

6

The Aquatic Species and Riparian Zone Conservation Strategy

6.1

Roles of the Strategy

The *Aquatic Species and Riparian Zone Conservation Strategy* is intended to fulfill a number of roles. These are:

- Action Plans for species listed as threatened under the *Nature Conservation Act 1980*.
- A multi-species strategy for the conservation of aquatic and riparian flora and fauna species, ecological communities and habitats.
- A source document on the rivers and riparian zones for ACT and Commonwealth Government agencies with responsibilities for nature conservation, planning and land management.
- A source document for community and other stakeholders with an interest in the conservation of aquatic and riparian flora and fauna species, ecological communities and habitats.

As an Action Plan prepared under the *Nature Conservation Act 1980*, the *Strategy* addresses the requirement in section 23 of the Act, that it 'shall include proposals to ensure, as far as is practicable, the identification, protection and survival of the species, or the ecological community; or proposals to minimise the effect of any process which threatens any species or ecological community'.

The *Strategy* provides information, strategic direction and performance criteria in relation to wider land use planning, and land and water management in the ACT, including the following documents:

- **The Canberra Plan** (ACT Government 2004f) (Theme 'Living with the Environment—Our Bush Capital' (p. 14)), which states that areas of high conservation value will be enhanced and protected.
- **The Canberra Spatial Plan** (ACT Government 2004b). *The Spatial Plan* contains the following objectives:
 - (a) Under the GOAL to 'Maintain a Unique Sense of Place' (pp. 17, 64):
 - Retain and strengthen the open space network, including the hills, ridges, natural watercourses and gullies.
 - (b) Under the GOAL to 'Respect the Natural Environment' (pp. 17, 72, 74):
 - Protect and enhance biodiversity through nature reserves and maintaining connectivity between them.
 - Maintain water quality and availability.

The *Plan* sets out policy responses related to the above objectives. The following, in particular, are relevant to this Strategy:

- The hills, ridges, major water features and gullies will be retained as the landscape setting (p. 64)
- The major river corridors, the urban hills and ridges, and the hills and reserves east and north of Gungahlin that create the main links for wildlife movement and connect into natural areas south and west of the Murrumbidgee River will be protected as wildlife corridors (p. 72).
- In the Molonglo Valley, environmentally sensitive areas of the Molonglo River corridor will be protected from the adverse impacts of development (p. 72).
- Urban areas are designed and managed to protect water quality in the receiving waters of the Molonglo and Murrumbidgee Rivers and ultimately the Murray–Darling River system (p. 74).
- **The Social Plan** (ACT Government 2004g): **(Priority 7 Respect and protect the environment)** '7.4 Ecological protection and urban development: The Government will help protect our threatened species and ecological communities as part of best practice planning for urban development'; and '7.5 Conservation strategies: The Government will continue to ensure that key biodiversity assets are identified, protected and managed through preparation of conservation strategies for lowland woodlands (2003), native grasslands (2004) and aquatic and riverine communities (2005)'.

As part of these planning processes, decisions will be made by the ACT Government with regard to the

level of protection and conservation management applied to the rivers and riparian zones. As noted in s. 5.1, most of the rivers and riparian zones included in the *Strategy* are Public Land under the *Land (Planning and Environment) Act 1991*. The key issues for these areas are not reservation or recognition in statutory planning, but the need to strengthen and coordinate management, improve their ecological condition and restore degraded areas (especially through weed control).

The central focus of this *Strategy* is on biodiversity and habitat conservation for the rivers and riparian zones, with some consideration of water resource management and recreation (especially recreational fishing) because of their importance in relation to habitat and threatened species conservation. Other natural and cultural values of river sections and adjacent riparian zones include Aboriginal and European cultural heritage, other forms of recreation, aesthetic amenity, educational and special scientific features (e.g. geological sites). These are normally considered in the planning phase before specific proposals are developed by government agencies, in environmental impact assessment, and in public consultation on proposals to amend the Territory Plan. Presenting information on these values is beyond the scope of this *Strategy*, which is not a management plan.

Description, assessment of significance, and management directions for the potentially broad range of values applicable to a place (such as a river section and its riparian zone) are set out in management plans for particular areas or groups of areas in the ACT (see Figure 1.2). Management plans pertinent to this *Strategy* are:

- *Namadgi National Park Management Plan* (ACTP&CS 1986) and *Namadgi National Park Draft Management Plan* (ACT Government 2005d).
- *Lower Cotter Catchment: Draft Strategic Management Plan* (ACT Government 2006b).
- *Murrumbidgee River Corridor Management Plan* (Environment ACT 1998).
- *Molonglo River Corridor Management Plan 2001* (Environment ACT 2001b).
- *Tidbinbilla Nature Reserve Management Plan* (Environment ACT 1999).

As noted in s. 5.1.3, management plans have not been prepared for some river sections and riparian zones that are Public Land.

These management plans set out overall management objectives and management objectives related to particular values (e.g. river and water values) and activities (e.g. interpretation and education). Overall

management objectives, common to all the plans listed above, encompass the following:

- to conserve aquatic and riparian ecosystems and habitats, and diversity of native flora and fauna;
- to conserve cultural heritage landscapes, areas and sites;
- to conserve and enhance habitat links through the regional landscape;
- to conserve natural landforms, scenery and sites of geological, geomorphological and ecological significance;
- to maintain water quality;
- to provide appropriate recreational opportunities consistent with other objectives; and
- to provide environmental education and scientific research opportunities.

The plans subsequently outline management activities that support these objectives.

6.2

Vision, Goals, Objectives and Actions for the Aquatic Species and Riparian Zone Conservation Strategy

Based on the approach adopted in the *ACT Lowland Woodland Conservation Strategy* (ACT Government 2004a) and the *ACT Lowland Native Grassland Conservation Strategy* (ACT Government 2005a), a vision statement, conservation goals and objectives, actions necessary to achieve those objectives, and performance criteria have been prepared for the *Strategy* as a whole. These have been derived from the more detailed discussion, objectives and actions set out in Chapters 2 to 5. The statements in Table 6.1 are grouped into: Information, Protection, Threats, Planning, Management, Community/Landholder Involvement and National and Regional Cooperation and are set out in a format similar to that adopted by some Australian jurisdictions for recovery plans for threatened species. Actions related to specified threatened or uncommon plant and animal species are included at the end of Table 6.1.

