



5

MANAGEMENT ARRANGEMENTS

This section details the institutional arrangements for the management of rivers, and covers issues such as capacity building, monitoring and accountability.

11. Management Arrangements

This chapter outlines the institutional arrangements for the management of river health within Victoria, including the roles and responsibilities of the major players and the funding mechanisms.

The health of a river system is a cumulative outcome of the combined impacts of land and water management within the catchment and the river itself. Therefore, the management of river health in Victoria is undertaken within the broader ICM context. It is integrally linked into broader programs of land and water management through the regional planning framework based on the RCSs and their component regional RHSs described in Chapter 5.

As part of the broader program of catchment management, the management and restoration of river health is undertaken as a partnership between governments and the community with clear agreed roles for each.

The general roles of the major groups within this partnership are described in Box 11.1.

Box 11.1 General Roles of Major Groups in River Restoration and Catchment Management	
Group	General Roles
Commonwealth Government	<ul style="list-style-type: none"> • contribute funding to States, regional authorities, groups and individuals to achieve national objectives for river restoration and catchment management • facilitate national or interstate coordination where this is necessary • invest in the development of better management principles, tools and systems • improve the knowledge base through strategic research and development • improve incentives especially in areas of Commonwealth responsibility • ensure that the wider Australian community is well informed about natural resource management issues • facilitate the monitoring of the effectiveness of natural resource management at appropriate scales • oversee the implementation of relevant Commonwealth legislation including the <i>Environment Protection and Biodiversity Conservation Act 1999</i> • ensure that Australia meets its obligations under international agreements • identify issues of national significance
State Government	<ul style="list-style-type: none"> • set statewide policy and strategic directions for river restoration and for catchment and environmental protection • establish legislative frameworks • establish effective catchment/regional institutional arrangements • provide funding to achieve State and regional priorities • provide relevant advice, and undertake research and monitoring, planning, extension, on-ground works and some referral and enforcement functions to support regional communities • participate in effective intergovernment processes and national approaches where necessary, and implement State responsibilities under nationally agreed strategies
Regional Catchment Management Authority	<ul style="list-style-type: none"> • develop, in partnership with the community and other stakeholders, RCSs and component RHSs and other action plans which define the vision for the catchment and set targets for land and water management • provide advice to the State Government on both Federal and State resourcing priorities at a regional level • develop and implement measures for river protection and restoration to implement RHSs and RCSs

Box 11.1 cont.	
Group	General Roles
Regional Catchment Management Authority (cont.)	<ul style="list-style-type: none"> ensure community involvement in river and catchment management undertake floodplain management in accordance with the <i>Victoria Flood Management Strategy</i> develop partnerships between resource managers in the catchment, and coordinate activities impacting on river health provide a focus for regional investment in river and catchment management monitor the condition and management of the land and water resources in their region provide community education act as a communication conduit between regional communities and Government on issues relating to land and water management
Regional Resource Managers (including water authorities and government land managers e.g. Parks Victoria, NRE)	<ul style="list-style-type: none"> participate in the development and implementation of RCSs and regional RHSs act in partnership with CMAs to implement RCSs and RHSs where appropriate undertake all activities which can potentially impact on rivers to best management practice standard, in accordance with 'duty of care' responsibilities and good corporate citizenship recognise their dependence on a healthy resource base and their potential impact on it, and manage in accordance with the principles of ecologically sustainable development develop partnerships with other resource managers in the catchment to enhance project coordination and implementation
Local Government	<ul style="list-style-type: none"> work in partnership with CMAs to set priorities for and implement RCSs and regional RHSs incorporate river restoration and catchment management objectives, priorities and actions into statutory planning processes undertake floodplain management and flood warning in accordance with the <i>Victoria Flood Management Strategy</i> develop and implement urban stormwater plans in an ICM context manage rural drainage schemes where appropriate facilitate local industry involvement in river restoration and catchment management activities provide local support for local action groups undertake all activities which can potentially impact on rivers to best management practice standard, in accordance with 'duty of care' responsibilities and good corporate citizenship
Industry	<ul style="list-style-type: none"> manage in accordance with the principles of ecologically sustainable development minimise their impact on the environment by the implementation of best management practices, in accordance with 'duty of care' responsibilities and good corporate citizenship
Individuals	<ul style="list-style-type: none"> participate in regional planning, priority setting and the implementation of work programs related to river management and restoration participate in community groups (e.g. Landcare, Waterwatch) aimed at monitoring river health or undertaking restoration projects in priority areas manage their own enterprises in ways that acknowledge their 'duty of care' and their role in the stewardship of natural resources

The roles described in Box 11.1 are quite general. The effectiveness with which they are undertaken will depend on:

- the detailed institutional arrangements put in place to deliver river restoration and catchment management which must clearly define the responsibilities and accountabilities for the management of activities which impact on river health; and
- the effectiveness of the partnerships between the various groups which either impact on or contribute to the management of river health.

11.1 INSTITUTIONAL ARRANGEMENTS

11.1.1 Statewide Arrangements

There are two major groups that assist the State Government in its role in river restoration and catchment management. These are:

Department of Natural Resources and Environment

NRE is the government department responsible for the integrated management of Victoria's natural resource base. In the area of river restoration and catchment management, NRE, predominantly through its Catchment and Water Division:

- advises Government on statewide policies and strategic priorities for river restoration, catchment management and water allocation;
- establishes consistent processes and standards for the planning and implementation related to river restoration and catchment management;
- manages government investment in river restoration and catchment management activities to enhance the public good; and
- provides oversight on behalf of Government of rural and urban water authorities and CMAs.

In addition, staff in Parks, Flora and Fauna (PFF) Division and Fisheries Division provide advice on biodiversity issues, fisheries management and priorities into State and regional planning processes, and Aboriginal Affairs Victoria staff provide guidance on Indigenous issues. Regional staff in Parks Victoria and in the PFF, Land Victoria and Forests sections of NRE manage Crown land, parks, conservation reserves, Heritage Rivers, Natural Catchment Areas and State Forests including floodplain forests. Regional staff in the PFF, Fisheries, and Catchment and Agricultural Services sections provide advice and undertake extension activities on issues relating to land, water and biodiversity management.

