

# The Yanco Creek System Natural Resource Management Plan



**STAGE 1.**  
(to be reviewed after five years)

**Written for the Yanco Creek and Tributaries Advisory Council by:**

Peter Beal  
Lee Furness  
Jim Parrett  
Rob Scriven

<b>FOREWORD</b> .....	i
<b>ACKNOWLEDGMENTS</b> .....	ii
<b>EXECUTIVE SUMMARY</b> .....	iii
<b>1. PLAN CONTEXT AND BACKGROUND</b> .....	1
1.1 Background to the Yanco Creek System Natural Resource Management Plan .....	1
1.2 Relationship to Forest Creek Management Plan .....	1
1.3 Scope of the Plan.....	2
1.4 Targeted Outcomes of the Plan .....	2
1.5 Status of the Plan.....	2
1.6 Management Actions .....	6
1.7 Duration of the Plan .....	9
1.8 How with this Plan make a difference?.....	9
1.9 Consultation Process .....	11
<b>2. DESCRIPTION OF THE YANCO CREEK SYSTEM</b> .....	13
2.1 The Physical System .....	13
2.2 History of the System.....	13
2.3 Hydrology Regime .....	15
2.4 Flow Constraints .....	16
2.5 The Biophysical Environment.....	18
2.6 Water Quality and Flow Monitoring of the YCS .....	22
2.7 Agricultural Importance .....	32
2.8 Indigenous Significance .....	34
2.9 European Significance .....	34
<b>3. EXAMINATION OF COMMUNITY AND STAKEHOLDER CORE ISSUES AND RECOMMENDED ACTIONS</b> .....	35
Improving the Overall Deliverability and Efficiency of Supply for the Entire Creek System.....	35
Issue 3.1 Supply and Delivery of Water.....	35
Issue 3.2 System Losses .....	36
Issue 3.3 Seasonal Flows.....	37
Issue 3.4 Improvement of Creek Flows.....	37
Issue 3.5 Willow removal.....	38
Issue 3.6 Excessive Growth of Cumbungi.....	40
Issue 3.7 Creek Breakouts .....	41
Issue 3.8 Alternative Supplies and Water Saving Schemes.....	42
Issue 3.9 Weirs .....	43
Issue 3.10 Water Ordering.....	45
Issue 3.11 Demand Management during the Irrigation Season .....	46
Issue 3.12 Improve the Provision of Stream Flow Information.....	46
Maintaining and Improving the Health of the Creek and to Mimic Natural Flooding Events where possible .....	47
Issue 3.13 Ecological Management of the Creek System.....	47
Issue 3.14 Water Quality .....	50
Maintaining and Improving the Riparian Habitat (Biodiversity of the Creek Corridor) and Ecological Health of the System.....	53
Issue 3.15 Protection of Riparian Land and Wetlands.....	53
Issue 3.16 Influence of Common Carp.....	57
Issue 3.17Vegetation Management.....	58
Issue 3.18 Environmental Regulation.....	58
Issue 3.19 More Flexible Approval Procedures for Riparian Works.....	58
Issue 3.20 Funding .....	61
Issue 3.21 Environmental Flow Provision to be included in Regulated Water Sharing Plan .....	62
Issue 3.22 Negotiation of Water Quality and Quantity Agreements with Associated Water Authorities .....	62
Issue 3.23 Maintenance Work .....	63
Issue 3.24 The Water Management Act (2000) and Compensation Triggers.....	64
Developing Community Ownership, Participation and Empowerment to Improve the Future Management of the Systems Natural Resources .....	65
Issue 3.25 Community Engagement.....	65

Issue 3.26 Perceptions of Government and Other Groups.....	66
Issues Unique to the Forest Creek.....	67
Issue 3.27 Lack of Water in the Lower Reaches of the Forest Anabranh.....	67
Issue 3.28 Management of the Wanganella Swamp System .....	70
Issue 3.29 Flooding of the Cobb Highway, Wanganella .....	72
<b>4. IMPLEMENTATION COSTS OF YCS NRMP.....</b>	<b>73</b>
<b>REFERENCES .....</b>	<b>76</b>
<b>GLOSSARY .....</b>	<b>79</b>
<b>ABBREVIATIONS.....</b>	<b>82</b>

## FIGURES

---

Figure 1 Location of Yanco Creek System in NSW.....	xi
Figure 2 Yanco Creek System .....	xi
Figure 3 Mean Daily discharge for Yanco-Colombo system 1980 – present .....	24
Figure 4 Flow Duration curve for Yanco-Colombo system 1980 – present .....	24
Figure 5 Total suspended sediment data for Yanco-Colombo system 1993-2003.....	25
Figure 6 Turbidity Data for Yanco-Colombo system 1993 – 2003 .....	25
Figure 7 Total Phosphorous for Yanco-Colombo system 1993-2003.....	26
Figure 8 pH for Yanco-Colombo system 1993 – 2003.....	27
Figure 9 Dissolved Oxygen concentration for Yanco-Colombo system 1993 – 2003 .....	28
Figure 10 Electrical Conductivity Yanco-Colombo system 1993 – 2003 .....	29