Performance Criteria have been developed as an aid to future reviews of progress in implementing the *Strategy*. Achievement of targets depends on a number of factors including budget funding by the ACT Government, commitment by landholders, the involvement of community groups and other factors beyond the control of Environment and Recreation, which will take a leading role in coordinating the implementation of the *Strategy*.

Table 6.1: Vision, Goals, Objectives, Actions and Performance Criteria for the Aquatic Species and Riparian Zone Conservation Strategy

VISION

The Murrumbidgee and Molonglo rivers in the ACT and their major tributaries make an outstanding contribution to the conservation of aquatic and riparian ecosystems of the upper Murrumbidgee River catchment.

PROTECTION GOALS

- Conserve in perpetuity viable, wild populations of all aquatic and riparian native flora and fauna species* in the ACT (*including declared threatened species).
- Conserve in perpetuity aquatic and riparian native vegetation communities in the ACT as viable and well-represented ecological communities.

MANAGEMENT GOALS

- Aquatic and riparian communities and habitats in the ACT are maintained and where degraded, rehabilitated to support the range of flora and fauna typical of the ACT. Rehabilitation may include the re-introduction of threatened or locally extinct fish species to ACT and/or regional streams where they no longer occur naturally.
- Maintain in perpetuity a well-connected system of aquatic and riparian environments that support movement of aquatic and riparian fauna in the ACT and region.

NOTE: (i) See end of table for abbreviations
 (ii) Bracketed items at end of each Action indicate primary responsibility for, or significant participation in the Action

1. Information		
Objectives	Actions	Performance Criteria
(a) The type, location and condition of all aquatic and riparian ecological communities in the ACT are described and the information kept current by means of an appropriate monitoring program. (b) A comprehensive database of aquatic and riparian ecological communities and component species in the ACT is maintained. (c) With regard to the bushfires of January 2003, knowledge is gained and documented about: (i) the long-term ecosystem effects of this event (in particular, the effects of sedimentation on aquatic fauna); and (ii) the recovery of aquatic and riparian ecological communities and their component species (in particular, fire sensitive species such as <i>Casuarina cunninghamiana</i> and <i>Callitris endlicherii</i> and threatened fish species). (d) ACT data is included in national, state and community databases, including the National Vegetation Inventory System (NVIS). (e) Ecological information is used to underpin adaptive management. (f) The ecological and habitat requirements of fish and crayfish are known and applied to their conservation management.	(a) Undertake a survey of vegetation and habitat in ACT riparian zones to update existing information and provide a baseline for subsequent monitoring (E&R). Give priority initially to (a) areas under most threat from current or proposed land uses or activities, (b) areas of high use, (c) areas where data is the most deficient. (b) Prepare and undertake a monitoring program for riparian ecological communities and component flora and fauna species (E&R). (c) Maintain a monitoring program for fish, Murray River Crayfish and aquatic macroinvertebrates in the ACT and appropriate external reference sites (E&R). (d) Develop a database to house survey and monitoring information on aquatic species. (e) Maintain a monitoring program aimed at understanding: (i) the long-term effects of the January 2003 bushfires on riverine and riparian ecological communities and threatened species; and (ii) recovery of ecological communities and their component species (in particular, fire sensitive species such as <i>Casuarina cunninghamiana</i> and <i>Callitris endlicherii</i>) (E&R). (f) Encourage research on ACT aquatic and riparian ecological communities and component species, including research on the effects of, and recovery from the January 2003 bushfires (E&R). (g) Assess the implications of research results for management (E&R). (h) Maintain ACT flora and fauna databases to support planning, management and research (E&R). (i) Link data collection to national (NVIS), state (especially NSW) and community databases (E&R, NSW, CwIth, community).	2008–2010 <ul style="list-style-type: none"> ■ Comprehensive survey undertaken of riparian vegetation and habitat for high priority areas. ■ Vegetation monitoring program designed and commenced for priority species/ecological communities. ■ Survey and other relevant data entered into ACT vegetation database within 6 months of collection. ■ Monitoring program for fish, crayfish and aquatic macroinvertebrates is maintained. ■ Database for survey and monitoring data on aquatic species is developed. ■ Extent of recovery of fire affected riverine and riparian ecosystems and ecological communities reported. ■ Number of research projects undertaken and extent to which management recommendations arising from research are adopted. ■ <i>Integrated Nature Conservation Plan</i> (INCP) includes up-to-date ecological data on rivers and riparian zones.

Table 6.1: (Continued)

