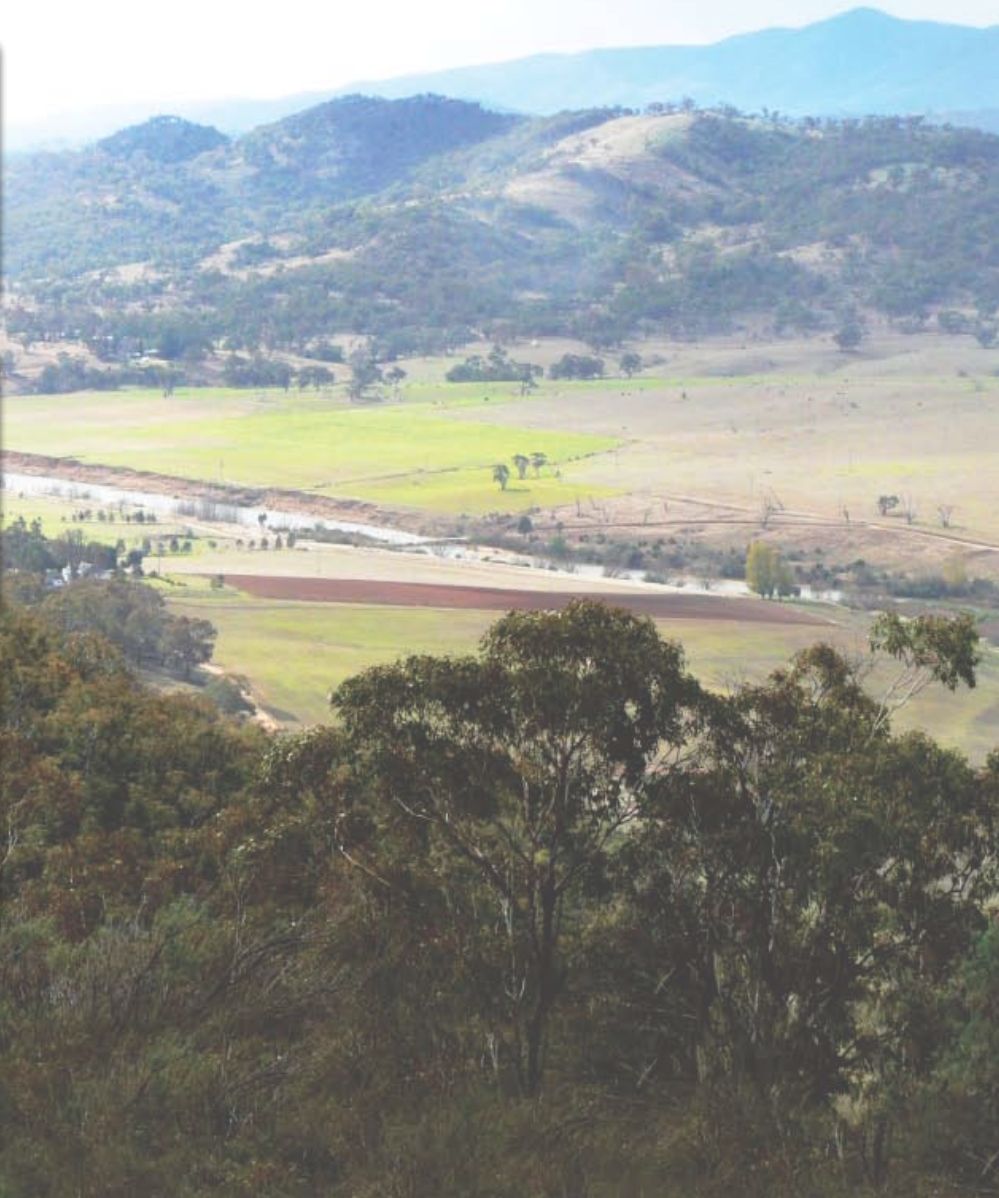




Upper Murrumbidgee Demonstration Reach

Implementation Plan





Upper Murrumbidgee Demonstration Reach

Implementation Plan

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About this initiative and plan