Environment Protection Authority

EPA is responsible for enabling a safe and clean environment for Victorians. EPA is an independent body, which acts as a 'watch-dog' for the environment by working with governments, businesses and communities to minimise the impacts of wastes to the environment. This is achieved through a range of mechanisms including partnerships, education, monitoring, auditing, reporting, regulation and enforcement. In relation to river and catchment management, EPA:

- through the *SEPP (Waters of Victoria)*:
 - sets beneficial uses of water environments and the level of environmental quality needed to protect them. These environmental quality objectives provide guidance to regional planning processes on the long term desirable outcomes for river and catchment management to protect the various beneficial uses of the water resource, and
 - sets specific policy direction on the management of various activities which impact on water quality;

- uses mandatory and regulatory functions, such as licensing and other discretionary tools (e.g. cleaner production and guidance for industries), to assist in the achievement of water quality objectives;
- acts in partnership with NRE and regional bodies to monitor water quality and river health;
- enables independent audits of impacts on the environment and the protection of beneficial uses; and
- participates in monitoring river water quality and preventing pollution.

In addition to NRE and EPA, the Government receives advice from two major peak councils concerning issues that may impact on the management of rivers and catchments. They are:

- the Victorian Catchment Management Council, which provides statewide advice on matters related to natural resource management. The Council advises Government on the condition of land and water, the priorities for catchment management and the priorities for research and investigation; and
- the Victorian Coastal Council which provides advice to Government on strategic planning and management of the Victorian coastal and marine environment.

11.1.2 Regional Arrangements

At the regional scale, the key organisations within regions for integrated catchment management and river restoration are the CMAs. As outlined in Box 11.1, CMAs are responsible for the development and coordination of implementation of the RCSs and for the involvement of regional communities in catchment management.

In addition to these broader functions, CMAs in Victoria are also responsible for providing services related to integrated waterway and floodplain management. These focus on the maintenance and improvement of river health and the minimisation of flood risks and costs whilst preserving the natural functions of the floodplain. These services relate to:

- waterway management;
- coordination/management of water quality;
- coordination/management of floodplains in accordance with the *Victoria Flood Management Strategy*; and
- coordination/management of rural drainage including management of regional drainage schemes (where relevant).

In embracing the concept of CMAs, one of the main aims of Government has been to fill a major institutional gap that commonly occurs in the management of rivers around the world; that is, whilst many groups are responsible for activities that impact on rivers, no one group has had the overall responsibility for the resultant environmental condition of the rivers and their linkages to the sea.

CMAs have been effectively established in the role of 'caretaker of river health' to fill this gap. They have been given responsibility for a range of functions which directly impact on rivers (as listed above) and will be expected by Government to show leadership on the management of river health in their region. Therefore, they have been given the lead role in the major functions which integrate all catchment activities having an impact on river health. These are:

- the development of regional RHSs (under the umbrella of the RCS) which:
 - integrate the management of impacting factors (e.g. flow, water quality, riparian land, catchment land use, instream habitat and floodplain linkages), and
 - set priorities for river restoration, taking into account environmental, economic and social issues; and
- reporting on river health.

These responsibilities ensure that there is an integrated overview of all activities impacting on river health and provide reporting on the cumulative outcomes of all those activities.

In addition, to consolidate the role of the CMA as river health caretaker, the Government has recently transferred the responsibility for licensing of works on waterways from the RWAs to the CMAs. To further consolidate this role, Government will:

- make arrangements for the transfer of management of Crown frontage; and
- make CMAs responsible for the coordination and implementation of Heritage River Management Plans where required.

However, it should be noted that CMAs do not have responsibility for every function which could directly impact on river health. The responsibilities for all specific functions which impact on river health in regional Victoria are given in Appendix 3.

One of the significant areas where CMAs do not have lead responsibility is that of water allocation. However, they are viewed as a major stakeholder in water allocation decisions and will, therefore, have a major role in decisions on BEs and SFMPs. As a result of the recent Farm Dams Review, CMAs will undertake the following roles:

- act as a referral authority on applications for licences to take and use water and construct dams;
- for SFMPs:
 - identify priorities for SFMPs, and
 - advise Government on membership of consultative committees;
- comment to Minister on draft SFMPs;
- oversee implementation of SFMPs, including formal receipt of annual report; and
- ensure that the SFMPs integrate with other catchment and river management strategies.

In addition to the above, the CMAs are also responsible for liaising with Regional Coastal Boards to ensure a seamless integration between the management of rivers and catchments and the management of estuaries and the coastal environment. Regional Coastal Boards are advisory bodies established to develop Coastal Action Plans within their region, and to facilitate the implementation of these plans and the *Victorian Coastal Strategy*.

However, whilst Government has established the CMAs in the lead role of caretaker of river health, this is not intended to absolve others (e.g. regional resource managers, industry and land managers) from their responsibilities to undertake their businesses in ways that recognise their dependence on a healthy resource and their potential to impact on river health. It is expected that they will undertake their business to 'best environmental management standards' in accordance with their 'duty of care' responsibilities and recognising their role in the stewardship of natural resources.

In future years, Government will continue to review the management responsibility for the various functions that impact on river health, with a view to further consolidating CMAs in the role of 'river health caretaker'.

It should be noted that these institutional arrangements apply to regional Victoria only. The situation is different in the Greater Melbourne area. This is discussed below.

11.1.3 Arrangements within the Port Phillip and Westernport CALP Region

The institutional arrangements for river and catchment management in the Greater Melbourne area are different to those in the rest of Victoria in that the two roles of:

- development and coordination of implementation of the RCS; and
- provision of integrated waterway and floodplain management services,

are separated. The first is undertaken by the Port Phillip and Westernport CALP Board and the second is provided in an expanded way by Melbourne Water for the majority of the region. However, there are sections of the Port Phillip and Westernport CALP region for which, currently, there is no waterway manager. These include the Werribee and Upper Maribyrnong catchments and some areas of the Mornington Peninsula.

The reasons for this are largely historical and the current arrangements are viewed as inadequate. However, the Government recognises that the model for river and catchment management, which is highly successful in regional Victoria, may not translate easily into the metropolitan region which has some unique challenges. These include:

- a population of between 3.4 and 3.5 million which may require different models of community engagement than those used in regional Victoria;
- the coordination of all or part of 38 local councils;
- the need to provide services to, and manage the impact of, rapid urban growth in a number of areas; and
- the need to provide integrated catchment management to two highly sensitive environmental areas – Port Phillip and Western Port bays.

Options for providing an integrated approach to the management of the rivers and catchments feeding into Port Phillip and Western Port Bays will be explored by NRE, the Port Phillip and Westernport CALP Board and Melbourne Water acting in partnership.

In developing these options, NRE, Port Phillip and Westernport CALP Board and Melbourne Water will consult with key stakeholders, such as Southern Rural Water, where appropriate.

Pending this options report, the policy statements in the VRHS which provide direction to CMAs as the statutory waterway managers will also apply to Melbourne Water in their role as waterway manager as outlined in the *Melbourne and Metropolitan Board of Works Act 1958*. This will be refined in the process of determining appropriate institutional arrangements for the Port Phillip and Westernport CALP region.