## TABLES

---

Table 1 Yanco/Colombo/Billabong Creek System Volumetric Allocation Summary.....	15
Table 2 Creek Flow Impediments, system losses, and location of weir structures within the YCS .....	17
Table 3 Aquatic Invertebrates collected in Autumn 1998 in Yanco Creek.....	20
Table 4 Stream Condition Assessment of the YCS .....	22
Table 5 Water quality stations currently operational within the Yanco-Colombo System.....	23
Table 6 Approximate Value of Irrigated Agriculture in the Yanco Creek System .....	33
Table 7 Costing Schedule for Works Identified in YCS NRMP.....	74

## LIST OF PLATES

---

Plate 1	Honourable Minister Craig Knowles signs a copy of “Song of Running Water.....	10
Plate 2	Landholder Consultation Meeting held at the Conargo Hall, Conargo on 29 October, 2002 .....	12
Plate 3	Artificially created wetland due to high summer flows .....	21
Plate 4	Diversion of flow by LWD, resulting in erosion and turbidity .....	31
Plate 5	Agriculture on the Yanco Creek System .....	32
Plate 6	The YCS provides water for vital agriculture and unique riparian ecosystems along its 800 km length.....	33
Plate 7	“Old Coree Homestead .....	34
Plate 8	Yanco Weir.....	36
Plate 9	Willow infestation of the stream .....	39
Plate 10	Cumbungi blocking the stream.....	39
Plate 11	Flooding from breakout .....	41
Plate 12	Algudgerie Weir .....	44
Plate 13	SCADA tower at Morundah .....	45
Plate 14	Typical Yanco system Wetland .....	49
Plate 15	Streambank Erosion caused by willows diverting flow .....	52
Plate 16	Cattle grazing .....	56
Plate 17	Field Day – The Gerrin Inspection .....	60
Plate 18	Wollomi Escape.....	64

## APPENDICES

---

Appendix 1 (a)	Notes of Landholder Meeting .....	83
Appendix 1 (b)	Key issues collected from survey of water users.....	91
Appendix 2	Community and Stakeholder Feedback on Draft Plan .....	101
Appendix 3	Average daily flow volumes in ML for the YCS .....	131
Appendix 4 (a)	Threatened Species Conservation Act Biological Database Lists .....	132
Appendix 4 (b)	Threatened Fauna Predictions .....	138
Appendix 5	NPWS Threatened Species Atlas .....	140
Appendix 6	Threatened Species, Fisheries Management Act .....	152
Appendix 7	Assessment Ratings used in the Preliminary Report.....	153
Appendix 8	Salinity Data for Yanco Billabong Creek System – Molino Stewart Report .....	154
Appendix 9	Guidelines for National Water Quality Management Strategy .....	155
Appendix 10	Murrumbidgee Diversions and Flows.....	156

## LIST OF MAPS

---

Yanco Creek System.....	A3 Insert at the Back of the Document
Yanco Creek System – Weirs .....	A3 Insert at the Back of the Document
Yanco Creek System – Willows .....	A3 Insert at the Back of the Document
Yanco Creek System – Snags .....	A3 Insert at the Back of the Document
Yanco Creek System – Cumbungi.....	A3 Insert at the Back of the Document
Yanco Creek System – Flood Runners .....	A3 Insert at the Back of the Document

## FOREWORD

---

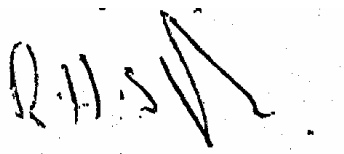
The Yanco Creek System Natural Resource Management Plan is the first step on the journey towards sustainable natural management of our unique environment. The plan has been developed as an outcome of the community consultation that took place during the latter part of 2002 and further consultation between September and November 2003. It was recognised that there is a need for a major upgrade of the infrastructure that delivers water to our communities. A number of issues were identified and this plan sets out how we will go about the work which needs to be undertaken. The work is a mixture of physical works, policy development, monitoring and coordination of projects – all which are aimed at ensuring the long-term environmental sustainability of the creek system.

An Integrated Catchment Management principled approach has been adopted by the governments of the Murray Darling Basin, and identifies natural resource management as a human activity, based on the values that our society holds, and acknowledges a sharing of responsibility. This plan takes a similar approach. The plan has been developed using integrated catchment principles as developed by the Murray Darling Basin Commission with a key principle being community participation in decision making.