The health of the Upper Murrumbidgee River is under threat from a range of environmental concerns. The native fish community within the Upper Murrumbidgee and its tributaries account for as little as four percent of the total catch recorded in monitoring programs (Lintermans and Osborne 2002). Alien fish species, in particular carp, are widespread, comprising between 70 and 100% of total biomass at survey sites within the reach. Ninety-nine percent of the Murrumbidgee River's headwater flows are diverted away to the Snowy Hydro Scheme at Tantangara Dam leaving reduced discharge and flow variability downstream. Loss of instream habitat due to widespread sediment deposition has been observed for over 100 years, while clearing of riverbank vegetation and spread of weeds have contributed to a reduction in resilience of the riverine ecosystem.

The fact that a small but seemingly viable native fish population, as well as areas of higher quality riverine habitat still remain, provides a baseline from which recovery can be demonstrated. This initiative aims to provide the community with a visible demonstration that the health of the river and its floodplain, and the plants and animals that depend upon these river habitats, can be rehabilitated to a better condition through coordinated actions that address the major threats.

Through adopting community engagement objectives for the site, in addition to ecological and recreational objectives, the Upper Murrumbidgee Demonstration Reach (UMDR) initiative is seeking to work with the community and involve them in project activities wherever possible.

The vision for this demonstration reach is:

A healthier, more resilient and sustainable river reach and corridor that is appreciated and enjoyed by all communities of the national capital region.

The initiative provides an opportunity for UMDR participants to communicate to the broader community within the region as to how the Upper Murrumbidgee can be 'cared' for by a range of committed stakeholders. Importantly the success of the initiative relies upon the interest and enthusiasm of the community

This implementation plan presents this overall vision, along with goals, objectives and guiding principles for the UMDR initiative. It reviews the natural assets of the site, and the threats they face, or may face in coming years; then sets out integrated actions to be taken in response to those threats.

It is recognised that the Upper Murrumbidgee Demonstration Reach Implementation Plan needs to complement existing documents such as the: *Murrumbidgee River Corridor Management Plan* (ACT Government 1998), the *ACT Aquatic Species and Riparian Zone Conservation Strategy* (ACT Government 2007), the *National Capital Plan* (National Capital Authority 2010) and the *Murrumbidgee Catchment Action Plan* (Murrumbidgee CMA 2008). The implementation plan should also aim to draw into a cohesive framework those activities that are ongoing within the area under other programs and initiatives.

This implementation plan should be considered in conjunction with its companion plans for:

- monitoring and evaluation
- communication, education, participation and awareness
- carp reduction.



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Abbreviations

ACT	Australian Capital Territory
CEPA	communication, education and public and awareness raising
CMA	Catchment Management Authority
DECCW	Department of the Environment, Climate Change, and Water
EPBC	Environmental Protection and Biodiversity Conservation Act
IBRA	Interim Biogeographical Regionalisation of Australia
M&E	monitoring and evaluation
ML	megalitres
ML/d	megalitres per day
MRC	Murrumbidgee River Corridor
NFS	Native Fish Strategy
NGO	non-government organisation
NRM	natural resource management
NSW	New South Wales
TAMS	ACT Department of Territory and Municipal Services
UMDR	Upper Murrumbidgee Demonstration Reach
WAE	(surface and ground) water access entitlements



1. Introduction

The Upper Murrumbidgee River Demonstration Reach is approximately 100 km in length, stretching from the rural township of Bredbo in south-east New South Wales downstream to Casuarina Sands in the Australian Capital Territory (see Figure 1).

A demonstration reach is a large (typically between 20 and 100 km in length) and prominent (for example, close to a large human population centre) river reach in which a number of management interventions are applied to showcase to the community the cumulative benefits of river rehabilitation (MDBC 2004) (see Section 1.1).

The Upper Murrumbidgee River is an ideal site for a demonstration reach as it is a high conservation value ecosystem containing the critical aquatic habitats of several nationally listed threatened species (notably trout cod, Murray cod and Macquarie perch).