11.1.4 Interstate Arrangements

There are a number of rivers in the State where there is a need for coordination between Victoria and other States to ensure a whole-of-catchment approach to river management. These include the rivers in the north of the State which flow into the River Murray which can therefore impact on the condition of the Murray, and rivers in eastern Victoria, including the Snowy River, where the river source is situated in New South Wales. The need for interstate coordination has been recognised and arrangements for both these areas have been established.

In relation to rivers flowing into the River Murray, Victoria is a member of the Murray-Darling Basin Ministerial Council which jointly determines policies and authorises planning and management of natural resources for the benefit of the Murray-Darling Basin.

Arrangements for the Snowy River have been put in place by formal agreements between Victoria, New South Wales and the Commonwealth Government. The other rivers in eastern Victoria are covered through an arrangement between the East Gippsland CMA and its counterpart in New South Wales.

11.2 EFFECTIVE PARTNERSHIPS

The State and regional management arrangements outlined above, together with the regional planning framework, provide:

- clarity about the roles and responsibilities of those involved in activities which can impact on river health;
- the means for integration of these activities to achieve agreed river health outcomes in an ICM context, considering the economic, environmental and social issues; and
- integrated monitoring to assess the effectiveness of the overall suite of activities undertaken on rivers.

However, none of it will work without the full, ongoing commitment and input from regional communities, local government, regional resource managers, and the State and Commonwealth Governments.

11.2.1 Regional Communities

Any improvement in the condition of Victoria's rivers will only occur if regional communities are fully engaged and committed to this as a long-term objective.

One of the original objectives in the establishment of the CMAs was to provide the mechanism for strong, ongoing community involvement in land and water management. Their structure and modus operandi have been designed to facilitate this. Consequently, CMAs can and will ensure that regional communities are engaged in the planning and implementation of river health programs. This occurs at four levels and, at a minimum, includes the following:

- In the development of regional RHSs, CMAs, at a minimum, consult with their Implementation Committees, farmer groups, Landcare and Waterwatch groups, local Indigenous groups, local conservation groups, local government and relevant regional resource managers, the Coastal Board, the EPA, and relevant industry, recreation and service groups, and ensure a period of public consultation.
- In the development of action plans, CMAs ensure that all relevant stakeholders are represented in the planning process and that plans have a period of public comment.
- In the development of sub-catchment plans and work programs, CMAs ensure that Implementation Committees are involved and that all riparian land managers have the chance to be consulted and involved.
- In undertaking any works in high priority areas, CMAs consult with individual land managers and enter into agreements where appropriate.

In addition to these mechanisms for community involvement in decision-making on river health, CMAs will establish programs to increase community awareness of river health and to encourage greater community participation in management programs related to river health.

CMAs will develop programs to encourage greater community participation in river management and restoration.

Because of their unique structure and strong linkages to regional stakeholders and community groups, CMAs can also act as a communication conduit between community and the Government. Government recognises this and will consult with CMAs as the peak regional body for river health on any issues associated with river health.

11.2.2 Local Government

Local government is a crucial player in the management of river health and in the broader context of catchment management. They are the organisations which can ensure that any new development is undertaken in ways that are consistent with river health and catchment management objectives via their statutory planning processes and development controls. In addition to this, they are responsible for the management of urban stormwater, some rural drainage schemes and aspects of floodplain management.

The success of many catchment and river management activities relies heavily on the willingness and ability of local government to integrate catchment and river considerations into their processes and on their commitment to the overall river health outcomes. To date, there has not been a sufficiently strong focus on improving the linkages between local government and the catchment management framework to ensure that this integration does occur.

Currently, the State section of the Victoria Planning Provisions requires local governments to be involved in the development of, and to take account of, the RCSs and their component action plans. The effectiveness of this involvement is enhanced where there are close relationships between councils and CMAs. However, across the State, there is considerable variation in how well the requirements of the RCSs and their action plans are integrated into local government planning processes. In many cases, this reflected a lack of clearly articulated land-use outcomes in the RCSs and their action plans. What is required is a planning framework and tools for local government that will formalise the land use requirements of the RCSs and their action plans in a way that will allow these requirements to be seamlessly translated into planning schemes.

Catchment and river management outcomes will be included in the local government planning system through:

- developing and making better use of tools which facilitate greater integration of regional catchment and river management requirements into the planning systems of local government; and
- identification and encouragement of more effective cooperation between CMAs and local government.

The Victorian Catchment Management Council in partnership with the Municipal Association of Victoria will finalise a planning model framework and will identify tools for local government to ensure a consistent approach to the implementation of RCSs in the planning system by December 2002.

This model framework will be discussed at regional level and used in the review processes for both the RCSs and the Municipal Strategic Planning Statements which are currently underway and will be undertaken in future years.

In addition, CMAs are encouraged to enter into joint projects with local government in priority areas wherever possible, and to develop an ongoing partnership approach with the local governments in their regions.

11.2.3 Regional Resource Managers

There is a range of regional resource managers whose activities have the potential to impact on river health. These include statutory authorities (e.g. rural and urban water authorities and Parks Victoria), some NRE regional staff (e.g. Forestry Division, Land Victoria and Fisheries) and private plantation managers. These groups are highly significant in the management of river health in that they often manage large tracts of land within catchments, manage large diversions of water or input wastewater to rivers. In addition, there are others whose role includes environmental protection and biodiversity conservation (e.g. regional EPA and NRE Flora and Fauna staff).

CMAs will ensure that these groups are involved in the development of the RCS, the regional RHS and relevant action plans, and in the development of the three-year rolling Regional Management Plan, which represents the formal funding agreement between Government and the region for the implementation of the RCS. Such involvement provides the means for the coordination of the relevant activities of these groups. In addition, these groups will be encouraged to undertake partnership projects with CMAs where these are a priority in the regional RHSs.

Government expects that all regional resource managers will undertake their business in accordance with best environmental practice and corporate citizenship in relation to river health. Those that are accountable to Government will be required to report on their performance on river health in annual reporting mechanisms.

11.3 FUNDING FOR RIVER MANAGEMENT AND RESTORATION

Funding for activities related to the management and restoration of river health comes from three principal sources:

- Commonwealth Government;
- State Government; and
- regions and individuals.

Other funds supporting river health programs include funds from local government, industry and philanthropic trusts.

11.3.1 Commonwealth Funding

The Commonwealth Government provides funds for river management and restoration through programs such as the National Action Plan for Salinity and Water Quality and the Natural Heritage Trust. Criteria for eligibility for funding are determined by the Commonwealth in consultation with the State Governments.