YACTAC is of the view that this plan should be considered as a sub-regional implementation plan that will help achieve and be consistent with the outcomes and actions in the Murrumbidgee and Murray Catchment Blueprints, which is the overarching natural resource management strategy for the catchments. These blueprints in association with existing Water Sharing Plans and Regional Vegetation Management Plans will be the basis of Catchment Action plans to be formulated by the newly formed Catchment Management Authorities.

The Yanco Creek System Natural Resource Management Plan asks for commitment from both individuals and organisations; to share responsibility for underpinning the health and productivity of the Yanco Creek System both now and for future generations. The plan was formally launched by the Hon. Craig Knowles, Minister for Natural Resources at a function held at the Rice Research Station “Old Coree” on March 1 2004.

The Yanco Creek and Tributaries Advisory Council wish to express our gratitude for the contributions made by Murrumbidgee Private Irrigators Executive Officer Lee Furness, Department of Infrastructure, Planning and Natural Resources Staff Peter Beal and Rob Scriven, State Water River Operations Officer Jim Parrett, and their respective organisations for the considerable time and effort they have put into this plan.



Richard Sleigh  
Chairman  
Yanco Creek and Tributaries Advisory Council

## Acknowledgments

---

The authors acknowledge the work of the following people who have assisted with this document.

Yanco Creek and Tributaries Advisory Council especially Richard Sleigh and Russell Ford.

Des Bennell

Ray Willis

Rob Cawley

Warwick Ford

Amanda Naismith

Cathy Harrison

Marie Campbell

Lorraine Hardwick

James Maguire

Mark Foreman

John Searson

Robert Shuttle

Phil Dempsey

David Nicholls

Bruce Simpson

Wendy Quayle

Evan Christen

Jack Chubb

DIPNR Water Quality Staff (Murray Region)

Greg Jones

Michele Perry

Forest Creek Management Plan Committee

Sally Dye

David Harriss

Abel Immaraj

Helen Glazebrook

Mary and Ken McCrabb

Wendy Spencer

Geoff McLeod

Mark Rowe

General Managers of the Jerilderie, Narrandera, Conargo and Wakool Shires

YACTAC gratefully acknowledge the contribution that State Water and DIPNR have made in the resourcing this plan.

# EXECUTIVE SUMMARY

## The Yanco Creek System

The Yanco Creek System (YCS) is a regulated stream of the Murrumbidgee River System. Water is diverted at the Yanco Off-take down the Yanco Creek, and the Colombo Creek where it joins with the Billabong Creek. This water can be directed down the Forest Creek also where below Warriston Weir, the system becomes an unregulated stream supplying domestic water to landholders until it joins the Edward River upstream of Moulamein.

The YCS is a jewel of the Riverine Plains and is the most prominent geographical feature of the area it traverses. The flow of water and riparian environ of the creek system, serves as life giving blood to a range of significant wetland areas that are highly valued by the community and must be better managed for the future sustainability of the biodiversity of the area. Key wetland areas are Dry Lake, Lake Urana, Wilsons Creek Anabranh, Wanganella Swamp, Kerribirri Swamp, *Rhyola* depressions and flood runners, break out areas on *Back Nullum* and Box Swamp on *Blue Gate*.

The people of the Riverine plain take great pride in the YCS for the great value it has in supplying water to their vast area of southern New South Wales. The community has thought the priority and importance of the system to Government in honouring its obligations has waned over recent decades in terms of providing delivery of water to agriculture and rural communities and securing the future of its ecological integrity.

The community is committed and determined to see their vision of YCS realised. This vision is that the YCS be managed in a collective and shared manner involving all stakeholders in fulfilling partnerships to enhance the long term future of the waterway. This is needed to provide sustainable irrigated agricultural production, healthy habitat for all is dependent flora and fauna and waster supply for the rural communities.

The YCS has approximately 250 licensed water users and is some 800 km in length. The YCS is the longest network of creeks in Australia. The average water volume used in the YCS is 160,000ML annually. Due to the area the system covers and vagaries of the Australia climate and landscape it is a very complex water supply system to operate. It is an absolutely critical water supply to a vast area of the Riverine Plains of NSW and supplies water to several towns along its path. These are Morundah, Urana, Oaklands, Jerilderie, Conargo, Wanganella and Moulamein.

## The Need for a Natural Resource Management Plan (NRMP)

In recent years a number of key natural resource issues have bought about a review of the system from a range of Environmental, Economic and Social perspectives. It is now abundantly clear from community input and extensive assessment of the system's natural resource assets by Government Agencies and other experts, that unless the YCS receives immediate attention in a concerted effort by all stakeholders, the fruits of the system enjoyed by all including the environment may be eroded away by decisions taken to manage the larger Murray Darling Basin. This situation is borne out by there being no provision for an environmental flow in the current Water Sharing Plans and the existing inherent water delivery losses that can occur in the system when distributing water to meet demands.