The Upper Murrumbidgee aquatic ecosystems are threatened by:

- reduced water quality from urban and rural pollution
- water extraction
- excessive sediment deposition
- introduced fish and other fauna
- loss of riparian vegetation
- the spread of weeds of national significance
- barriers to fish movement that fragment threatened fish populations.

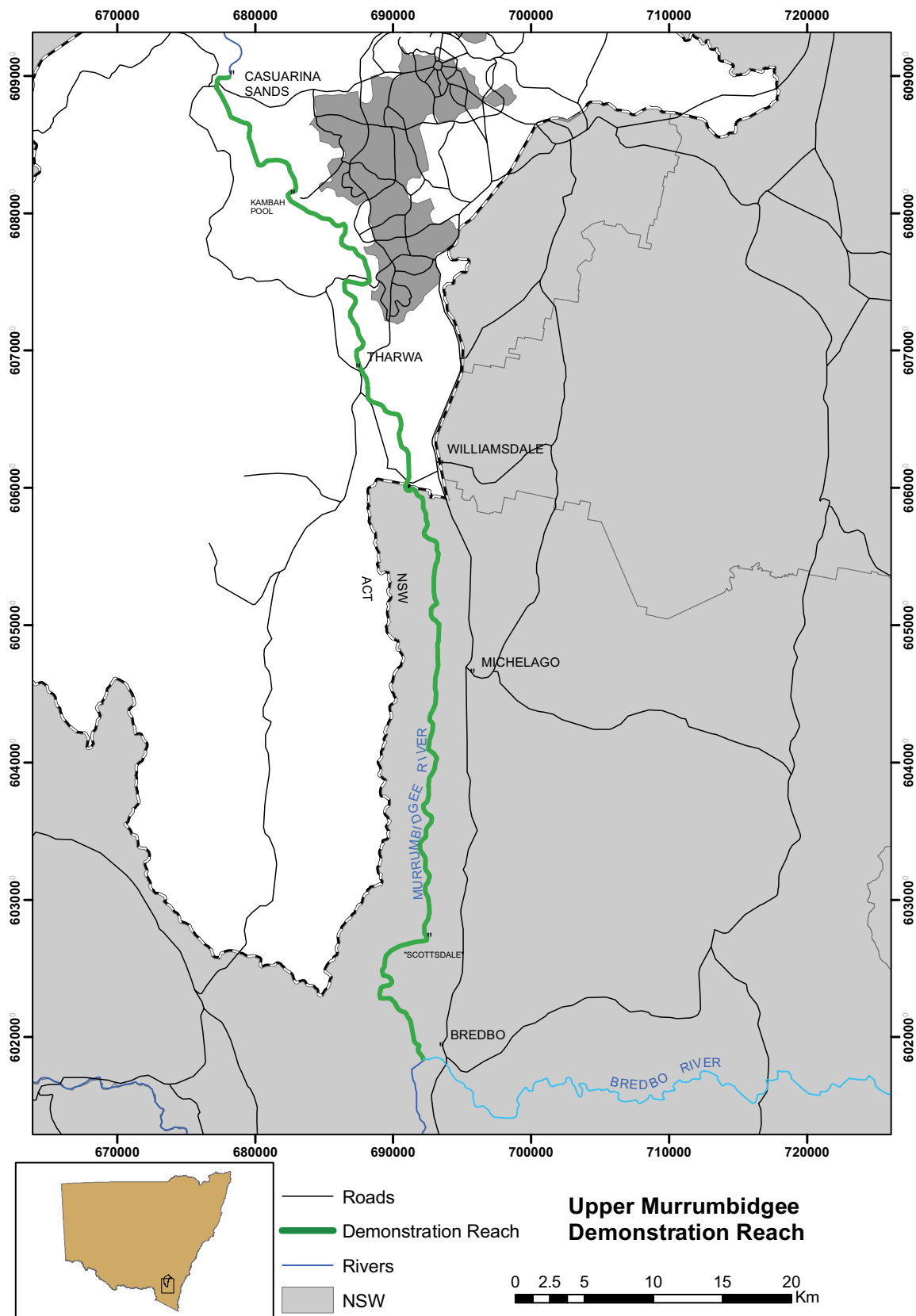
The demonstration reach framework provides a cohesive and inter-disciplinary way to achieve large-scale and significant environmental outcomes for the Upper Murrumbidgee River in both New South Wales (NSW) and the Australian Capital Territory (ACT). In particular, it will improve ecosystem resilience and ability to cope with future change by directly increasing the connectivity and condition of critical aquatic habitats within the reach.