2. Protection		
Objectives	Actions	Performance Criteria
<p>(a) The conservation status of aquatic and riparian species and ecological communities in the ACT has been assessed. Where appropriate, nominations have been prepared for consideration as threatened species or communities under the <i>Nature Conservation Act 1980</i>.</p> <p>(b) Riverine and riparian habitats in the ACT are protected by reservation or other measures where reservation is not practicable or desirable.</p> <p>(c) Key habitats for aquatic and riparian species or communities are protected. These include:</p> <ul style="list-style-type: none"> (i) spawning sites for native fish (e.g. Cotter River above Cotter Reservoir for Macquarie Perch); (ii) raptor nesting sites in river gorges; and (iii) riparian areas containing a high diversity of native plant species (e.g. lower Molonglo Gorge). <p>(d) An appropriate level of protection is in place for aquatic and riparian species in the ACT that are declared as threatened under legislation in surrounding jurisdictions or nationally (e.g. Murray Cod, Pink-tailed Worm Lizard, uncommon plant species).</p> <p>(e) Development proposals affecting aquatic and riparian areas are assessed for their ecological impact and if proceeded with, adverse impacts are minimised to an acceptable level.</p> <p>(f) The ACT Heritage Places Register contains aquatic and riparian areas, including key habitats for threatened species or ecological communities.</p>	<p>(a) Assess the conservation status of ACT aquatic and riparian species and ecological communities, which survey and monitoring results show may be at risk. Where appropriate, prepare nominations for consideration as threatened species under <i>Nature Conservation Act 1980</i> (E&R).</p> <p>(b) Evaluate the adequacy of protection for ACT aquatic and riparian areas (E&R).</p> <p>(c) Identify key habitats for aquatic and riparian species or communities. Develop and support appropriate legislative and other protection measures for these habitats (E&R).</p> <p>(d) Identify the riparian zone in the lower Cotter Catchment (above Cotter Reservoir) as an area needing special attention in the rehabilitation of the surrounding former pine plantation, destroyed in the January 2003 bushfires (E&R).</p> <p>(e) Keep protection measures for aquatic and riparian species in the ACT, declared as threatened under legislation in surrounding jurisdictions or nationally, under review (e.g. Murray Cod, Pink-tailed Worm Lizard, uncommon plant species) (E&R).</p> <p>(f) Ensure land development proposals are assessed under relevant environmental impact and nature conservation legislation (E&R, ACTPLA).</p> <p>(g) Work with the ACT Heritage Council to identify riverine and riparian areas, including key habitats for threatened species or ecological communities, suitable for nomination to the ACT Heritage Places Register. Prepare nominations (E&R, ACTPLA, ACT Heritage Council).</p>	<p>2008–2010</p> <ul style="list-style-type: none"> ■ Conservation status of aquatic and riparian species and ecological communities assessed. Where appropriate, threatened species nominations prepared. ■ Key riverine and riparian habitats are protected by legislation, reservation, planning and management actions. ■ Plant and animal species declared threatened in the States or by the Commonwealth are protected in the ACT. ACT conservation status reviewed. ■ Extent to which development proposals are assessed under applicable legislation. <p>2010–2012</p> <ul style="list-style-type: none"> ■ Rivers and riparian zones have been assessed for suitable entries to the ACT Heritage Places Register and nominations prepared.
3. Threats		
Objectives	Actions	Performance Criteria
<p>(a) Threats to:</p> <ul style="list-style-type: none"> ■ riverine and riparian habitats; ■ native riparian flora, fauna and ecological communities; ■ native aquatic fauna; <p>have been assessed and priorities for action developed. Threats have been reduced.</p> <p>(b) The impact and/or occurrence of the following threats is controlled, reduced or eliminated by appropriate planning, research and/or management actions:</p> <ul style="list-style-type: none"> (i) weeds; (ii) pest animals; (iii) inappropriate stock grazing; (iv) inappropriate fire regimes; (v) recreational activity and recreational infrastructure; 	<p>(a) Identify and monitor threats to:</p> <ul style="list-style-type: none"> ■ riverine and riparian habitats; ■ native riparian flora, fauna and ecological communities; ■ native aquatic fauna. <p>(E&R, ACTPLA, land managers, community)</p> <p>(b) Develop priorities for action, prepare and implement threat abatement responses, in particular:</p> <ul style="list-style-type: none"> (i) Continue to undertake a comprehensive weed control program for riparian areas focused on high priority areas and weed species, and follow up weed control work with revegetation of native species to reduce opportunities for reinvasion. (ii) Maintain pest animal control programs. Report and where possible eradicate new occurrences of known or potential pest species e.g. Red-eared Slider Turtle. 	<p>2008–2010</p> <ul style="list-style-type: none"> ■ Actions to address threats have been prepared and are being implemented. ■ Area of riparian zone occupied by weeds has been reduced. Incidence of high priority weeds has been reduced and their spread controlled. <p>2010–2012</p> <ul style="list-style-type: none"> ■ Threats to rivers and riparian areas are substantially reduced or decreasing.
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Table 6.1: (Continued)

3. Threats (Continued)		
Objectives (Continued)	Actions (Continued)	Performance Criteria (Continued)
<p>(vi) urban edge effects (potential, related to proposed urban development near the Molonglo River); and</p> <p>(vii) releases of aquarium and other pest species to streams, and spread and impact of alien fish species.</p>	<p>(iii) Complete the riparian fencing program to prevent uncontrolled stock grazing in riparian areas.</p> <p>(iv) Review fire management policies in relation to knowledge of the fire sensitivity of riparian species/ecological communities and recovery from the January 2003 bushfires.</p> <p>(v) Encourage research into the fire ecology and post-fire recovery of <i>Callitris endlicheri</i> and <i>Casuarina cunninghamiana</i> communities.</p> <p>(vi) Recognise and protect river corridor values in planning/management of recreational infrastructure/activities.</p> <p>(vii) Evaluate potential impacts of urban development and seek to reduce these impacts in the planning process.</p> <p>(viii) Investigate means to reduce (a) the risk of releases of aquarium and other pest species to streams and (b) the impacts of already established species;</p> <p>(ix) Encourage investigation into control mechanisms to prevent the spread of established pest species (terrestrial vertebrates, alien fish).</p> <p>(E&R, ACTPLA, land managers, landholders, community)</p> <p>(c) Monitor the results of threat abatement measures (E&R, ACTPLA, land managers, landholders, community).</p>	
4. Planning		
Objectives	Actions	Performance Criteria
<p>(a) The <i>Aquatic Species and Riparian Zone Conservation Strategy</i> and up-to-date ecological information is an important basis for assessing planning decisions impacting on the conservation of aquatic and riparian ecological communities and component species.</p> <p>(b) Government and non-government organisations recognise the biodiversity conservation values of the rivers and riparian zones and incorporate their conservation requirements in planning, development and land management activities. In particular:</p> <p>(i) River corridor values are recognised in planning studies for new urban areas (Molonglo, Kowen) and river corridors are given appropriate protection in physical planning.</p> <p>(ii) Planning of recreational infrastructure recognises and protects corridor values. Recreational infrastructure remains concentrated at nodes and linear impacts are minimised.</p> <p style="text-align: right;"><i>(Continued next page)</i></p>	<p>(a) Consult with all government and non-government parties involved in planning processes for rivers and riparian zones to ensure that information on their conservation significance is incorporated: (i) into strategic planning for the ACT and region; (ii) at an early stage into planning for urban and other development in the ACT; and (iii) into development control and management plans. In particular, seek to ensure that:</p> <p>(i) River corridor values are recognised in planning studies for new urban areas (Molonglo, Kowen) and river corridors are given appropriate protection in physical planning.</p> <p>(ii) Planning of recreational infrastructure recognises and protects river corridor values, remains nodal and avoids linear impacts.</p> <p style="text-align: right;"><i>(Continued next page)</i></p>	<p>2006</p> <ul style="list-style-type: none"> ■ Planning and development decisions (urban, recreation and infrastructure) are based on this Strategy and up-to-date ecological information. <p>2008–2010</p> <ul style="list-style-type: none"> ■ Extent to which vegetation communities and linear habitat connectivity have been maintained and improved. ■ Extent to which habitat for Pink-tailed Worm Lizard and other rare and threatened species is protected.