11.3.2 State Funding

The State Government provides ongoing funding specifically for river management and restoration through two major programs:

- the Tariff Replacement Fund (TRF); and
- the Healthy Waterways Program (HWP).

In addition, funds are provided for other catchment management programs and for special initiatives, such as the Water for Growth Initiative, which may also have river health benefits. Furthermore, when significant damage occurs in their region as a result of major flooding, CMAs may also access National Disaster Funding for flood restoration activities.

The TRF was established by Government in 1999 to replace the funding raised in the past by a regional waterway tariff. Government considers that the management and restoration of Victoria's rivers is a statewide responsibility for the benefit of all Victorians and has therefore provided funding to replace revenue previously collected by the CMAs under the *Water Act 1989* for these functions. Funding has been provided both to regions where the tariff had been collected and also to the two regions, Wimmera and Mallee, where the introduction of the tariff had been planned but not implemented. It is recognised that the tariff revenue was replaced at one point in time and that the value of the TRF could be eroded by inflation.

Government will review the Tariff Replacement Fund allocation every three years.

The TRF is allocated to CMAs to replace the previously collected waterway tariff. It is therefore linked to the number of landholders in the catchment and funds activities that are described in Part 10 of the Water Act. Activities eligible to be funded through the TRF and the HWP include:

- developing regional RHSs and their component action plans;
- undertaking works identified as priority in plans, which may include the restoration of riparian zones, aquatic habitat restoration (e.g. installation of fish ladders and resnagging rivers), water quality protection, bed and bank stabilisation works, and improving environmental flows;
- providing community incentives to achieve river restoration objectives in priority areas;
- providing a basic floodplain management service including provision of flood advice, planning referrals and general planning;
- monitoring river health;
- entering into partnership with other regional groups such as local government and water authorities for projects with multiple benefits (e.g. stormwater management);
- increasing community awareness of river health;
- encouraging community participation in river health decisions and programs;
- corporate management; and
- major government-funded drainage and floodplain management schemes (where relevant).

The regional TRF allocation forms the base funding for river management and restoration for a region. These are different for each region because they reflect, to a large extent, the number of landholders in the region and therefore, to some extent, the significance of river health problems within the region. Regional TRF allocations may then be supplemented by additional allocations from the HWP.

The HWP is allocated to CMAs and the Port Phillip and Westernport CALP Board using different criteria that reflect statewide priorities for river management and restoration. Regional HWP allocations may be varied by the Government from year to year after assessment against the HWP criteria. These are outlined in Box 11.2.

The criteria for the allocation of TRF and HWP are complementary so that the total State allocation to a region represents the best outcome after consideration of regional needs and problems and State objectives for river management and restoration.

The HWP and the TRF are allocated to CMAs and the Port Phillip and Westernport CALP Board through the Regional Management Planning process. This process involves the annual development of a three-year rolling work plan for the implementation of the RCS. It becomes the formal agreement for the use of government funding for land and water management in the region. It is developed with the input of CMA Implementation Committees and input from all regional resource managers.

Box 11.2 Criteria for the Allocation of Healthy Waterways Program Funds

1. Status of Catchment

- Value of environmental and public assets within catchment.
- Environmental condition of assets and level of risk.
- Benefits of proposed work program.
- Need to protect areas of high statewide and natural value.
- Relative catchment size and length of waterways to be managed.

2. Progress of Action Plans

- Status/progress of regional RHS and river health-related action plans.
- Priority of proposed work program activities as indicated in endorsed action plans.

3. Performance of CMA in relation to:

- Agreed performance measures.
- Management of waterway funds.
- Implementation of government policy; for example:
 - integration of waterway and related functions,
 - innovative, efficient and effective regional partnerships, and
 - innovative and effective community engagement.

4. Government-directed Activities

- The requirement of a CMA to undertake additional activities directed by Government.

5. Funding Available from Other Sources

- Level of Tariff Replacement Funding.
- Level of other available funding, e.g. Commonwealth programs or other State Government Initiatives. (This will be taken into account when opportunities for funding from various sources may not be available to all CMAs, e.g. National Action Plan program, MDBC programs.)

11.3.3 Regional Resources

Whilst the major source of regional resources for river management and restoration, the waterway tariff, has been replaced by Government with the TRF, there are some natural resource management activities where there are regional contributions towards implementation and which may provide river health benefits. These include:

- government endorsed and community agreed action plans which include landholder contributions because of the private benefits generated by various implementation activities, such as community drainage systems or groundwater pumping schemes within salinity management plans or irrigation reuse systems within catchment water quality management plans; and
- floodplain management or regional drainage schemes which provide clear benefits to all landholders within a specific region.

These regional contributions have been based on a set of cost-sharing principles that are applied more generally across natural resource management (outlined in Box 11.3).

Regional and landholder contributions for activities which are part of the implementation of regional RHSs or their component action plans (i.e. water quality management plans, streamflow management plans, regional floodplain management plans, regional drainage plans) will be negotiated during the planning process using these cost-sharing principles as a basis.

Box 11.3 Cost-Sharing Principles for Natural Resource Management Programs

These cost-sharing principles will be applied in the development of regional RHSs and component river-related action plans.

Duty of Care

All natural resource users and managers have a duty of care to ensure that they do not damage the natural resource base. They are responsible for making good any damage incurred as a result of their actions.

Beneficiary Pays

When it is not possible to attribute damage, then primary beneficiaries should pay. Users, both existing and future, are expected to pay for activities which provide private benefits. Contributions from secondary beneficiaries will, where appropriate, be negotiated with the primary beneficiaries.

Government Contributions for Public Benefit

Government contributes primarily for activities which produce public benefits. Government may agree to contribute to land and water management activities that provide private benefits, where the cumulative uptake of these activities provides significant public benefit and government support is required to facilitate this up-take.

Positive Benefit-Cost

Before Government will contribute to any land or water management activity, the activity must be technically sound, the benefits must justify the costs and it must be considered a priority activity.

Statewide Policy and Monitoring

Government will contribute to the cost of statewide planning, statewide resource monitoring and assessment, and research and investigations where they are crucial to sustainable land and water management.

11.3.4 Cost-sharing for River Protection and Restoration

Whilst the framework for river protection and restoration outlined in the VRHS will ensure that resources are directed to the areas of highest priority and to the most effective means of river restoration, it is clear that the task to be undertaken to achieve the vision is a major one requiring significant resources and long-term commitment. It is important to ensure that the long term funding mechanisms reflect the general cost-sharing principles for natural resource management (Box 11.3) and truly represent, in a fair and equitable way, the impacting groups and the various beneficiaries relating to river health. Beneficiaries that need to be considered include:

- water authorities, given their dependence on a healthy resource base and their potential impacts on healthy rivers;
- direct beneficiaries (e.g. recreational groups);
- local government representing regional economic benefits (e.g. increased tourism);
- the broader Victorian community; and
- others.