The initiative also aims to help in the further development of cross-jurisdictional links for catchment management between the ACT and NSW, and foster improved partnerships and links between terrestrial and aquatic natural resource management groups, including government, community and industry. More than ten groups are already partners for the Upper Murrumbidgee Demonstration Reach (see section 1.3).

Strong links and diverse partnerships will ensure that the Upper Murrumbidgee Demonstration Reach:

- connects with all levels of government, from local to state/territory to national
- encourages community involvement and input at all stages of development
- develops a firm regional commitment to its longevity beyond initial short-term funding cycles
- explores novel ways to leverage corporate sponsorship
- achieves ecological, economic and social outcomes desired by all stakeholders
- recognises the importance of the river to the wellbeing of the people dependant on it including long-term Aboriginal occupation.

Figure 1: Location of the Upper Murrumbidgee Demonstration Reach





1.1 The demonstration reach concept

In May 2003 the Murray–Darling Basin Ministerial Council approved the Native Fish Strategy (NFS) for the Murray–Darling Basin. The strategy has a theme of rehabilitating aquatic habitats and ecological processes in the Murray–Darling Basin through management actions designed to restore healthy native fish communities. The strategy is based around several key issues:

- that the decline of native fish populations in the Murray–Darling Basin has been caused by a combination of threatening processes, not one single process
- in order to achieve the strategy's overall goal (rehabilitation of native fish populations back to 60% of the pre-European situation after 50 years of implementation), several key management interventions need to occur simultaneously and in an integrated and holistic manner
- rehabilitation should be based on ecosystem management, with emphasis on ecological communities rather than single species
- the concept of a demonstration reach is a positive way to engage the public and learn from practical examples of rehabilitation.

The purpose of demonstration reaches is to show, by example, how river and floodplain rehabilitation can be achieved by well-integrated actions such as riparian zone rehabilitation; improvements to in-stream habitat such as improving fish passage, re-snagging and enhancing aquatic vegetation; management of introduced species; improving water quality; and providing direction on environmental flows.

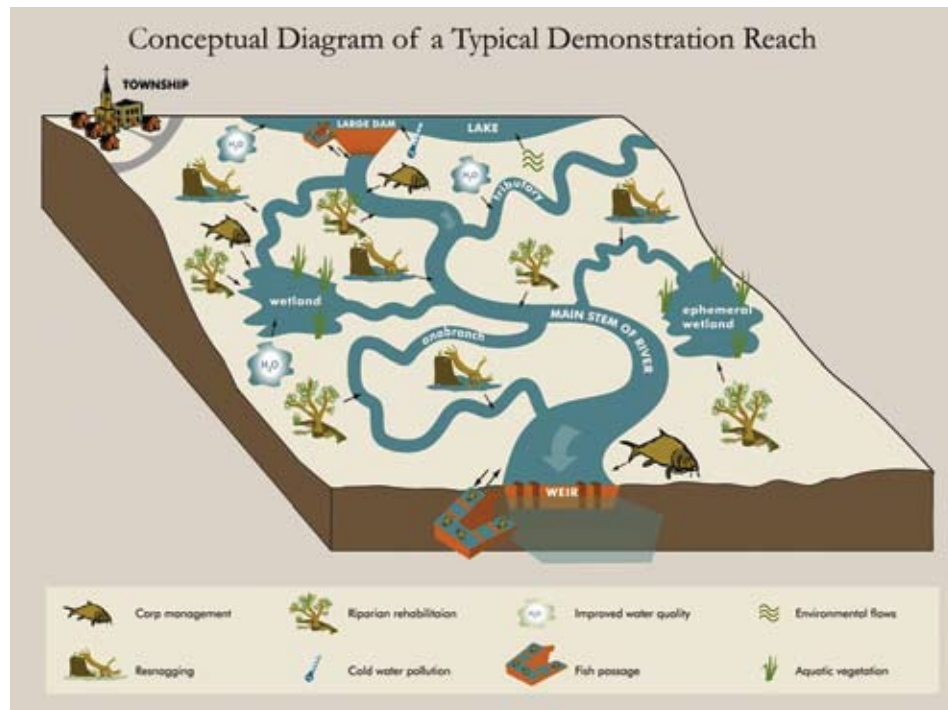
The successful rehabilitation of a reach or floodplain (see Figure 2 for conceptual diagram) is designed to enhance community awareness, support and involvement in management and provide models that can be used elsewhere. It is also hoped that such rehabilitation will attract the attention of funding agencies and boost scientific knowledge.