Unsustainable volumes of water escape from the creek system through evaporation that occurs in weir pools, in low lying areas where high level creek flows escape the stream channel and spread over adjoining farmland. Water is also lost into a network of old prior streams where the flow recharges the groundwater.

Additionally, inflows that stem from dry land areas in the catchment, particularly from the upper Billabong, that flow over the weir at Darlot to meet end of system target flows expected of State Water are also recorded as delivery losses and make the total water delivery escapes in the system appear excessive. These in-system flows play a role of acting as environmental flows in the reaches below Darlot and are not a true indicator of inefficient use of water by system users and operators.

There is also a need to ensure the ongoing enhancement of the biodiversity of the creek corridor and the riparian zone. The area is rich in native fauna and flora being in the flight path of endangered species like the Superb Parrot (*Polytelis swainsonii*) and providing critical habitat for the Southern bell Frog (*Litoria reniformis*). Land holders are committed to ensuring the protection of wetlands, the refinement of appropriate wetting and drying regimes of the wetlands, protecting remnant vegetation, and increasing the numbers of native fish in the creek.

The YCS Natural Resource Management Plan (NRMP) is a strategic document that provides a framework to manage the system into the future. The plan will also serve as a sub-regional integrated action plan for a vital part of the Murray/Murrumbidgee and Murray Darling basin catchment.

## **Key Issues**

Four key issues have been identified in this plan and are supported by 30 key management actions.

The four key issues are:

- Maintaining and improving the health of the creek and mimicking natural flooding events where possible.
- Maintaining and improving the riparian habitat (creek corridor biodiversity) along the creek system.
- Improving the overall deliverability and efficiency of supply for the entire creek system.
- Developing community ownership, participation and empowerment to improve the future management of the system's natural resources.

It is intended that the YCS NRMP will isolate issues threatening the productive and ecological values of the YCS and form the basis from which progress towards improving the natural resource status of the system can be measured.

To be successful, implementation of the strategic plan must develop on-going partnerships between community and government stakeholders to enable action in a co-ordinated and integrated manner.

## **Forest Creek**

The YCS NRMP contains a section on issues relating primarily to the Forest Creek. These issues were documented in the Forest Creek Management Plan which for various reasons was not implemented. The section deals specifically with a lack of water in the lower reaches of the Forest Creek Anabranche, management of the Wanganella Swamp, and flooding of the Cobb highway. Other issues contained in the Forest Creek Management Plan such as cumbungi and willow infestation form part of the overall YCS NRMP.

## Environmental Outcomes

Implementing the YCS NRMP will achieve the following environmental outcomes:

- Water delivery losses as defined in this plan to be reduced to an acceptable level of 20% taking account of key factors such as accession losses to the groundwater system, overbank escapes in times of high flow and flood, evaporation and pilfering.
- Through the benefits of all actions undertaken as part of the plan that a net saving of 36 GLs of water to be achieved for alternate purposes such as environmental flows and off-sets for funding to undertake on-going maintenance and increased understanding of the system through more extensive scientific and technical investigations.
- That riparian health including native endangered flora and fauna species to improve by 8% by the year 2010.
- That predetermined and measurable water quality parameters at established monitoring sites improve by 5% by the year 2010.
- Enabling the State and Federal governments' natural resource management agenda to be realised.

## Socio-Economic Outcomes

Implementing the YCS will achieve the following socio-economic outcomes:

- Securing the viability and sustainability of the rural communities who depend on irrigated agriculture for their livelihoods. Over 90% of the riparian zone is in private hands and is dependent on landholders being economically viable to ensure its management for future generations. Environmental outcomes can only be realised when socio-economic outcomes are realised.
- Ensuring future prosperity for the state and the nation.
- Enabling communities to invest in the well being of their natural environment.
- Developing community ownership, participation and empowerment in the management of their natural resources.

## Management Actions and How They relate to the Key Issues

The Management Actions have been designed to relate to the key issues identified in the plan. The following is a list of the Key issues with the related management actions from the NRMP. A full list of the management issues is contained in Section 1.6.

**Key Issue: Maintaining and improving the health of the creek and mimicking natural flooding events where possible.**

Action Number	Action
<b>ACTION 3.13(A)</b>	That the current flow regime of YCS be investigated and modified if necessary, to best mimic natural flooding regimes and particularly wetlands.