NRE will develop a Discussion Paper on 'Cost-Sharing Options for the Protection and Restoration of River Health' for public comment by December 2003.

11.4 ACCOUNTABILITY

CMAAs will continue to be accountable to Government for funds they spend on river health related activities. They will report, in accordance with government requirements, on activities undertaken and on progress in implementation of their regional RHS and component action plans as part of their annual report.

In addition, NRE will from time to time conduct audits of regional integrated waterway and floodplain management programs, and EPA will develop an auditing system to enable audits of the protection of beneficial uses.

12. Community Engagement and Participation

In the development and implementation of any strategy, the roles of all stakeholders need to be clearly articulated if communication and implementation of action are to be successful. This is particularly important when one of the stakeholder groups is 'the community', where the community is defined as any person entered in or affected by aspects of river health management. We have learnt from past experience that without careful definition and planning of roles and tasks, community participation can be seen as tokenistic, can be poorly attended and can fail to fulfil expectations.

To achieve the outcomes described in the VRHS, building capacity in three key stakeholder groups will be required. These groups are:

- the community (including environmental stakeholder groups and local government);
- waterway management professionals; and
- research and development organisations.

The role and future direction of research and development organisations is explored in detail in Chapter 13. The roles and needs of the community and waterway managers are detailed in this chapter.

Within the VRHS, three key outcomes are sought:

1. **that the community has an understanding and knowledge about the issues that affect river health.** Communities have an important role to play in contributing to the knowledge and information base, the human resource base and the direction of research and development that is required to effectively manage rivers now and into the future. Underpinning this is the need for broader, more general information about waterway management issues to raise community awareness.
2. **that the community participates in priority setting and decision making at a catchment level.** Inherent in this, is participation in setting objectives, priorities and targets for river health and making judgements on the relative value's (economic, environmental and social) of a river system.
3. **that capability within the waterway management industry to deliver the strategic outcomes described in the VRHS is further developed.** In addition to the appropriate institutional arrangements required to implement the actions described in the VRHS, it is necessary to build on the skills and expertise of waterway managers responsible for implementing many of the actions at the ground level.

12.1 COMMUNITY ENGAGEMENT AND PARTICIPATION

The role of the community and other stakeholders in setting priorities for river health at a regional level is critical to the success of the VRHS. This is because the decisions that will be made about management of river systems ultimately affect community livelihoods and quality of life.

Underpinning the policies described in the VRHS is the recognition that community decision-making about river protection and restoration will balance economic, social and environmental imperatives, provided these decisions are based on a good understanding of how rivers work and what is important ecologically.

The need for community and stakeholder participation in the decision-making process has been described in section 2.4 and how this will occur has been described in Chapter 5. However, given the particular nature of community engagement, a number of overarching principles must be adhered to. Community engagement must:

- **be needs driven** – the objectives of community participation need to be clearly articulated. Equally, the roles of the community, other stakeholders and agencies need to be clearly articulated and communicated, so that expectations are understood and have broad support.
- **be focused at the appropriate level** – priority-setting processes should be as close to the ground as possible in order to maximise community input.
- **be accessible to all members of a community** – the VRHS provides the agency commitment and policy context for a truly participatory process. In implementing the VRHS, community and stakeholder groups will have the opportunity to be involved in all the major phases of planning and implementation of programs affecting river health.

Specifically, these principles will be implemented through the development of regional river health planning processes that assist the community in setting priorities and agreed targets for the environmental condition of rivers in their catchment.

Communities and the individuals that make up communities have a number of roles in the implementation of the VRHS. Primarily, individuals will be relied on to manage their own enterprises in ways that acknowledge their 'duty of care' and their role as stewards of natural resources. Secondly, they may participate in community groups and networks, such as Waterwatch and Landcare, aimed at monitoring river health and/or undertaking restoration projects. Thirdly, community members may participate in regional river health planning, priority setting and the implementation of works programs related to river management and restoration.

In order to fulfil these roles, it is important that community members are able to build on and enhance local and existing knowledge, skills and resources. Underpinning this is community confidence, willingness and ability to participate in planning and implementation processes.

To maximise community knowledge and understanding and ultimately to encourage increased input into decision-making processes and participation in on-ground activities, a number of key elements must be considered:

- **Data and information** – the community have a valuable role to play in the collection of data and information, but also must have access to data and information collected by agencies or other stakeholder groups in order to make fully informed decisions. The role of community monitoring, the issue of access to data and a number of recommendations relating to these issues are explored in section 13.1. Of particular importance is the role of community monitoring, undertaken in programs such as Waterwatch. Community monitoring not only raises awareness and understanding of natural resource management but also allows community members to learn new skills and to contribute data and information to existing agency monitoring programs. Fundamental to the success of community monitoring programs is the exchange of information from agencies to community groups about monitoring needs, and advice and support on methods and protocols and on the strategic direction of waterway management in the region. With this assistance, community groups will make increasingly valuable and demonstrable contributions to waterway management.

Community monitoring programs, such as the Victorian Waterwatch Program, will continue to develop tools and training aimed at increasing the value and useability of the data collected by communities.

CMA's will develop partnerships with regional community monitoring networks and others to provide monitoring additional to that undertaken by agency monitoring programs to support regional management requirements.

Data collected through community monitoring programs will also be made accessible through the Victorian Water Resources Data Warehouse.

Community members will have ongoing access to data and information about their catchments through access to:

- Regional Data Net;
- State Flora and Fauna databases;
- Victorian Water Resources Data Warehouse; and
- Index of Stream Condition.

- **Institutional arrangements to support community engagement and capacity** – without clearly defined processes for community engagement and participation, community concerns and effort may be piecemeal, misdirected or, at the extreme, ignored. As described in Chapter 11, the community role in priority setting and planning processes, through working with the CMA's and associated organisations such as Waterwatch, Landcare and local government, is clearly defined.

- **Skills and training** – access to information and data to inform decision-making, and clearly defined stakeholder engagement processes facilitate community involvement to a certain point. Community engagement can be greatly enhanced when participants have the skills and capacity to take on a more ‘hands-on’ role. This allows for greater involvement in action planning and implementation and can also give plans longevity, by creating a greater sense of community ownership and stewardship.

New skills can be learnt with the assistance of programs like Waterwatch and Landcare. In particular, these programs may provide additional opportunities for environmental stakeholder groups, as a complement to or extension of their existing interests and activities.

Community training programs will continue to be developed through programs, such as Waterwatch and Landcare, to provide the community with the skills to participate in monitoring and on ground rehabilitation activities.