One fundamental premise of a demonstration reach is to enhance community awareness and support. Engagement of both Aboriginal and non-Aboriginal community members is therefore essential to success. A range of individuals and community groups are expected to be involved. These individuals or groups may have either an interest in a demonstration reach (e.g. fishing, educational, environmental) or a right (e.g. property or custodial) linked to the land and/or water resources.

A demonstration reach needs a considered approach to engaging with this variety of individuals and groups, and needs to be cognisant of the different ways in which individuals and groups receive, respond to, and can contribute to planning and management processes.

The establishment of a demonstration reach is consistent with the initiatives of the former Murray–Darling Basin Commission to involve Aboriginal people in management of the basin and incorporate consideration of Aboriginal cultural heritage into decision making (MDBC 2003). Aboriginal people have ownership and custodial responsibilities over waterways and fish as well as important traditional knowledge. Aboriginal rights to fish in the Murray–Darling Basin are recognised by the *Native Title Act 1994* (Cwlth). The MDBC Aboriginal Action Plan aimed to support a co-management approach to natural resources that could be linked with a demonstration reach initiative. This would allow for the meaningful involvement of Aboriginal people in decision making and management aimed at rehabilitating native fish populations and fish habitats. The area encompassed by the UMDR is commonly recognised as crossing lands occupied by both Ngarigo and Ngannawal Aboriginal Peoples who utilised the Murrumbidgee River for a range of traditional activities. It is anticipated that where possible, outcomes concerning the development of this initiative will involve representatives of these groups.

Figure 2: Conceptual diagram of a typical demonstration reach



1.2 Why the Upper Murrumbidgee River was chosen as a demonstration reach

The Murrumbidgee is the largest river flowing through the ACT and surrounding NSW region. The significance of the upper reaches of the river were recognised when approximately 400 km were placed on the Register of the National Estate, extending from Tantangara Dam to the mouth of Oaky Creek, 300 m south-west of Yeumburra Homestead and about 20 km north of the northern border of the ACT, including 20 m on either side of the river from bank-full discharge level.

Along its length within the ACT the river is protected to some degree by the presence of the Murrumbidgee River Corridor reserves. However, critical aquatic habitats cannot be managed successfully by adhering only to jurisdictional boundaries, and consequently more effective and direct links need to be established with the upstream catchment in NSW.

Native fish communities have undergone significant declines across the whole of the catchment, with the Murrumbidgee River fish community (as it existed in 2004) being classified as severely degraded (Gilligan 2005). A report card on the ecosystem health of the upland and montane zones of the Murrumbidgee River revealed them as being in very poor condition, with the fish community component rated as being poor to extremely poor (MDBC 2008a).



The Upper Murrumbidgee River is a critical aquatic habitat for several nationally threatened species (Lintermans 2002; MDBC 2008b). Nine native fish species have been recorded in this reach of the Murrumbidgee (Lintermans 2002). The list includes nationally listed threatened species under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (Trout cod, Macquarie perch, Murray cod), three ACT listed threatened species including one crayfish (Murray River crayfish, Silver perch, Two-spined blackfish) and four other species (Golden perch, Mountain galaxias, Western carp gudgeon and Australian smelt). Two species from the UMDR are also listed as endangered under the *Fisheries Management Act 1994* (NSW), namely, Trout cod and Macquarie perch.