Table 6.1: (Continued)

4. Planning (Continued)		
Objectives (Continued)	Actions (Continued)	Performance Criteria (Continued)
<p>(iii) Specific recognition is given to habitat protection for the Pink-tailed Worm Lizard (<i>Aprasia parapulchella</i>) in planning studies for the Molonglo and Murrumbidgee river corridors.</p> <p>(c) Ecological connectivity along rivers and riparian zones is improved and further fragmentation is avoided or minimised.</p>	<p>(iii) Specific recognition is given to habitat protection for the Pink-tailed Worm Lizard (<i>Aprasia parapulchella</i>) in planning studies for the Molonglo and Murrumbidgee river corridors. (E&R, ACTPLA, NSW, Cwith, community).</p> <p>(b) Work with other agencies and landholders (especially rural lessees) to improve existing connectivity and prevent or minimise further fragmentation in riparian zones. Give priority to areas where connectivity needs to be improved (EACT, landholders, community).</p>	
5. Management		
Objectives	Actions	Performance Criteria
<p>(a) 'Best practice' management is applied to rivers and riparian zones in the ACT with particular attention to the habitat of threatened, uncommon and declining species and conservation of ecological communities.</p> <p>(b) Recreational fishing in the ACT is managed so as to provide a satisfying and sustainable recreational experience, and to protect threatened, uncommon and declining species.</p> <p>(c) Management plans are in place for all Public Land areas of the rivers and riparian zones.</p> <p>(d) The ecological condition and habitat quality of rivers and riparian zones in the ACT is maintained or improved by appropriate rehabilitation activities (regeneration*, restoration* or reinstatement*).</p> <p>(e) Management responsibility is established for the Molonglo River adjacent to Fyshwick and below Scrivener Dam to Coppins Crossing, and rehabilitation programs are underway based on management plans.</p> <p>(f) Linear and upslope connectivity along rivers and riparian zones is improved and further fragmentation is avoided or minimised.</p> <p>(g) Threats to riverine and riparian habitats, flora and fauna and ecological communities have been addressed by appropriate management actions.</p> <p>(h) Land Management Agreements are completed for all rural leases in riparian zones.</p> <p>* <i>Regeneration</i> means the natural recovery of natural integrity following disturbance or degradation.</p> <p>* <i>Restoration</i> means returning existing habitats to a known past state or to an approximation of the natural condition by repairing degradation, by removing introduced species or by reinstatement.</p> <p>* <i>Reinstatement</i> means to introduce to a place one or more species or elements of habitat or geodiversity that are known to have existed there naturally at a previous time, but that can no longer be found at that place (<i>Australian Heritage Commission 2002</i>).</p>	<p>(a) Prepare and keep under review:</p> <ul style="list-style-type: none"> ■ management plans (Public Land); ■ other plans and agreements (for other tenures e.g. LMAs for rural leases); ■ environmental management policies and guidelines (e.g. fish stocking, environmental flows); <p>that reflect commitment to active and effective conservation of rivers and riparian areas, and conservation management of aquatic ecological resources (EAR, ACTEW, land managers, land holders, community).</p> <p>(b) Continue to develop and promote 'best practice' management of rivers and riparian zones and their component species in the ACT. Give particular attention to the following:</p> <ul style="list-style-type: none"> (i) Protect and manage the habitats of threatened, uncommon and declining species. (ii) Investigate and undertake appropriate rehabilitation activities (regeneration*, restoration*, reinstatement*). This may involve streambed, riverbank, habitat and wider riparian activities including those of an experimental kind. An important aim of such activities is to maintain and re-establish natural movement patterns for aquatic and riparian flora and fauna (e.g. honeyeater migration along the Murrumbidgee River Corridor). (iii) Investigate options for the use of closely monitored commercial extractive industries to remove in-stream sand and gravel deposits, as part of a habitat enhancement program. (iv) Continue with reinstatement of threatened fish species for conservation purposes and monitor the result. (v) Manage recreational activity and the provision of recreational infrastructure so as to minimise environmental effects, especially in areas containing the habitat of threatened or uncommon flora and/or fauna species. <p>(Continued next page)</p>	<p>2008–2010</p> <ul style="list-style-type: none"> ■ Extent to which aspects of best practice management have been applied. ■ Management Plans prepared for all Public Land areas. ■ Extent to which ecological condition and habitat quality of rivers and riparian zones have been maintained or improved. ■ Management responsibility established for the Molonglo River adjacent to Fyshwick and below Scrivener Dam to Coppins Crossing. Rehabilitation programs commenced.

Table 6.1: (Continued)

5. Management (Continued)		
Objectives (Continued)	Actions (Continued)	Performance Criteria (Continued)
	<ul style="list-style-type: none"> (vi) Ensure that information on flora and fauna and ecosystem function is included in considerations about water use and the establishment and maintenance of environmental flows. (vii) Enforce the fishing regulations established under the <i>Fisheries Act 2000</i> (ACT) (e.g. prohibitions on take, bag limits, gear limits, closed seasons). (viii) Monitor and review fishing legislation in jurisdictions surrounding the ACT to ensure fishing legislation is consistent across borders. (ix) Continue to develop and promote 'best practice' management of recreational fishing, giving particular attention to protecting and managing threatened, uncommon and declining species, and promoting consistency in fisheries regulations with NSW. (x) Include provisions for the protection and conservation management of rivers and riparian areas, ecological communities, and component flora and fauna in Land Management Agreements for rural leases adjacent to, or containing riparian areas. (xi) Seek to ensure that adequate financial and other resources are applied to the rehabilitation of the Cotter River, tributary streams and riparian zones in the lower Cotter catchment. (xii) Maintain linear and upslope connectivity and avoid management actions which increase fragmentation. (xiii) Use the results of macroinvertebrate monitoring to develop management actions and priorities to improve water quality and aquatic and riparian habitat. (E&R, ACTEW, ACTPLA, NSW, Vic., land managers, land holders, community) <p>(c) For the Molonglo River adjacent to Fyshwick and below Scrivener Dam to Coppins Crossing:</p> <ul style="list-style-type: none"> (i) Establish management responsibility for both areas. (ii) Prepare management plans. (iii) Undertake rehabilitation programs giving particular attention to major weed species, bank stability and riverflows. (ACTPLA, TAMS, NCA, community) 	