In addition, skills in local government will be further enhanced through the development of tools to facilitate greater integration of regional catchment and river management requirements into local government planning systems, as described in section 11.2.2.

- **Resources** – access to resources, whether it be a water quality database, advice from an extension officer or access to financial assistance for particular natural resource management activities such as weed eradication, can facilitate, or in its absence hinder, stakeholder capacity to participate in natural resource management planning and implementation processes. Therefore, it is important that community members have a clear understanding of the role of stakeholders in catchment management and the services, information or skills that a given group may contribute.

Furthermore, opportunities for community engagement in planning and implementation processes, from the development of the regional RHS or a monitoring plan for a Waterwatch group, to participation in streamflow management planning, need to be supported by the provision of appropriate tools developed to meet community needs. In designing planning and implementation processes, agencies need to consider the tools required by the community to maximise community understanding, engagement and participation.

12.2 CAPACITY BUILDING WITHIN THE WATERWAY MANAGEMENT INDUSTRY

Rivers are complex and dynamic systems, and adequate planning based on a full understanding of the natural processes involved is essential for maximisation of investment into management activity.

The understanding and application of best management practice principles for the stabilisation, protection and restoration of rivers and riparian land is fundamental to the maintenance of good water quality, minimisation of damage to public and private assets, improved environmental values, protection of native fauna, flora and aquatic biodiversity, and public amenity, recreation and tourism values.

The waterway management industry has evolved considerably over the last decade. Focus has shifted from engineering solutions for river channels to a whole-of-catchment approach and integrated river and land management solutions. As the industry grows there is a clear need for education and training of its managers for the delivery of waterway management programs to the best management practice principles, thereby also maximising returns from investment in these programs.

A commitment to refresh and enhance the skills and knowledge in waterway management of Victorian waterway management professionals, including improved understanding of stream systems, riverine related issues and techniques for stabilisation of waterways and riparian zones, is required, particularly in order to deliver the outcomes of the VRHS.

In addition to the need for appropriate institutional arrangements and access to information and resources, waterway management professionals require a range of competencies in order to maximise the implementation of VRHS actions. These competencies include:

- understanding of the principles of waterway management;
- planning, prioritising and management skills;
- well developed relationships with stakeholders and good communication and negotiation skills;
- understanding of the linkages between waterway management, river ecology, and land and biodiversity issues;
- understanding of techniques, design and construction in waterway management;
- understanding of legislation relevant to waterway management;
- understanding of the application of quality assurance systems; and
- understanding of vegetation management in riparian zones.

The skills and knowledge required are not necessarily easily taught in a traditional classroom situation. Rather, field demonstrations, practical experience and knowledge sharing between those who have extensive experience and those who have less experience in the waterway management industry are critical. It is also acknowledged that traditional skills training programs run in a rigid format can exclude newcomers to the industry. For these reasons, a flexible training program, run on a continuous cycle over a number of years, is required.

A three-year rolling training program for waterway management professionals to improve their skills and abilities in relation to riverine management will be facilitated by NRE in consultation with waterway management professionals.

Commitment to ongoing training for waterway management professionals is critical in ensuring continuous improvement in the industry. However, in addition to this, strategies for bringing in new people, particularly at a graduate level, also need to be considered. By providing opportunities for graduates and new people to enter the profession, knowledge sharing and monitoring can be maximised and succession planning for waterway managers can be improved.

NRE will facilitate the development of a graduate recruitment program to provide training opportunities across the breadth of the waterway management profession including experience in the field and in policy and strategic planning.

13. Adaptive Management

The framework for the management of river health in Victoria needs to be an adaptive one; that is, one that has built into it the capacity to learn from management decisions and to change our management strategies on the basis of improved knowledge. This is necessary because:

- our knowledge of river health processes and how effectively they respond to the various management activities recommended in regional RHSs is incomplete and is unlikely ever to be fully adequate; and
- our river systems and climate are highly variable and often system responses cannot be easily predicted at the planning stage.

The major elements of an effective adaptive management framework for river health involve a combination of planning, management, research and monitoring and include:

1. high quality, baseline information on river health to be used as the basis for regional planning;
2. some understanding of river health processes and their response to management activities;
3. performance monitoring – to assess whether targets and objectives established in regional RHSs have been achieved;
4. the capacity to assess the effectiveness of key management activities implemented in regional river health management programs;
5. review processes to incorporate new information into regional RHSs and works programs; and
6. community commitment and involvement in a long-term management process.

The first two elements are essential inputs to the development of effective regional RHSs. The regional RHSs and their component action plans are developed using the best available information on resource condition in the catchment and, in general, some form of catchment modelling which effectively summarises existing knowledge of predicted resource responses to various management actions.

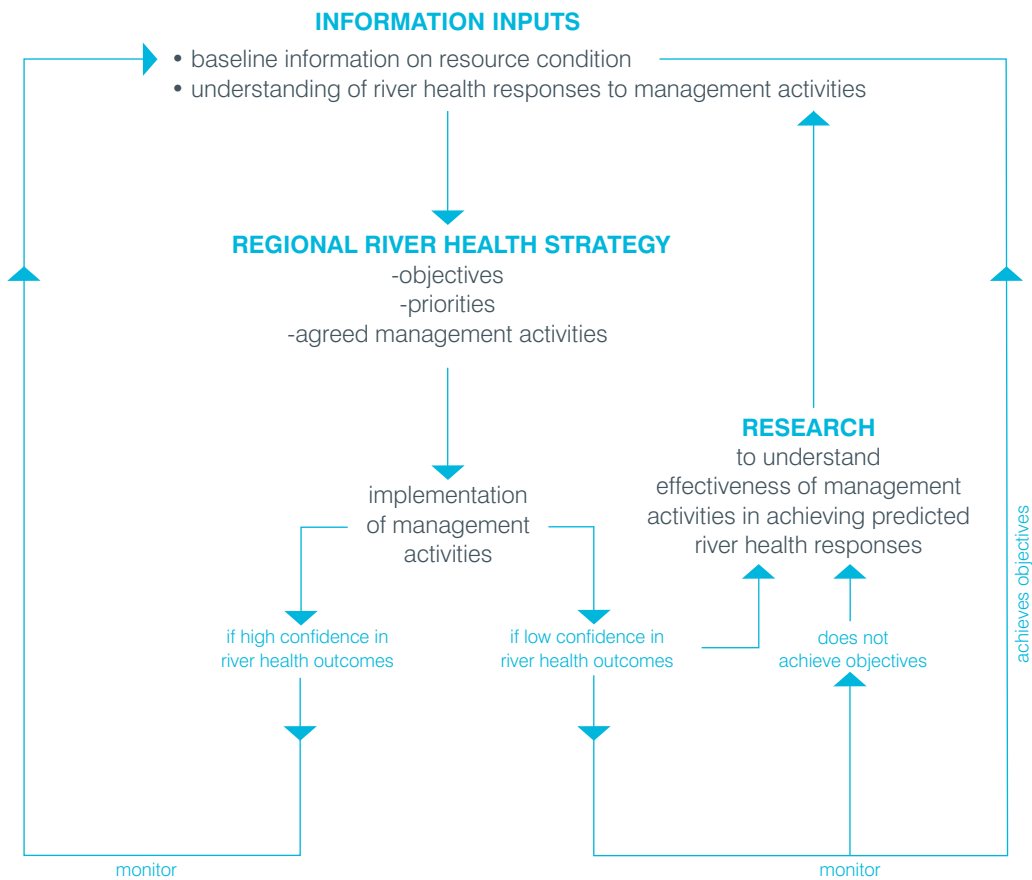
The third and fourth elements are key areas where the effectiveness of current management programs can be evaluated. However, it should be noted that the third element, performance monitoring, simply gives an indication of whether the management program, in total, has achieved its targets. It does not provide an assessment of the effectiveness of individual management actions. This is provided by the fourth element and can only be obtained by well-designed and targeted research programs. It is obviously not possible to undertake this across the State for all management actions. The need for this type of research will be indicated when:

- it is clear in the development of the regional RHSs that there is a low level of confidence in the existing information on resource responses to individual management actions; or
- performance monitoring has shown that targets predicted to be met for an agreed work program have not been met.

Where this is the case, undertaking strategic research case studies is the most effective way of increasing the knowledge base.

The fifth and sixth elements provide the means for ensuring that future management does incorporate improved knowledge. This adaptive management cycle for the management of river health in Victoria is described in Figure 13.1.

Figure 13.1 An adaptive management framework for river health



Given this, the key requirements for an adaptive management framework are:

- a monitoring program designed to measure progress in achieving State and, more particularly, regional objectives and targets;
- a consistent statewide long term monitoring network providing baseline information on aspects of the resource base relevant to river health;
- a research program, which is aimed at improving our understanding of river health processes and management responses and specifically tests key underlying assumptions made in the development of regional plans;
- regular plan review processes which utilise the improved information base; and
- mechanisms to engage the community in the management of river health.

The last of these has been discussed in Chapters 11 and 12. The following sections discuss the requirements for monitoring and research, and the mechanisms for plan review.

13.1 MONITORING RIVER HEALTH

The provision of baseline information for regional river health planning and the capacity to measure progress against statewide and regional targets require monitoring programs that provide data on the various aspects of river health, in particular on:

- integrated river health;
- streamflows and water quality;
- freshwater biota; and
- condition of instream and riparian habitat.

Issues such as monitoring floodplain condition, the status of floodplain linkages, and wetland and estuarine condition will be important in assessing river health. However, at the moment there are no accepted monitoring methodologies for these areas. Therefore these will be considered under research needs.

13.1.1 Assessment of Integrated River Health

The VRHS sets up a framework for the integrated management of river health across Victoria. In doing this, it establishes the regional RHSs as the vehicle for the development of clear management objectives for major river reaches and for setting targets. These management objectives are aimed at providing levels of asset protection but will also be articulated as a statement of the condition of the river reach using the Index of Stream Condition. The ISC was developed as an integrated measure of environmental condition of rivers that could be used to:

- benchmark river condition;
- set management objectives and targets; and
- assess the overall long-term effectiveness of an integrated river management program.

The ISC combines information on a range of parameters that are important from an ecological perspective, including hydrology, water quality, physical form, riparian zone and aquatic life (see Appendix 1).

The ISC was used to benchmark river condition across the State in 1999. This was the first integrated report on river health that had occurred within Australia. The ISC was designed to be repeated every five years – the next is due in 2004. This type of information is fundamental to the success of the framework established within the VRHS.

The CMAs in partnership with NRE will report on stream condition in their regions every five years using the Index of Stream Condition.

In addition to the current network of ISC sites, additional sites may be added by CMAs where appropriate to fit their regional planning needs.

The ISC was developed using the best available science at the time to fit its objectives. As understanding of river processes and management responses is increased, the ISC will need to be updated to provide the most useful measure of stream condition to regional communities for planning, setting of objectives and river health assessment. One of the most obvious areas for updating is the hydrology component to take into account current advances in the area of environmental flows. These updates will need to consider that the long-term integrity of the datasets is maintained.

NRE will review the ISC prior to each five year assessment to ensure that the information collected is the most relevant for regional planning whilst ensuring long-term integrity of the data.

Whilst the ISC provides highly valuable information to the regional river health planning process, it will not be the only source of information. CMAs and Melbourne Water may need to conduct further investigations to ensure that they have adequate information on which to base their regional RHSs.

13.1.2 Monitoring of Streamflows and Water Quality

Monitoring of streamflows and water quality provides key information inputs to water allocation and water quality planning decisions. In addition, data summarising the hydrology and characteristic water quality of a river reach are required as part of the ISC.

Currently, monitoring of both streamflows and water quality is provided through the Victorian Water Quality and Quantity Monitoring Networks. These networks have been established since 1975 (water quality) and the 1950s (water quantity). The networks provide information for a range of target audiences and for a range of purposes including the management of river health. Other purposes include:

- assessing trends in resource quality and quantity;
- characterising resource condition;
- providing data for flood warning;
- providing early warning of changes to the resource base;
- assessing progress towards targets and objectives;
- providing data to determine relationships between catchment condition and use, and water quality and quantity; and
- providing data for water infrastructure and regional development projects.

Because of the variability of Victorian environments, it is essential to have long-term datasets across the State providing information for this range of purposes. In the past, investment in these long-term monitoring networks has been severely reduced. The number of sites monitored for water quality was reduced from 301 in 1975 to 148 in 2000. The number of sites monitored for water quantity was reduced from 530 in 1981 to 275 in 2000.

The current networks are in the process of being incorporated into regional water resources monitoring partnerships across Victoria. The process is aimed at providing the most cost-effective means of meeting all water resource monitoring requirements within a region. The process involves all parties conducting water resource monitoring in each region agreeing on a monitoring configuration that meets their collective needs and agreeing on cost sharing. Statewide requirements are fed into these regional agreements and funded by the State Government.

The current investment in water quality and quantity monitoring for statewide requirements will be maintained at a minimum and will be increased where there is a clear requirement identified within the regional monitoring partnerships.

13.1.3 Biological Monitoring

A key issue in monitoring river health is an understanding of the condition of the biota living in the river, particularly macro-invertebrate and fish communities which are used as indicators of the health of the rest of the biota.