Macquarie perch have been detected at several sites in recent sampling along the UMDR, including at Angle Crossing near the southern ACT border and Collinton Gorge near Michelago (ACT Government unpubl data 2010, MDBA SRA unpubl data 2010). Conservation stockings of Trout cod continue at key locations within the reach. Studies show that there is still an ecological community present that is capable of responding to rehabilitation of the river (ACT Government unpubl data 2010). Intervention is urgently required to mitigate the diverse array of cross-border threats that impact on this stretch of river and to rebuild ecosystem resilience.

This demonstration reach initiative will contribute to environmental outcomes of national significance through:

- preservation and/or enhancement of in-stream habitat condition.
- seeking the removal of artificial barriers to fish passage in order to increase aquatic ecosystem connectivity and maintain and improve threatened native fish populations
- participating in the establishment of enhanced environmental flows to maintain biodiversity and critical ecosystem processes
- seeking solutions to introduced pest fish management
- improving water quality in the Upper Murrumbidgee River through addressing rural and urban pollution sources
- improving the extent, condition and biodiversity of riparian zones
- reducing the impact of nationally significant weed species such as willows and blackberries
- encouraging greater community empathy, education and understanding of aquatic issues
- strengthening community collaborations and ownership of natural resource management issues
- committing to rigorous monitoring and evaluation by both scientists and local community groups.

This demonstration reach will also contribute to achieving water quality and biodiversity targets in the ACT Natural Resource Management Plan and the Murrumbidgee Catchment Action Plan.

1.3 Who is involved?

The Upper Murrumbidgee Demonstration Reach creates a cohesive framework for the activities of the many different natural resource management agencies and organisations in the ACT and NSW region. The initiative currently includes the following partners:

- Murray-Darling Basin Authority
- Murrumbidgee Catchment Management Authority
- ACT Natural Resource Management Council
- ACT Territory and Municipal Services
- ACT Waterwatch
- Industry and Investment NSW
- Greening Australia Capital Region
- Bush Heritage Australia
- RiverSmart Australia
- ACTEW AGL
- ACTEW Corporation
- Upper Murrumbidgee Catchment Coordinating Committee
- University of Canberra
- Australian National University

Actively linking to a wide range of organisational partners greatly enhances the promotion and likely success of the initiative, and develops a firm regional commitment to its longevity beyond initial short-term funding cycles.

All partners, as well as representatives of other community organisations have contributed towards the development of this ten-year integrated strategic plan for natural resource management in the Upper Murrumbidgee River.

1.4 Purpose of this implementation plan

This implementation plan has been prepared to set out a common vision and to justify, integrate and document the actions to be undertaken. These actions seek to further the management goals of an existing range of related plans (see Section 1.8), while also seeking to improve the condition of the reach and reduce impacts on the health of the site, and the ecological communities it supports.

This plan will be an evolving document. It is anticipated that elements of the plan may be modified, based on the results of the ongoing monitoring of the site. This is consistent with the adaptive management approach being used (see Guiding Principles – Section 1.7).

While some studies within the Upper Murrumbidgee Demonstration Reach area have been completed (see Sections 2 and 4 especially), there are some significant gaps in knowledge. As such, this first implementation plan applies a conservative approach based on the threats identified at present (see Section 4). When new information becomes available, or areas of uncertainty are confronted, every effort will be made to address these information gaps as soon as possible and the implementation plan adjusted accordingly.

This implementation plan should also be considered in conjunction with its companion plans for:

- monitoring and evaluation (M&E)
- communication, education, participation and awareness (CEPA) and
- carp reduction.



1.5 Vision and goals for the Upper Murrumbidgee Demonstration Reach initiative

Vision: A healthier, more resilient and sustainable river reach and corridor that is appreciated and enjoyed by all communities of the national capital region.