Table 6.1: (Continued)

6. Community/Landholder Involvement		
Objectives	Actions	Performance Criteria
<p>(a) Landholders, community groups (e.g. Waterwatch, Frogwatch) and others are actively involved in the monitoring and conservation management of rivers and riparian areas in the ACT.</p> <p>(b) For rivers and riparian areas, land managers, landholders, and the community are linked together, exchanging information and skills and undertaking collaborative projects.</p> <p>(c) The ACT community is better informed about the values of the rivers and riparian zones and the need for conservation management.</p>	<p>(a) Encourage the involvement of landholders, community groups and others in the conservation management of rivers and riparian areas in the ACT (E&R).</p> <p>(b) For rivers and riparian areas, facilitate information and skills exchange and the undertaking of collaborative projects by land managers, landholders, and the community. Encourage catchment groupings and build upon the existing Land Keepers program (E&R, landholders, community).</p> <p>(c) Undertake community information activities to promote the values of the rivers and riparian zones and the need for conservation management (E&R).</p> <p>(d) Make information available to support and develop community awareness about the role and value of environmental flows (E&R).</p>	<p>2008–2010</p> <ul style="list-style-type: none"> ■ Number and type of opportunities for managers of rivers and riparian zones to exchange information about ‘best practice’ management. ■ Number and type of opportunities for community groups to participate in conservation activities in the rivers and riparian zones. ■ Materials available to community groups to educate and raise awareness about aquatic and riparian issues.
7. Regional and National Cooperation		
Objectives	Actions	Performance Criteria
<p>The ACT takes an active role in national and regional programs and activities involved with the planning and management of rivers and riparian zones, and associated threatened species and ecological communities.</p>	<p>(a) Liaise with interstate and Commonwealth government agencies and other organisations involved in the planning and management of the Murray–Darling Basin, the Upper Murrumbidgee River catchment, and the particular rivers, riparian zones, threatened species and ecological communities to share knowledge and expertise (ACT, NSW, Vic., Cwth, MDBC, other organizations).</p> <p>(b) Maintain links with, and participate in, regional and national recovery efforts for threatened species and ecological communities to ensure that ACT conservation actions are coordinated with regional and national programs (E&R, Cwth, NSW, Vic., MDBC).</p> <p>(c) Work with regional bodies to encourage and develop coordinated control of threats e.g. weeds.</p>	<p>2008–2010</p> <ul style="list-style-type: none"> ■ Extent and effectiveness of ACT involvement in relevant national and regional programs and activities.

Table 6.1: (Continued)

8. Threatened and Uncommon Plants and Ecological Communities (see s. 2.4 for more detail) (<i>Muehlenbeckia tuggeranong</i> and any other threatened or uncommon plant species/ecological community occurring in riparian zones)	
Actions	Performance Criteria
<p>INFORMATION (Survey, Monitoring, Research)</p> <ul style="list-style-type: none"> ■ Maintain alertness to the possible presence of threatened or uncommon plant species when undertaking surveys in appropriate habitat (E&R). ■ Maintain a database of known occurrences and abundance of threatened and uncommon plant species to enable analysis of changes in distribution and abundance (E&R). ■ Maintain a watching brief on ACT populations of uncommon plant species and evaluate their conservation status in a regional context (E&R). ■ Facilitate and encourage research that will provide information on the status of threatened and uncommon plant species and management requirements (E&R). <p>(more detailed actions apply to <i>Muehlenbeckia tuggeranong</i>, see s. 2.4.1)</p> <p>PROTECTION</p> <ul style="list-style-type: none"> ■ Assess the conservation status of uncommon plant species, identified in survey and monitoring (E&R). ■ Ensure known populations of threatened and uncommon plant species are protected from inadvertent damaging actions (e.g. by advising landholders and managers of their presence) (E&R). ■ Protect the existing specimens of <i>Muehlenbeckia tuggeranong</i> in accordance with the specific management objective in the Murrumbidgee River Corridor Management Plan (p. 21) 'to protect the habitats of rare and threatened plant and animal species' (Environment ACT 1998) (E&R). <p>MANAGEMENT</p> <ul style="list-style-type: none"> ■ Prepare management guidelines for uncommon plant species for use by landowners and managers where necessary (E&R). ■ Manage sites, and provide advice to other landowners and managers, to maintain optimum habitat (where known) for threatened and uncommon plant species (EAR, landholders, land managers). ■ Consider nomination for ACT listing if uncommon plant species show evidence of local decline in extent and abundance (E&R). <p>REGIONAL AND NATIONAL CO-OPERATION</p> <ul style="list-style-type: none"> ■ Liaise with interstate agencies involved in protection and management of uncommon plant species with the aim of increasing knowledge of their biology, and habitat and conservation requirements (E&R). 	<p>2008–2010</p> <ul style="list-style-type: none"> ■ Actions with regard to the reproduction of <i>Muehlenbeckia tuggeranong</i> have been undertaken (s. 2.4.1). ■ Threatened or uncommon plant species or ecological communities identified from surveys. ■ Conservation status of uncommon plant species or ecological communities assessed. ■ Land managers and landowners advised of presence of threatened or uncommon plant species or ecological communities and management guidelines provided. ■ Liaison with interstate agencies undertaken (as required).
9. Threatened and Uncommon Animals of the Rivers and Riparian Zones (see s. 3.3 and s. 4.10 to s. 4.14 for more detail) (Rivers: Two-spined Blackfish, Trout Cod, Macquarie Perch, Silver Perch, Murray Cod, Murray River Crayfish and any other threatened or uncommon animal) (Riparian Zones: Painted Honeyeater and Pink-tailed Worm Lizard and any other threatened or uncommon animal)	
Actions	Performance Criteria
<p>INFORMATION (Survey, Monitoring, Research)</p> <p>Rivers</p> <ul style="list-style-type: none"> ■ Improve understanding of the biology and ecology of threatened and uncommon fish and crayfish species as the basis for managing the species and their habitat. Give specific attention to establishing causes of population decline. Investigate translocation as a management option for establishing new sub-populations. (a) Survey: Undertake surveys for threatened fish/crayfish species to determine distribution and abundance (see s. 4.11.1 and Table 4.6); (b) Monitoring: Continue monitoring program for threatened fish/crayfish species and liaise with NSW and Victorian fisheries agencies and the MDBC regarding threatened fish/crayfish species (see s. 4.11.2 and Table 4.7); (c) Research: Continue to encourage research on ACT threatened fish/crayfish species, focused on priority areas with key information gaps (see s. 4.11.3 and Table 4.8). Encourage research on spiny crayfish and the burrowing crayfish <i>Engaeus cymus</i>. <p>Include uncommon species (e.g. Murray Cod) in above actions where appropriate.</p> <p>Riparian Zones</p> <ul style="list-style-type: none"> ■ Maintain alertness to the possible presence of threatened or uncommon fauna species when undertaking surveys in riparian zones (E&R). <p style="text-align: right;">(Continued next page)</p>	<p>2008–2010</p> <ul style="list-style-type: none"> ■ Up-to-date database of threatened and uncommon animal species maintained. ■ Conservation status of uncommon animal species assessed. ■ Land managers and landowners advised of presence of threatened or uncommon animal species and management guidelines provided. ■ Habitat for threatened and uncommon species has been maintained or restored. ■ Liaison with interstate agencies undertaken (as required).

