopt-a-Roadside: Challenge, encourage and involve local community groups in adopting a roadside. Works might include weed control, revegetation works, litter removal campaigns.	Low	B, F, L	Landcare Support Officer, Urban Landcare Group, Community Organisations	4 roadsides

Table (iii) Education and Marketing Actions

Rank	Action	Priority	Relates To Issues In Table (i)	Persons Responsible For Assisting Community To Achieve Action	2005 Performance Indicators
1.	Newsletter (up to date landcare information)	High	B	Implementation Officer, Landcare Support Officer in conjunction with landholders and other specialists	4 per year
2.	Business Planning Workshops: Involve subcatchment groups in programs (eg: Farming for the Future) that involve a balance of physical, personal and financial planning.	High	A, B	Landcare Support Officer and Subcatchment Leaders, Farm Planning Extension Staff	2-3 subcatchment groups per year.
3.	Brochures: Local best practice case studies, eg: revegetation techniques, perennial pasture, farm forestry,	Medium	B	Implementation Officer in conjunction with	2 brochures/year.

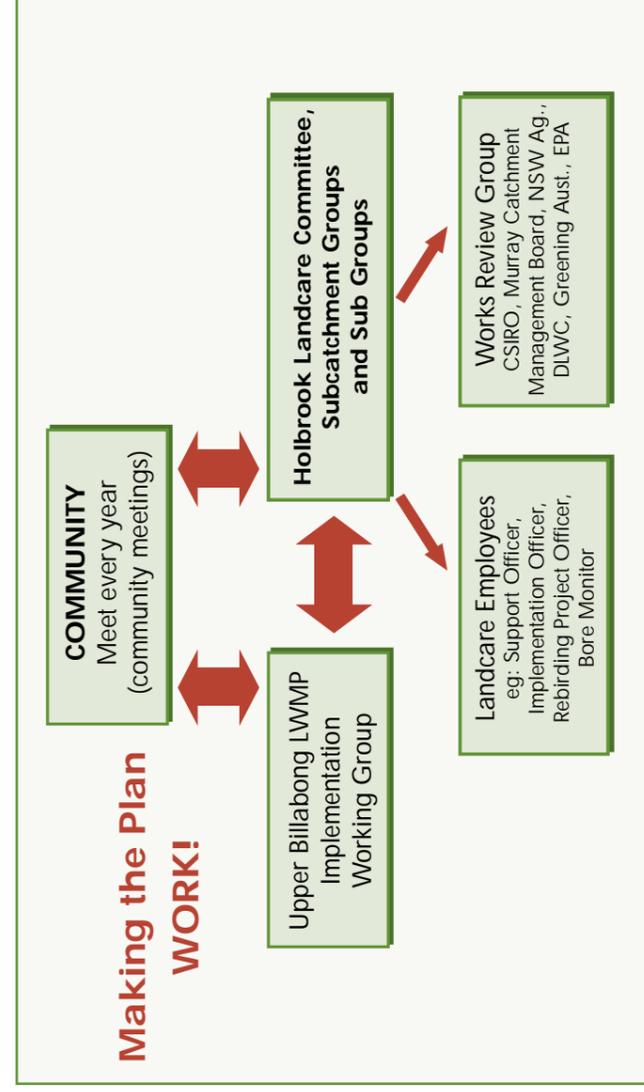
	alternative enterprise establishment, conservation cropping.			landholders and other specialists.	
4.	Physical Planning Workshops: Involve subcatchment groups in programs (eg: Farming for the Future) that involve a balance of physical, personal and financial planning.	Medium	A, B	Landcare Support Officer and Subcatchment Leaders, Farm Planning Extension Staff	2-3 subcatchment groups per year.
5.	Investigate New and Alternate Marketing Practices for current enterprises: <ul style="list-style-type: none"> Engage consultants or other specialists to investigate the potential of alternate management and marketing practices, value adding practices, return maximisation 	Medium	A, B, I	Implementation Officer, Landcare Support Officer, Landcare Executive and LWMP Working Group members. Link with established research bodies and regional development groups.	Investigate 2 alternate management and marketing practices/year.
6.	Farm Walks	Medium	B, L	Implementation Officer, Rebirding Project Officer in conjunction with other landholders and technical specialists.	Farm walks, workshops and field days: total of 4-6 per year
7.	Investigate New Enterprises and Industries <ul style="list-style-type: none"> Engage consultants or other specialists to investigate new enterprises and industries Possibilities: holistic grazing, carobs, olives, persimmons, loquats, nuts, cut flowers, herbs, specialist farm forestry, etc 	Medium	A, B, I	As per Education and Marketing Action #5	Investigate 3 new enterprises and industries/ year.
8.	Field Days	Medium	B	As per Education and Marketing Action #6	As per Education and Marketing Action #6
9.	Workshops	Medium	B	As per Education and Marketing Action #6	“ “ “ “ “
10.	Community Meetings To keep the community up to date, seek support and guidance.	Medium	B, H, L	Implementation Officer and LWMP Working Group members.	A series of 5 meetings once a year

Table (iii) Education and Marketing Actions cont...