Goals help to articulate this vision of the initiative and indicate the aspirations for the UMDR

1. Through the activities proposed in this plan, the desire is to stop further degradation of the demonstration reach and see it become healthier through actions such as:
 - improving the health of in-stream and riparian habitats
 - increasing native fish populations, especially those of threatened species
 - removing or modifying barriers to native fish movements
 - improving water quality, particularly reducing sediment and nutrient inputs
 - making best use of available surface water and environmental flows to improve the health of the reach
 - reducing the spread and impacts of woody weeds; most notably blackberries, and willows and other deciduous trees
 - seeking solutions to reduce populations of introduced pests including European carp, *Gambusia*, Redfin perch, rabbits, pigs and deer
 - improving the health of native plant communities – particularly the health status and recruitment of riparian trees and associated understorey
 - Seeking advice on, and incorporating, traditional ecological knowledge with modern contemporary management techniques.
2. This initiative is also about demonstrating what is possible through strategic, coordinated interventions involving government and non-government organisations, and leaseholders and landholders influencing the Murrumbidgee working together
3. This initiative will also be used to strengthen community interest and engagement in working to restore the health of our rivers, and in this case a portion of the Upper Murrumbidgee River. Opportunities to engage and support community river health improvement and monitoring initiatives to benefit the rehabilitation of the UMDR will be valued. Opportunities to assist traditional owners involvement in the initiative, such as through the integration of traditional ecological knowledge and respect for cultural values and heritage, are important to the vision of the successful UMDR.

1.6 Objectives of the Upper Murrumbidgee River Demonstration Reach initiative

Implementation plans specify the objectives for the management efforts they seek to guide and mobilise. Such objectives encompass the broad range of social, economic, cultural and environmental implications for river management. Importantly, plan objectives can help to further define the 'vision' for the site (see Section 1.5).

1.6.1 Long-term objective

The long-term objective of this initiative is to develop a demonstration reach of approximately 100 km in length, stretching from the township of Bredbo in NSW downstream to Casuarina Sands to the west of the Canberra suburban area.

If this proposed core demonstration reach area proves successful, there is the potential to extend the demonstration reach in stages to cover other areas of the ACT, as well as further upstream and downstream into NSW between Tantangara and Burrinjuck reservoirs.

1.6.2 Short to medium-term objectives

Environment: The primary objective is to enhance the ecological condition of the site by:

1. improving the connectivity along the river, both in-stream and along the riparian corridor, as well as laterally into the surrounding landscapes
2. providing input to flow management improvements to revitalise in-stream, riparian and floodplain environments
3. reducing water pollution in particular sediment and nutrients
4. increasing the populations and abundance of native aquatic and terrestrial flora and fauna, especially threatened species
5. reducing the impacts of introduced plant and animal species.

Community: Community engagement objectives aim to ensure the community is engaged and aware of project activities by:

1. increasing awareness of activities – what is happening and what is planned in the project
2. improving community capacity to assist with management of the reach
3. demonstrating, through education, best practice techniques for environmental rehabilitation and water use
4. improving the understanding of river ecology and fish management through communication with the community
5. developing a better understanding of the links between traditional culture and the ecology of the river and its floodplain
6. using the site as a demonstration of river rehabilitation to the broad community so that they can learn from it in undertaking their own initiatives.

Recreation: Recreational objectives aim to ensure the Upper Murrumbidgee River continues to be enjoyed by visitors, by:

1. promoting sustainable recreational use on public lands through asset improvement and education
2. promoting recognition of the reach as an important natural, cultural and economic asset in the region, and promoting this initiative as a model for other river communities to follow.

Governance: Governance objectives aim to achieve a high level of integration between those involved with the management of the reach focused on the objectives above, by:

1. promoting collaboration between management agencies, landholders and other stakeholder parties to achieve the agreed vision for this initiative
2. pursuing the intent of the Murray–Darling Basin Authority's Native Fish Strategy demonstration reach concept, where a number of integrated management interventions are applied to showcase the cumulative benefits of river rehabilitation



3. participating in best practice environmental rehabilitation and promote community awareness and involvement in riverine restoration activities
4. supporting environmental education and training related to issues of conservation and sustainable resource use
5. developing active participation by local communities, all levels of government, private groups and organisations to bring resources and expertise to achieve project outcomes.