Table 6.1: (Continued)

9. Threatened and Uncommon Animals of the Rivers and Riparian Zones (Continued)	
Actions (Continued)	Performance Criteria (Continued)
<ul style="list-style-type: none"> ■ Maintain a database of known occurrences and abundance of threatened or uncommon fauna species that utilise the riparian zone to enable analysis of changes in distribution and abundance (E&R). ■ Maintain a watching brief on threatened or uncommon fauna species that utilise ACT riparian zones and evaluate their conservation status in a regional context (E&R). ■ Facilitate and encourage research that will provide information on threatened or uncommon fauna species that utilise ACT riparian zones and their management requirements (E&R). <p>PROTECTION AND MANAGEMENT</p> <p>Rivers</p> <ul style="list-style-type: none"> ■ Protect sites and habitats that are critical to the survival of threatened fish and crayfish species. Manage activities in the Murrumbidgee, Cotter and Paddys River catchments in the ACT to minimise or eliminate threats to fish and crayfish populations. Evaluate means and undertake actions to maintain and expand existing populations. Re-introduce Trout Cod to their former habitat in the ACT. <ul style="list-style-type: none"> (a) Undertake protection and management actions for threatened and uncommon fish/crayfish species (related to legislative protection, environmental flows, habitat rehabilitation, future water supply options, alien fish species, fish stocking, barriers to fish passage and trade in freshwater crayfish) (see s. 4.12.1 to s. 4.12.10). <p>Riparian Zones</p> <ul style="list-style-type: none"> ■ Seek to ensure known populations of threatened and uncommon fauna species and species that utilise ACT riparian zones are protected from inadvertent damaging actions (e.g. by advising landowners and managers of their presence). ■ Prepare management guidelines for uncommon fauna species where necessary. ■ Manage sites, and provide advice to other landowners and managers, to maintain optimum habitat (where known) for uncommon fauna species (<i>Casuarina cunninghamiana</i> riparian woodland for painted Honeyeater; native grassland with rocks for Pink-tailed Worm Lizard). ■ Consider nomination for ACT listing if uncommon fauna species show evidence of local decline in extent and abundance. <p>EDUCATION</p> <p>Rivers and Riparian Zones</p> <ul style="list-style-type: none"> ■ Provide information about and increase community awareness of the need to protect aquatic and riparian species and their habitats (see s. 4.13 for fish and crayfish). <p>REGIONAL AND NATIONAL COOPERATION</p> <p>Rivers</p> <ul style="list-style-type: none"> ■ Maintain links with, and participate in, regional and national recovery efforts for threatened aquatic species (see s. 4.14). <p>Riparian Zones</p> <ul style="list-style-type: none"> ■ Liaise with interstate agencies involved in protection and management of threatened and uncommon fauna species that utilise ACT riparian zones with the aim of increasing knowledge of their biology, and habitat and conservation requirements. 	

Abbreviations

- ACTEW:** ACTEW Corporation Limited
- ACTPLA:** ACT Planning and Land Authority
- Cwith:** Commonwealth Government (primarily Department of Environment and Heritage)
- TAMS:** Department of Territory and Municipal Services
- E&R:** Environment and Recreation (part of TAMS)
- GPT:** Gross Pollutant Trap
- INCP:** The *Integrated Nature Conservation Plan* is the central repository for information related to nature conservation in the ACT. Based on a Geographical Information System it shows, for example, all ACT reserves, distribution of threatened species and ecological communities, important fauna habitat and locations where major works are planned or being undertaken.
- MDBC:** Murray–Darling Basin Commission
- NSW:** NSW Government (primarily Department of Environment and Conservation and Department of Primary Industries)
- NCA:** National Capital Authority
- Vic.:** Victorian Government (primarily Department of Sustainability and Environment and Department of Primary Industries)

6.3

Policy Guidelines for River and Riparian Zone Conservation in the ACT

ACT Government policies for conservation of riverine and riparian habitats, ecological communities, and flora and fauna are set out in documents such as *The Territory Plan*, *The Canberra Spatial Plan* and *The ACT Nature Conservation Strategy* (ACT Government 1998). Other relevant documents include *Think water, act water* (the ACT water resources strategy) (ACT Government 2004d), the *ACT Natural Resource Management Plan 2004–2014* (ACT NRM Board 2004), *An Integrated Catchment Management Framework for the ACT* (Environment ACT 2000b), the *ACT Lowland Woodland Conservation Strategy* (ACT Government 2004a) and the *ACT Lowland Native Grassland Conservation Strategy* (ACT Government 2005a). Statements in these documents point towards a system of protection for the ACT that places its natural environments within a regional context and reflects national priorities. The latter are contained in the *Australian Guidelines for Establishing the National Reserve System* (Commonwealth of Australia, 1999), the *National Strategy for the Conservation of Australia's Biological Diversity* (Commonwealth of Australia 1996), and the *National Action Plan for Salinity and Water Quality* (COAG 2000).