<b>ACTION 3.13(B)</b>	That a scoping study be undertaken to identify and establish management needs to maintain and enhance key wetlands including natural wetlands and those created by water escapes and weir pools.
<b>ACTION 3.14(A)</b>	That the current water quality monitoring regime in place be assessed with a view to ensuring that it provides timely and accessible information on appropriate water quality parameters.
<b>ACTION 3.14(B)</b>	That a salinity audit of the YCS be undertaken that determines salt sources, its distribution and location in the system, so as to instigate management actions to control its accumulation and impact on the system and to measure export quantities.
<b>ACTION 3.14(F)</b>	That an integrated water quality and ecological monitoring framework be established to assess the effect of plan implementation. This to include riverine environment, in-stream water quality and town water supplies.
<b>ACTION 3.14(G)</b>	That a review be undertaken of flow and water quality recording network to meet current and future requirements, and with particular emphasis on the lower reaches of Colombo Creek to determine end of valley flow and salt load export from the Murrumbidgee valley.
<b>ACTION 3.15(A)</b>	<ul style="list-style-type: none"> <li>(i) That all land managers including farmers, irrigation companies, government agencies, local councils and regional weed management groups implement and coordinate weed eradication programmes along riparian areas of YCS.</li> <li>(ii) That YACTAC ensure weed identification, reporting and controls are key components in establishing a prioritised works and monitoring programme along the YCS.</li> <li>(iii) That control works programmes are formulated in consultation with government agency staff and comply with relevant legislation and noxious weed protocols.</li> </ul>
<b>ACTION 3.16(B)</b>	That current research techniques e.g. daughterless carp (induced sterility measures) to control the persistence and spread of carp into inland waterways be supported.
<b>ACTION 3.16(C)</b>	That the YACTAC NRMP strategies and actions are consistent with Murray and Murrumbidgee Catchment Blueprints.
<b>ACTION 3.19(A)</b>	That any creek works be undertaken following a coordinated and integrated approach involving consent authorities and with regard to whole of system strategy.
<b>ACTION 3.19(B)</b>	That YACTAC investigate the possibility of the YCS NRMP and associated works, be used as a pilot project for trialling improved integrated approvals being developed by government agencies.
<b>ACTION 3.21</b>	That the YACTAC requests appropriate authority to have a formal and permanent consideration of environmental flow requirements for the YCS.
<b>ACTION 3.25(B)</b>	That YACTAC ensure that works are carried out in accordance with the regulations contained in the National Parks Act 1974 pertaining to Aboriginal sites of cultural significance.
<b>ACTION 3.27(A)</b>	That the Landholder proposal currently being drafted be supported and endorsed on completion to expedite its implementation to return 11.5 GL's of water for environmental flows.

<b>ACTION 3.27(B)</b>	<p>That the following revised target flows for Warriston Weir be implemented as soon as possible:</p> <p><b>Target 1. Unregulated/rain rejection flows</b></p> <ul style="list-style-type: none"> <li>• That unregulated/rain rejection flows be permitted to pass through the Forest Creek system for environmental purposes. (It should be noted that from an operational point of view this is extremely difficult to implement because of the inadequate capacity of the Forest Creek off-take and the Forest Creek Regulated Section to allow those flows to pass through.)</li> </ul> <p><b>Target 2. ‘Summer’ target flow at Warriston Weir</b></p> <ul style="list-style-type: none"> <li>• That a target flow of 80MI/day at Warriston Weir be provided from the beginning of November to end March.</li> </ul> <p><b>Target 3. ‘Winter’ target flow at Warriston Weir</b></p> <ul style="list-style-type: none"> <li>• That a minimum target flow of 60MI/day at Warriston Weir be provided from beginning of April to end October.</li> </ul>
<b>ACTION 3.27(C)</b>	That funding be secured for infrastructure to return flows to Billabong Creek.
<b>ACTION 3.27(D)</b>	That proposed changes to the flow regime be monitored annually to assess the social, economic and environmental impact.
<b>ACTION 3.28(A)</b>	That the operation of the Forest Creek off-take regulator and its impact on the Wanganella Swamp be considered in wider YCS assessment of environmental outcomes and related flows.
<b>ACTION 3.28(B)</b>	That McCrabb’s regulator and adjacent spillway be modified and appropriately upgraded.
<b>ACTION 3.28(C)</b>	That the operation of McCrabb’s regulator be monitored as a consequence of the modifications in (B) above.
<b>ACTION 3.29</b>	That flooding of the Cobb Highway at Wanganella be mitigated by redesigning and refurbishing the Estuary Creek Regulator and McCrabb’s regulator.