Rank	Action	Priority	Relates To Issues in Table (i)	Persons Responsible For Assisting Community To Achieve Action	2005 Performance Indicators
11.	Landcare Education in Schools Involve Catchment primary schools in landcare activities and education programs, eg: fauna surveys, Streamwatch, tree plantings, Murder Under the Microscope, seed collecting and propagation etc	Medium	B, I	Implementation Officer, Landcare Support Officer, Rebirding Project Officer in conjunction with other landholders and schools	On-going
12.	Resource Library in the Landcare Shopfront	Medium	B	Implementation Officer in conjunction with landholders and other specialists.	On-going
13.	Seminars	Medium	A, B	As per Education and Marketing Action #6	1 per year
14.	Marketing of Holbrook Landcare and the LWMP to the wider community outside the Catchment <ul style="list-style-type: none"> Market the vision, objectives, issues, targets, actions, cost sharing desires etc. to other bodies. Presentations would be tailored to the specific audience. Focus will be on this catchment being a model catchment, landscape change, community instigated change and a positive outlook - making our dreams happen. Develop and supply promotional materials e.g. clothing, hats, pens etc with Holbrook LC logo. 	Medium	A, B, H, I, L	Landcare Support Officer, Implementation Officer, Landcare Executive and LWMP Working Group members	On-going
15.	Establishment of Herbarium with a focus on local plant species	Medium	B, C, F, K	Implementation Officer in conjunction with landholders and other specialists. Develop links with Charles Sturt Uni in their herbarium development	On-going

16.	Bus Trips	Low	B, L	As per Education and Marketing Action #6	1 per year
17.	Displays/Posters: For field days, seminars, conferences, meetings etc.	Low	B	Implementation Officer and Landcare Support Officer.	Ongoing as required
18.	Painting red of a high profile dead tree: (eg: Hume Hwy) plus simple signage: "Holbrook Landcare Improving the Environment".	Low	B, L		tree

Figure (iv) Organisational Structure for Implementation



Framework for Implementing the Plan

The flow-chart adjacent shows an organisational frames work and lines of responsibility for implementing the LWMP. Complete descriptions of each aspect of the framework are contained in Appendix 1 ("The Planning Process")

4. COSTING THE IMPLEMENTATION OF THE PLAN

The “beneficiary pays” principle applies to the sharing of the costs associated with the proposed actions outlined by this plan. That is: whoever benefits from particular works being undertaken will pay according to the proportion of the benefit.

This system of payment requires a definition of public and private benefits that will flow from works. For example, public benefits could include reduced salinity, increased community education, improved water quality, increased employment and biodiversity. From the same works, private benefits might be increased production and increased property values.

Table (iv) Currently available and Proposed Funding for landholders

Current	Proposed	
\$1200/km	\$1500/km	Fencing out remnant native vegetation and revegetation works
\$250/ha	\$400/ha	Revegetation with predominantly local native species
\$1200/km (winding up)	\$1500/km	Fencing of the Billabong Creek and tributaries
\$1280 (winding up)	\$2000	Establishment of alternative watering point where creeklines along the Billabong Creek and tributaries have been fenced out
\$66/ha	\$130/ha	Establishment of perennial pasture on cleared agricultural land with a predominance of exotic annuals.

In broad terms if there are distinct public benefits associated with Landcare works – such as fencing of creeklines and remnant native vegetation – then there is strong potential for cost sharing negotiation with government and other public bodies. The greater the private or commercial benefit associated with the works – such as perennial pasture establishment and the application of lime – the greater the contribution expected from private landholders.

Appendix 7 provides a detailed analysis of the ways in which the private/public benefits of on-ground actions recommended in this Plan can be calculated. Set out below is a summary of cost-sharing over a five year period.