A significant context for this *Strategy* is the *Murray–Darling Basin Initiative*, a cooperative arrangement between the Commonwealth Government, governments of New South Wales, Victoria, South Australia, Queensland, the Australian Capital Territory, and a Community Advisory Committee. This is aimed at promoting the equitable, efficient and sustainable use of the Basin's water, land and other environmental resources. The ACT is a participant in a number of programs, such as the sustainable rivers audit. A long-term native fish strategy has been prepared for the Basin (MDBC 2004a) with the goal 'to rehabilitate native fish communities in the Murray–Darling Basin back to 60 per cent of their estimated pre-European settlement levels after 50 years of implementation'.

A *Draft ACT Fisheries Management Plan* (Environment ACT (in prep.)) aims to provide directions and guidance for the conservation and management of ACT fisheries. Prepared pursuant to section 6 of the *Fisheries Act 2000* (ACT), the Plan identifies ACT fisheries and activities necessary for their management.

At the sub-regional level, the *Murrumbidgee Catchment Blueprint* (Murrumbidgee Catchment Management Board 2003) has been prepared to satisfy legislative requirements in the NSW *Catchment Management Act 1989* and in response to arrangements under the *National Action Plan for Salinity and Water Quality* (COAG 2000). Although the *Murrumbidgee Catchment Blueprint* is inclusive of the ACT at the broader catchment level, the ACT has a separately identified component that reflects the ACT's different governmental arrangements, land tenure system, and urban focus.

ACT aspects are dealt with in the *ACT Natural Resource Management Plan 2004–2014* (ACT NRM Board 2004). Originally developed (in its draft form) as a component of the *Murrumbidgee Catchment Blueprint*, this *Plan* has been refined to meet the requirements of a Territory Bilateral Agreement for the delivery of the Natural Heritage Trust. Funding under the Trust is mainly through a 'regional investment' program, with regions defined under the *National Action Plan for Salinity and Water Quality*, and made on the basis of a regional natural resource management plan incorporating major environmental issues in the area. The *ACT Plan* provides a strategic framework for natural resource management at the Territory and local scale and in the context of the Murrumbidgee River Catchment. Targets and actions in the *Plan* have been prepared through a process of community and government consultation. They are complementary to, and in some instances provide context for the objectives and actions in this *Strategy*. Examples are:

Biodiversity BMT 3 (Wetland and riverine) (ACT NRM Board 2004, p. 42):

- Conduct a comprehensive survey of the condition and conservation status of riparian and wetland areas that is consistent with regional and NVIS (National Vegetation Information System) standards.
- Conserve and rehabilitate native riparian vegetation adjacent to plantations, public and rural lands with a priority focus on threatened species habitat and fire-affected land.
- Control livestock access to permanent streams and wetlands.
- Implement Murray–Darling Basin Fish strategy in cooperation with other States.
- Identify and manage invasive aquatic and riparian species to protect biodiversity.

Water Resources (WMT 4) (ACT NRM Board 2004, p. 51):

- Undertake research and monitoring to gain a greater understanding of environmental flows and aquatic ecosystem needs.
- Review environmental flows guidelines and ensure there is a clear mechanism for implementing these guidelines.
- Undertake a community education and awareness campaign about the role and value of environmental flows.

6.4

The State of Protection and Conservation Management of Rivers and Riparian Zone in the ACT

The reservation, planning and management framework for catchments and river corridors in the ACT is outlined in s. 5.1, which shows that the river corridors are:

- covered by land use policies in both the *National Capital Plan* and the *Territory Plan*,
- mostly categorised as Public Land under the *Land (Planning and Environment) Act 1991* and declared as reserves (except for Paddys River and most of the lower sections of the Naas and Gudgenby rivers).

However, while significant sections of the river corridors are included in management plans, Public Land areas for which these have not been prepared are (Figure 1.1):

- Molonglo River
 - MO 1. Burbong to Blue Tiles;
 - MO 2. Molonglo Gorge to Lake Burley Griffin;
 - MO 3. Scrivener Dam to Coppins Crossing.

The remaining river sections are mainly rural leasehold or plantation forestry areas (Figure 1.1):

- Paddys River (Rural leasehold, plantation forestry)
 - CO 1. Paddys River (Tidbinbilla River within the Tidbinbilla Nature Reserve is included in the management plan for the reserve).
- Gudgenby River (Rural leasehold, Public Land (possible Tennent Dam site))
 - GU 2. Namadgi National Park to Murrumbidgee River.

A priority action to improve protection and conservation management of rivers and riparian zones

in the ACT is to include all Public Land areas of the rivers and riparian zones in management plans as required under the *Land (Planning and Environment) Act 1991* (s. 197 (1)). Related to this is the need to strengthen and coordinate management, including for those areas (above) that are not Public Land.

6.5

Priority Actions to Improve Conservation Management of Rivers and Riparian Zones in the ACT

The status of planning, protection and management for ACT rivers and riparian zones is discussed in Chapter 5. Planning and conservation issues are outlined in s. 5.4 to s. 5.6, including Table 5.1, which contains planning and conservation issues and priority actions for the river sections and adjacent riparian zones identified in the *Strategy*. Actions for the *Strategy* as a whole are contained in Table 6.1. Actions taken to improve the state of the rivers and riparian zones in the ACT bring both local benefits and make a contribution to environmental improvement in the wider Murray–Darling Basin. The latter is identified in the *Australian Catchment, River and Estuary Assessment 2002* (Commonwealth of Australia 2002a) as having an urgent need for rehabilitation and strategic management, and in the *Australian Terrestrial Biodiversity Assessment 2002* (Commonwealth of Australia 2002b) as having degraded riparian zones that are continuing to decline.