1.7 Guiding principles

Guiding principles are the agreed *modus operandi* or 'ways we will operate' statements on which implementation of this plan rests. The following principles are applicable to the Upper Murrumbidgee Demonstration Reach initiative:

1. Adaptive management will be applied. This requires ongoing monitoring of system responses to management actions to help inform those co-ordinating implementation so that, as necessary, these actions can be adjusted or fine tuned.
2. The precautionary approach will be applied. This states *where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation* (Rio Declaration, Principle 15) (UNEP 1972) (see Appendix A).
3. Through the steering group (see Section 3.3.1), open, transparent and consultative decision making will apply to implementation of this plan.
4. Consultations will be held with those responsible for managing ecologically or hydrologically linked areas where activities may result in a potential risk to the environmental, social, cultural or economic values of the Upper Murrumbidgee Demonstration Reach. Where such risks are identified, solutions to mitigate or minimise these risks will be sought.
5. Respect will be shown for the Aboriginal and European cultural heritage values of the site. These are important in community links to the site.
6. Recognition will be given to regional, as well as broader NSW/ACT and Murray–Darling Basin policies, initiatives and obligations, especially in relation to water management, salinity and environmental flows.
7. The availability of resources, both human and financial, may limit the pursuit of the vision and implementation of this plan, and, where necessary, management actions will be prioritised to match available resources.

1.8 Links to other initiatives, existing and related plans

The Upper Murrumbidgee Demonstration Reach is located within the NSW Southern Tablelands region of the Murray–Darling Basin. The project is framed within the basin-wide Native Fish Strategy for the Murray–Darling Basin 2003–2013 (MDBC 2004). Within NSW and the ACT, several related plans, strategies and projects exist across a range of legislative frameworks.

The Murrumbidgee Catchment Action Plan (Murrumbidgee CMA 2008) includes socio-economic and environmental plans for the whole of the Murrumbidgee Catchment. In NSW the UMDR is within the Cooma–Monaro Shire for which environmental considerations are included in Local Environment Plans (LEP's) prepared under the *Environment Planning and Assessment Act 1979* (NSW). At the time of publication these include the *Cooma–Monaro Local Environmental Plan 1999—(Rural)* and the *Yarrowlumla Local Environmental Plan 2002*.



This demonstration reach initiative addresses a number of riverine issues not detailed in a *Planning Framework for Natural Ecosystems of the ACT and NSW Southern Tablelands* (Fallding 2002) that is otherwise focussed on an integrated cross-border approach to regional environmental planning issues.

In the ACT the UMDR goals accord with the policies of the *National Capital Plan* (NCA 2010) and *The Territory Plan* (ACT Government 2010a), as well as the *ACT Aquatic Species and Riparian Zone Conservation Strategy* (ACT Government 2007) and *Murrumbidgee River Corridor Plan of Management* (ACT Government 1998).

At the time of publication a number of initiatives exist within the region that have direct synergies with the UMDR project. The Molonglo River Rescue Action Plan (Bowman and Keyzer, 2010), directs a targeted river rehabilitation project along one of the major tributaries of the Upper Murrumbidgee. Relevant work being undertaken along the Queanbeyan River includes Aboriginal training and cultural interpretation, as well as willow control and related riparian works for which the Queanbeyan City Council and the Murrumbidgee Catchment Management Authority are primarily responsible in partnership with the local Aboriginal community.

At a more regional scale the Kosciuszko to Coast (K2C) initiative aims to increase regional habitat connectivity throughout the region including the UMDR. Several other organisations undertake on-ground action, planning and monitoring in the Upper Murrumbidgee Catchment, for example the Upper Murrumbidgee Landcare network, the Upper Murrumbidgee Catchment Coordinating Committee, and Upper Murrumbidgee Waterwatch and associated catchment groups centred on the Upper Murrumbidgee (NSW), southern ACT, the Molonglo River and Ginninderra Creek.