**Key Issue: Maintaining and improving the riparian habitat (creek corridor biodiversity) along the creek system.**

<b>Action Number</b>	<b>Action</b>
<b>ACTION 3.5(A)</b>	That a draft strategic program be developed for willow removal, bank stabilisation and revegetation providing prioritisation and timeframes for any proposed staged development.
<b>ACTION 3.5(B)</b>	That the program of willow removal, bank stabilisation and revegetation be submitted and approved by relevant government agencies.
<b>ACTION 3.6</b>	That the extent of cumbungi in the Yanco Creek system be monitored, with a view to the possible need for future control. This is to involve possible targeted areas where chemical control options would be trialled and monitored to determine efficient and effective control measures.
<b>ACTION 3.15(B)</b>	That land managers, implement recognised best practice management techniques for the management of stock adjacent to riparian areas. Best management practices may include fencing off areas to exclude grazing stock and allowing natural regeneration.

<b>ACTION 3.15(c)</b>	Those areas of high conservation value riparian areas be identified with a view to developing 'best management practices' and using funding incentives to maintain and improve riparian and wetland habitat. Best management practices may include fencing off areas to exclude grazing stock and allowing natural regeneration.
<b>ACTION 3.15(d)</b>	That DIPNR and CMA's through incentive programs continue to raise community awareness of the value of protecting riparian habitats, and the importance this plays in contributing to ecologically sustainable management.
<b>ACTION 3.17</b>	That the YACTAC seek access to vegetation management incentives to facilitate the opportunity to achieve better management outcomes from managing the riparian pathway for conservation purposes.

**Key Issue: Improving the overall deliverability and efficiency of supply for the entire creek system.**

<b>Action Number</b>	<b>Action</b>
<b>ACTION 3.2(A)</b>	Request appropriate bodies to initiate a comprehensive water balance study of the entire Yanco Creek System to clarify definitions and interpretations of losses occurring in the system. This will improve the overall understanding of water losses and transport of flows within the system and of those which there is little control over in relation to delivery capabilities. i.e. channel capacities, weir distribution volumes and travel times.
<b>ACTION 3.2(B)</b>	Target for reduction of transmission losses to be from the current 43% to 20% over ten years. This equates to 35GL water savings per year.
<b>ACTION 3.4</b>	YACTAC to consult with DIPNR, NSWf, DEC and State Water on applying an integrated approach for works along the system in order to meet legislative requirements. A holistic approach taking in the needs of both users and the environment for the entire YCS help achieve a streamlined consent process for the project.
<b>ACTION 3.7</b>	State Water Asset Management Branch liaise with DIPNR, NSWf and DEC staff where necessary and make provision in a State Water maintenance budget to include remedial works to prevent losses.
<b>ACTION 3.8(B)</b>	That all engineering options to improve operational and environmental management of the Yanco Creek system be appropriately assessed to determine their feasibility and cost benefit.
<b>ACTION 3.9(B)</b>	Following the Weir Review of the YCS, undertaken by State Water, YACTAC review the document with a view to developing a strategic approach to weir removal or retention that is consistent with the outcomes and objectives of this plan.
<b>ACTION 3.9(c)</b>	Where viewed appropriate and in line with operational needs and government policy, that State Water assist with the cost of refurbishment of important in-system flow structures.
<b>ACTION 3.10</b>	That YACTAC seek a meeting with the Murrumbidgee Customer Service Committee to pursue improvements to State Water's water ordering system including information and education of users on its use and the need for compliance.

<b>ACTION 3.11(A)</b>	That YACTAC instigate a demand management strategy be used during water shortages, for future management of supply in the YCS over the irrigation season.
<b>ACTION 3.11(B)</b>	That irrigators continue to order water weekly, with a two week forecast, as part of on-going management of supply in the YCS.
<b>ACTION 3.14(E)</b>	That a detailed hydrological analysis and modelling for the YCS be undertaken prior to any changes to existing structures or flow management.
<b>ACTION 3.22(A)</b>	That YACTAC, DIPNR and State Water develop a Memorandum Of Understanding with Murray Irrigation Limited and Coleambally Irrigation Cooperative Limited which guarantees supply of water from their channel systems to the YCS under agreed conditions.
<b>ACTION 3.22(B)</b>	That the YACTAC, DIPNR and State Water establish formal agreements with irrigation companies for surplus flows entering the system which would place parameters on flow volumes, timing of releases and water quality targets.
<b>ACTION 3.23</b>	That State Water in collaboration with relevant agencies (local government, community etc) establish and make a permanent commitment to an annual system maintenance program based on targeted work priorities to enhance the long term sustainability of the YCS.