MacLeod (2002a, p. 148) suggests that three broad ‘strategies’ should be given priority in managing riparian lands to maintain and/or improve their ecological condition:

- retaining and managing riparian vegetation;
- managing stock access to riparian areas; and
- controlling weeds and exotic species within riparian areas.

These ‘strategies’ can assist in protecting valuable riparian and aquatic ecosystems and, importantly, they include actions over which land owners and managers can exert some direct control. They are incorporated into the priority actions for this *Strategy* in s. 6.5.1 below.

6.5.1 Priority Actions

Priority actions to improve conservation management of rivers and riparian zones in the ACT are:

INFORMATION

- Undertake a program of systematic survey of vegetation and habitat in ACT riparian zones.
- Assess the conservation status of riparian species and ecological communities.
- Encourage research into the ecology and conservation requirements of ACT threatened and uncommon fish and crayfish species and aquatic habitats.
- Develop a database for storage of survey and monitoring information on threatened, declining or rare aquatic species.

PROTECTION

- Maintain the protection arrangements for threatened fish species and habitats in the Cotter River (fishing prohibition, access limitations).
- Review the adequacy of the *Nature Conservation Act 1980* to declare and/or protect habitats of threatened aquatic and riparian species.

THREATS

- Maintain, and keep under review, the weed control programs based on high priority areas and weed species.
- Investigate means to (a) reduce the risk of releases of aquarium and other pest species to streams; (b) reduce the impacts of already established species; and (c) control the spread of already established species.

PLANNING

- Protect river corridors in planning for new urban, recreational and infrastructure development noting that adjustments to the statutory and management boundaries of existing conservation areas may be made as part of detailed planning processes. Avoid fragmentation (loss of linear connectivity).

MANAGEMENT

- Prepare management plans and implementation plans, and where required, strengthen and coordinate management (see s. 6.4 above).
- Maintain and restore riverine and riparian habitat and connectivity:
 - Rivers:
 - (a) Maintain environmental flows.
 - (b) Investigate options for rehabilitating critical fish habitat including sediment removal.
 - Riparian zones:
 - (a) Maintain and rehabilitate native vegetation.
 - (b) Manage the impacts of riparian and upslope activities including grazing.

- (c) Maintain and, where practicable, improve connectivity with upslope ecological communities, including lowland grassy woodland.

- Continue the range of threatened fish/crayfish research and conservation programs in the ACT and region (particularly the reinstatement of threatened fish species for conservation purposes and the monitoring the results) and keep these programs under review.
- Enforce the fishing regulations established under the *Fisheries Act 2000* (ACT) (e.g. prohibitions on take, bag limits, gear limits, closed seasons).
- Maintain a monitoring program for fish, crayfish and aquatic macroinvertebrates in the ACT and appropriate external reference sites.

COMMUNITY/LANDHOLDER INVOLVEMENT

- Maintain and develop community involvement and information activities in relation to the conservation management of rivers and riparian zones in the ACT.

REGIONAL AND NATIONAL COOPERATION

- Maintain liaison and participation with other Governments and organisations involved with the Murray–Darling Basin and recovery efforts for threatened species and ecological communities.

6.5.2 Priority River Sections

Planning and conservation issues and priority actions for all the river sections and riparian zones included in the *Strategy* are contained in Table 5.1. From the foregoing, conservation actions related to the following river sections and their riparian zones warrant high priority.

CO 1: Paddys River

Key issues:

- Weed infestation.
- Degraded in-stream and riparian habitat.
- Sedimentation.
- Loss of ecological connectivity.
- Potential impacts of provision of recreational facilities associated with recovery from January 2003 bushfires.
- Potential for reinstatement of threatened fish populations.

CO 4: Cotter River (below Bendora Dam to Cotter Dam)

Key issues:

- Post-fire recovery following January 2003 bushfires.
- Future land use, riparian protection and management.

- Weeds (including pine wildings).
- Issues related to threatened fish species (see Table 5.1).
- Altered flow patterns and thermal pollution.

MO 2: Molonglo River—Molonglo Gorge to Lake Burley Griffin

Key issues:

- Management responsibility.
- Weed infestation (especially willows).
- Poor water quality (impoverished macroinvertebrate assemblages).
- Riparian ecological connectivity.

MO 3: Molonglo River—Scrivener Dam to Coppins Crossing

Key issues:

- Management responsibility.
- Weed infestation (especially willows and other woody weeds).
- Poor water quality (bottom discharge from Scrivener Dam).
- Potential urban edge effects.
- Riparian ecological connectivity.
- Poor knowledge of aquatic biodiversity

6.5.3 Implementation

Implementation of priority actions across all river sections and their riparian zones (s. 6.5.1) and for high priority sections (s. 6.5.2) depends upon a variety of government administrative processes including implementing existing planning and management policies adopted under the *Territory Plan* and the *Land (Planning and Environment) Act 1991*. Briefly these are:

- Applying the *Strategy* and the information it contains to future planning proposals in the ACT.

- Applying the Policies of the *Territory Plan* relevant to the rivers and riparian zones, in particular: Part B13: River Corridors Land Use Policies; Appendix I: Water Use and Catchment Policies; Appendix II: Mandatory Preliminary Assessment.
- Completing and keeping under review, Land Management Agreements between Environment ACT and landholders of rural leases.
- Carrying out the management activities and programs detailed in existing management plans;
- Preparing management plans for Public Land areas consistent with the requirements of the *Land (Planning and Environment) Act 1991* (s. 197 (1)).
- Reviewing and revising management plans taking into account legislative requirements, changing circumstances and new information.
- Coordinating the activities of Government agencies and other organisations involved in water resource management in the ACT.
- Based on the results of survey and monitoring, nomination of species and/or ecological communities for consideration by the ACT Flora and Fauna Committee as threatened species under the *Nature Conservation Act 1980*.
- Implementing best practice management of the rivers and riparian zones managed by Environment ACT as well as areas managed by other agencies, organisations and individuals.

Promoting cross border cooperation amongst ACT and NSW government agencies and other stakeholders aimed at coordinated conservation planning and management activities. This will maximise the opportunities to achieve regional targets for biodiversity conservation.