Over the past six years, there has been a major effort undertaken to monitor and characterise the macro-invertebrate communities in Victorian rivers through the AUSRIVAS program undertaken by the EPA. This has been undertaken as part of the National River Health Program funded mostly by the Commonwealth Government. Whilst this program has now ended, the data collected have been essential inputs to regional planning and are a crucial component of the ISC.

Monitoring of macro-invertebrate communities will be undertaken in priority areas to assist in future reporting on river health and in EPA's reporting on beneficial uses.

Monitoring of fish communities has not occurred in any regular program. Information on fish communities has been collected through a range of specific studies. This is due in part to the fact that there is currently no agreed, consistent, cost-effective methodology for monitoring.

NRE will develop a consistent, cost-effective methodology for monitoring fish communities as a key input to assessments of river health.

Once this methodology has been developed, the potential to incorporate it into regular assessments or reports on river health will be reviewed.

13.1.4 Instream and Riparian Condition

Information on the condition of riparian and instream habitats will be collected on a five year basis through the ISC.

13.1.5 Data Accessibility

All data collected through the monitoring networks described above will be made available through the Victorian Water Resources Data Warehouse. This is an initiative that allows public access to current and historic water resource information. The data is accessible through the World Wide Web at www.vicwaterdata.net.

The Victorian Water Resources Data Warehouse currently contains:

- water quality and quantity information covering the whole of Victoria; and
- the results of the 1999 benchmarking of river condition.

It is intended to incorporate further data on groundwater and freshwater fish following development of a standard survey method (see section 13.2).

13.1.6 Role of Community Monitoring

Community monitoring programs such as the Victorian Waterwatch Program are a key element in the Victorian approach to monitoring river health. These programs have been established with dual objectives:

- to increase community awareness of water quality and river health issues; and
- to provide credible data to assist in the management of water quality and river health.

The value of these programs in performing the first objective has been discussed in Chapter 12. However, these networks also provide the opportunity to collect data additional to that collected by the official monitoring networks described above. This can provide increased spatial coverage, increased sampling frequency and/or an increased number of parameters sampled. These programs have significant quality assurance and quality controls in place to ensure the credibility of data.

Community monitoring programs such as the Victorian Waterwatch Program will continue to develop tools and training aimed at increasing the value and useability of the data collected by communities.

CMAAs will develop partnerships with regional community monitoring networks to provide additional monitoring to support regional management requirements.

Data collected through community monitoring programs will also be made accessible through the Victorian Water Resources Data Warehouse.

13.1.7 Oversight of Monitoring of River Health

It is important that there is some oversight of the monitoring of river health across the State to ensure that:

- it provides information to meet regional needs for planning and performance measurement;
- it is well coordinated, efficient and effective;
- monitoring programs and networks continue to be based on the best available scientific information; and
- data continues to be made accessible to the public in relevant, useable ways.

A State Water Quality Monitoring and Assessment Committee has been established under the auspices of the Victorian Catchment Management Council to:

- further develop, implement and coordinate a statewide monitoring and assessment program to report on the condition or health of the State's rivers and streams, wetlands and estuaries;
- investigate more innovative ways of monitoring to more efficiently and effectively provide information to regional management frameworks; and
- provide an annual report card to the Minister.

13.2 RESEARCH

The framework for the management of river health in Victoria will be based on the best available scientific information and will be adaptive. This means it must incorporate a research component, which is aimed at improving:

- current knowledge of river health processes;
- understanding of river health responses to various management actions so that:
 - there is a better understanding of the effectiveness of management actions in achieving river health outcomes, and
 - there is improved capacity to predict these responses for input into regional planning processes;
- current methods for assessing river health;
- tools for the management and restoration of river health; and
- factors which influence community understanding and engagement in the management of river health.

The research component of the Victorian river management program will be undertaken with the best expertise available and will contribute, wherever possible, towards improving knowledge on river management and restoration at the national level.

There will be an ongoing research component of the Victorian river management and restoration program. This will:

- **be undertaken through partnership between government research institutions, universities and Cooperative Research Centres.**
- **provide essential knowledge to the Victorian program and will contribute wherever possible to the national agenda.**

There are many areas where our knowledge base on rivers is insufficient. However, during the development of the VRHS and through consultation with stakeholders, some key gaps in our knowledge base have been identified. One major gap is the need to improve the understanding of the importance and likely impact of environmental flows. This knowledge can only be gained by significant work through a combination of basic research aimed at identifying the significance of aspects of the flow regime for river functioning and biota and through a series of case studies examining the impacts of changes in environmental flow regimes on river health. Another major gap is the importance of groundwater in affecting both the quality and quantity of water in river systems. Immediate priorities for research are identified in Table 13.1.

Table 13.1 Immediate priorities for research identified in the development of the Victorian River Health Strategy

Research Area	Immediate Priority for Research
Improving understanding of river health processes	<ul style="list-style-type: none"> Identifying the significance of components of the flow regime, including groundwater, for river functioning and biota
Improving understanding of river health responses to management actions	<ul style="list-style-type: none"> Undertaking experimental case studies examining the impacts of changes in environmental flow regimes on river health Identifying ecosystem thresholds to better inform restoration programs and targets Identifying the relationship between nutrients and algal blooms
Assessment methods	<p>Development of indicators to identify ecologically healthy rivers. This will involve:</p> <ul style="list-style-type: none"> development of improved indicators of hydrologic stress development of an agreed methodology for assessing the health of fish communities development of a methodology to assess the health of floodplains and estuaries and their links to river health development of definitions of 'ecologically healthy' for urban and highly regulated streams development of an approach to improve the link between riparian and catchment vegetation assessments
Management tools	<p>Development of approaches to improve protection and restoration of rivers, specifically:</p> <ul style="list-style-type: none"> development of improved means for the protection of river health including investigation of the role of aquatic reserves development of risk assessment approaches for management of threats to aquatic systems development of guidelines to assess 'overall improvement' in river systems, for application to water trading and riverine works development of production systems that reduce water use and run-off of nutrients and chemicals
Improving understanding of community attitudes to river restoration	<ul style="list-style-type: none"> identify factors which influence community understanding and engagement

NRE will:

- facilitate the immediate commencement of research projects in these areas; and
- continue to liaise with CMAs and other relevant groups to identify priorities for future research.

13.3 REVIEW

The final requirement of an adaptive framework for the management of river health in Victoria is ensuring that there is a process that allows management strategies to be reviewed to incorporate:

- new information;
- results of performance monitoring; and
- any changes in community attitudes and value.

The VRHS and the regional RHSs and their component action plans will be reviewed every five years.