**Key Issue: Developing community ownership, participation and empowerment to improve the future management of the system's natural resources.**

<b>Action Number</b>	<b>Action</b>
<b>ACTION 3.1</b>	That YACTAC in conjunction with State Water and NSW Agriculture explore measures to increase information flow to enable landholders to make strategic decisions in terms of what crop or pasture to grow for any year, and enable tactical decisions in terms of specific watering regimes for any given summer irrigation period.
<b>ACTION 3.3</b>	YACTAC in conjunction with State Water instigate a working party to investigate seasonal delivery policies for the YCS.
<b>ACTION 3.8(A)</b>	That YACTAC be proactive in discussing partnering opportunities with Murray Darling Basin Commission, Pratt Water and Snowy Hydro.
<b>ACTION 3.9(A)</b>	That YACTAC DIPNR and State Water undertake a combined information program to increase landholder awareness of weir ownership and/or licence conditions included in relevant legislation.
<b>ACTION 3.12</b>	That the YACTAC promote the availability of flow information on the Yanco Creek System to the YCS community in an accessible and easily understood format.
<b>ACTION 3.14(C)</b>	That YACTAC meet with Irrigation Companies and the EPA with a view to determining the licence requirements and conditions as they effect YCS and that this be made available to members.

<b>ACTION 3.14(D)</b>	That YACTAC work with the EPA and Local Councils and other bodies such as Fire Brigades and rescue squads to establish emergency management plans to control environmental emergencies. e.g. road accidents/chemical spills.
<b>ACTION 3.14(H)</b>	Provision of water quality and monitoring data to ensure landholders are better informed in related decision making.
<b>ACTION 3.16(A)</b>	Community participation programs to promote the control and commercial use of carp be supported and enhanced.
<b>ACTION 3.20</b>	That YACTAC set up a funding sub-committee to pursue all funding opportunities for the implementation of the NRMP.
<b>ACTION 3.24</b>	YACTAC to make members aware of limited provisions pertaining to compensation contained in the Water Act 2000.
<b>ACTION 3.25(A)</b>	That the YACTAC form an implementation steering group that is tasked with ensuring adequate consultation with stakeholders in the development management and review of the Natural Resource Management Plan.
<b>ACTION 3.26</b>	That YACTAC continue to support efforts by groups such as NSW Irrigators Council to improve the public's perception of irrigated agriculture.
<b>ACTION 4.1(A)</b>	That YACTAC seek external funding to initiate on-ground works which includes the employment of implementation personnel.
<b>ACTION 4.1(B)</b>	That all water users in the YCS contribute to the NRMA via a levy being \$1.50 per megalitre on entitlement and \$2.00 per megalitre on usage. This is to be charged as part of State Water annual water accounts.

## **Project Management**

YACTAC believe that given the complexity and cost of the project that an independent Project Management Committee (PMC) will be set up. The PMC would comprise three YACTAC members, representatives from the CMA's and State Water and three independent members. Nominations for the independent members have been called for. The PMC will have a terms of reference, set reporting formats and timeframes and will have multiple accountabilities including YACTAC, irrigators, funding bodies, CMA's and DIPNR. We believe that a PMC is the most efficient and transparent way to manage a project of this size and nature.

## **Cost and Funding of the NRMP**

The cost of implementing the plan are set out in the budget at the end of Section 4 and are estimated to cost \$23.4 million. This plan is fundamentally different from most other plans in that landholders have committed to funding the plan on 20% cash and 20% in kind basis. YCATAAC is seeking Government assistance for 60% of the costs associated with the plan. This is unique in that landholders are directly investing in natural resource management. We have consulted with landholders on the basis of putting a compulsory levy on their water accounts. This has been overwhelmingly accepted. State Water have advised that they are unable to place a compulsory levy on the water accounts as State Water are bound to the IPART process. Initial alternate advice sought by YACTAC on implementing a levy on water accounts for funding the plan has been that CMAs have the capacity within their governing legislation to impose levies and this option is being further investigated. Regardless of this, the levy is a steadfast commitment on behalf of the landholders to progress their NRMP.