Table (v) Summary of estimates for proposed cost sharing for 2000–2004, inclusive (\$'000s)

On-Ground Works	Landholder	Outside funding*	Education and Marketing	Landholder	Outside funding*
Revegetation and Remnants: revegetation, enhancement, fencing, alternative watering points	2558	1675	Landcare Communications	759	0
Soil Erosion Structural Works	258	156	Extension Materials	0	46
Farm Forestry Establishment	3026	1685	Investigation of Options	110	64
Perennial Pasture Establishment	2829	417	Landcare Shop Front	30	25
Other Landcare Associated Costs	10184	0	Landcare Employed staff	0	632
Total On-Ground Works	18855	3933	Monitoring and Evaluation	110	37
As a percentage	83%	17%	Total Education and Marketing	1009	804
			As a percentage	56%	44%
			On-Costs and Administration	339	399
			As a percentage	46%	54%
Totals	20203	5171			
Totals as a percentage	80%	20%			

*Government and Non-government

5. MONITORING and EVALUATION

This Land & Water Management Plan has grown out of the community's concern for the future of their catchment area, and the community, through Holbrook Landcare, will continue to be involved in the monitoring, evaluation and dynamic growth of the Plan. Keeping the Plan alive will involve a long-term, cyclical process as in the figure adjacent.

Figure (v) The Strategic Process (Thorman & Heath 1997)



Examples of the catchment features that will continue to be monitored include:

- water quality
- flora and fauna quality and quantity
- groundwater height and quality
- the uptake of desired on-ground actions
- soil salinity and acidity
- attendance at meetings, field days and workshops
- extent of erosion
- economic viability, population and attitudinal change

The people identified to carry out these monitoring activities are Landcare staff, departmental employees, community members, and consultants.

Full details as to how the various actions in the current plan will be monitored and evaluated are contained in Appendix 8.

6. OVERVIEW OF APPENDICES

The LWMP appendices provide more detailed information on the matters outlined above. The table below describes each of the appendices.

	TITLE	PARTS	P.
1	The Planning Process	1. Acknowledgments 2. Planning Process 3. Role of Holbrook Landcare Group 4. Organisational Framework for Implementation Committees, Sub-Committees, Sub-catchment groups, Employed staff. 5. Consistency with Broader Planning Policies: MDBC; Murray Catchment Management Bd.	1
2	The People	1. Useful Background Material Location and history; Demographics and Employment; Infrastructure and Services. 2. Issue A: Reduced Economic Viability and Issue I: Loss of Services Causes; Current economic and social situation; The Bigger Picture and Trends. 3. Issue B: Lack of Knowledge, Understanding and Skills of NRM 4. Issue H: Ineffective Government Policy	11
3	The Natural Environment	1. Useful Background Material: Fauna and Flora of the Upper Billabong. 2. Issue C: Tree Decline and Dieback Causes and current status. 3. Issue K: Biodiversity Decline Causes; Current status; Future implications.	27
4	The Land	1. Useful Background Material Elevation, Geology and Soils; Current Landuse; Agricultural Statistics; Climatic Data. 2. Issue D: Soil Acidity 3. Issue E: Soil Erosion 4. Issue F: Weeds Causes; Effects; Current Status; Trends.	57
5	The Water	1. Groundwater 2. Issue G: Dryland Salinity – a groundwater issue Causes; Current Status and Trends 3. Surface Water Major watercourses; Water Quality – salinity, turbidity, pH, dissolved O ₂ , pesticides, nutrients, heavy metals, temperature, macroinvertebrates, algae, bacteria, fish. ISSUE J: Water Quality Decline Causes; Current Status and Trends	80
6	The Actions	1. Overview of (a) On-ground actions and (b) Education and Marketing actions 2. Priority Locations, Responsibilities and Performance Indicators for actions 3. How the actions relate to the issues	93
7	The Costs and Benefits - “Do-Nothing” vs Proposed Actions	1. Costs of ‘Do-Nothing’ Scenario 2. General Costs and Benefits of Proposed Actions Primarily Public Benefits; Both Public and Private Benefits; Primarily Private Benefits; Both Public and Private Costs; Primarily Private Costs. 3. Benefit Cost Studies in other Regions 4. Upper Billabong Approach: An alternative to cost benefit analysis 5. Current and Proposed Cost-Sharing	109
8	Monitoring and Evaluation		143
9	Maps and References	References; Maps: (1) Habitats: Landuse and Vegetation Systems; (2) Land Degradation; (3) Regolith: Geology, Landform and Topography; (4) Lime Requirements to Manage Soil Acidity (Target pH: 5.2); (5) Target areas for Landuse	

“Land of many rivers, look after the Land and Rivers

And the Land and Rivers will look after you”

Cec Grant, Senior Wiradjuri Elder

Want more information?

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