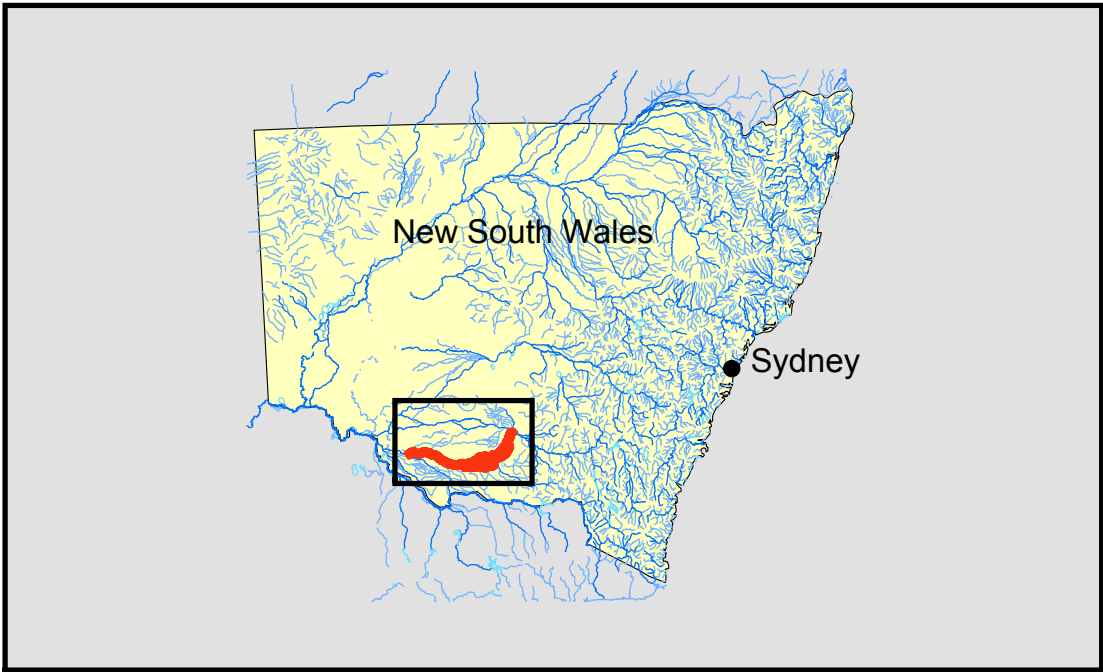


Figure 1: Location of Yanco Creek System in N.S.W.

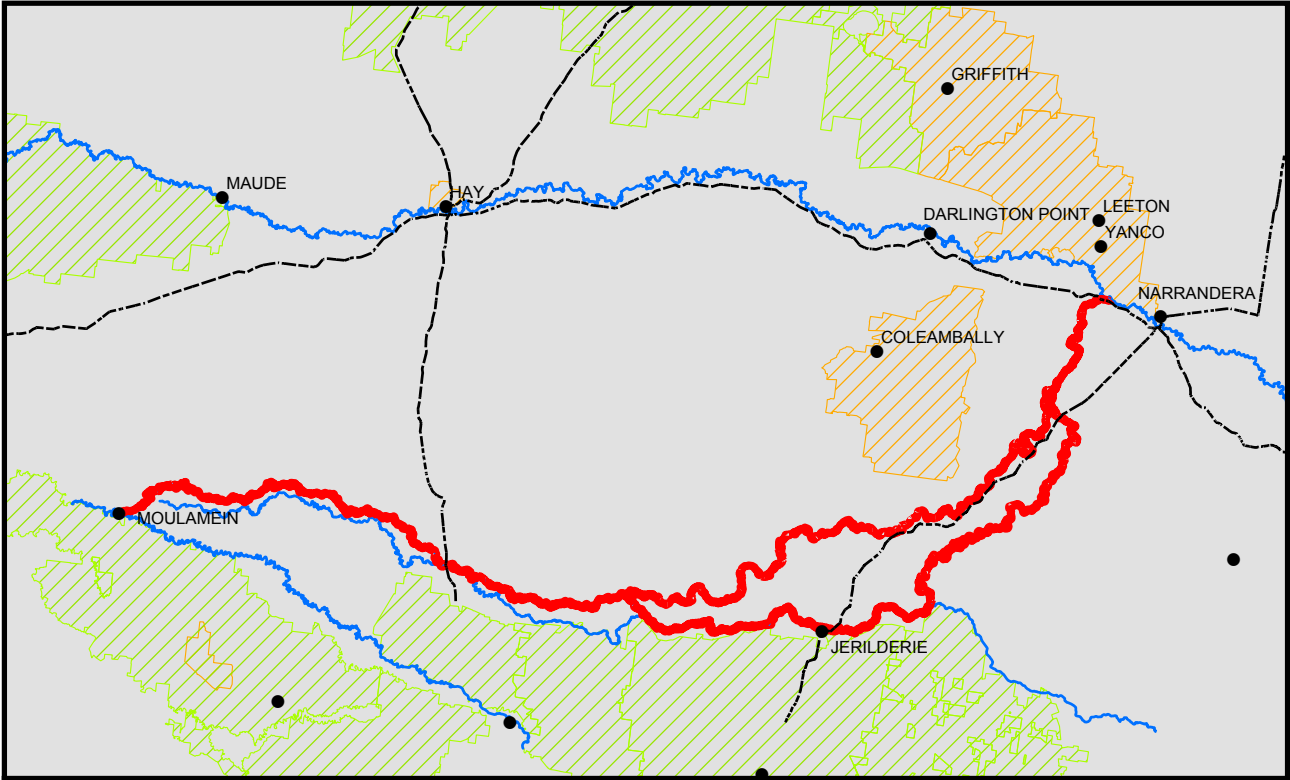


Figure 2 : Yanco Creek System