



**Code of Practice for
Water Management**

Road Development and Management

April 1999

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CHIEF EXECUTIVE'S MESSAGE

This RTA Code of Practice is another achievement in RTA's commitment to protecting waterways. It forms part of the RTA's commitment to continuously improve the management of our activities and sites to minimise environmental impacts. This process will require ongoing effort, investment and innovation through the effective use of available resources and technology.

The RTA is committed to applying the principles of ecologically sustainable development in its operations, by achieving the optimum balance between the development and management of the transport system for the needs of the community and protection of the environment. The RTA is committed to undertaking works in a manner that maintains, or contributes to the achievement of natural water flows and acceptable water quality for the maintenance of biodiversity and for the protection of aquatic ecosystems, and other environmental values in accordance with the stream flow and water quality objectives set by the NSW Government.

This Code of Practice for Water Management has been prepared to assist RTA staff who are involved in the planning, design, implementation and maintenance of RTA activities that may impact on water flow patterns and water quality. It details the principles of water management that the RTA is committed to following in the planning, construction and maintenance works that are carried out at various stages of a road's life.

NSW legislation dictates that environmental management is the responsibility of all employees of the organisation. There is an expectation that both management and staff will perform their duties, at their respective levels, in accordance with the appropriate environmental laws, which in turn reflect this assumption of shared responsibility.

It is essential that all RTA water management activities are undertaken with due diligence. Due diligence involves assessing the potential impacts of the activity, having taken reasonable precautions to prevent a pollution incident occurring, and having systems in place to minimise the impact of such an incident should it occur in spite of the precautions taken.

I commend the Code of Practice for Water Management to RTA employees who have responsibilities to implement the principles outlined in the document. Staff are encouraged to provide feedback, based on knowledge or experience, that will enable RTA to continually improve these principles.

Paul Forward
Chief Executive

SECTION 1 INTRODUCTION

1.1 PURPOSE OF THE CODE OF PRACTICE

The NSW Roads and Traffic Authority's commitment to water management as outlined in the RTA Water Policy states;

“The RTA will use the most appropriate water management practices in the planning, design, construction, operation and maintenance of the roads and traffic system in order to:

- *conserve water*
- *protect the quality of water resources; and,*
- *preserve ecosystems.”*

This Code of Practice (CoP) for water management outlines the principles the RTA will work within to meet the objectives of the RTA's Environment Policy, Water Policy and RTA's 5 Year Environment Plan, “Caring for the Environment”, which is a Business Support Strategic Plan for 1999-2004 (Environment Plan). The prime objective of the CoP is to provide the links between the outcomes required in the Water Policy and implementation guidelines. It aims to guide staff to the principles that need to be maintained for effective management of water quality during the various stages of road development and management.

Development of this CoP and its submission to the EPA, satisfied an element of a Notice issued by the EPA under Regulation 21 of the Clean Waters Regulations 1972. This notice stated the RTA is required to “*Submit to the EPA a Code-of-Practice for Stormwater Environment Management (the Code -of-Practice) by 24 April 1999. The Code-of-Practice is to be prepared in consultation with the EPA and is to specify policies and principles to be adopted by the RTA in the management of stormwater for environmental protection purposes from the construction, operation and upgrading of State Roads*”.

This notice requires that the CoP be adhered to in the planning, construction, operation and maintenance of State Roads. Also, the notice requires that written consent be obtained from the Director General of the EPA for any variation from the code for individual projects.

The NSW Government has initiated a comprehensive Water Reform process, aimed at achieving clean, healthy and productive waterways. Part of this process involves the establishment of river flow and water quality objectives to protect or restore waterway values important to the community. Locally based communities will develop management plans to meet these objectives. It is envisaged that the stormwater management plans prepared for urban areas throughout NSW will form one component of these Plans. It is therefore important that Environment Management Plans or Soil and Water Management Plans developed by the RTA recognise the objectives specified in the Stormwater Management Plans developed for urban areas.

It is intended that this document will promote the understanding of water management throughout the RTA and provide the framework for the development of comprehensive water management guidelines for:

- construction works
- maintenance works; and,
- other RTA facilities such as depots, vehicular ferries and heavy vehicle inspection stations.

The key outcomes that are sought from a structured water management framework are:

- protection of the environment
- minimising RTA's environmental impacts
- maintenance of community values
- compliance with the relevant legislative requirements
- zero environmental prosecutions or infringements
- demonstration of due diligence
- maintenance of a collaborative approach to water management with other agencies and stakeholders
- negotiation of licence conditions with the NSW Environment Protection Authority (EPA) that are achievable and consistent across the State while giving recognition to site specific requirements, opportunities and constraints
- reduction of potable water usage and the use of stormwater and treated wastewater where relevant in its road works.

The implementation of the objectives will be practically achieved by following the continuous improvement process outlined in the Water Management Framework shown in Section 1.3. Successive construction and maintenance projects will implement the principles in this code as will depot and other site activities in the preparation of Depot Environmental Management Plans and the local Site Environmental Management Programs (SEMPs). The water management planning hierarchy is shown in Figure 1 (below).

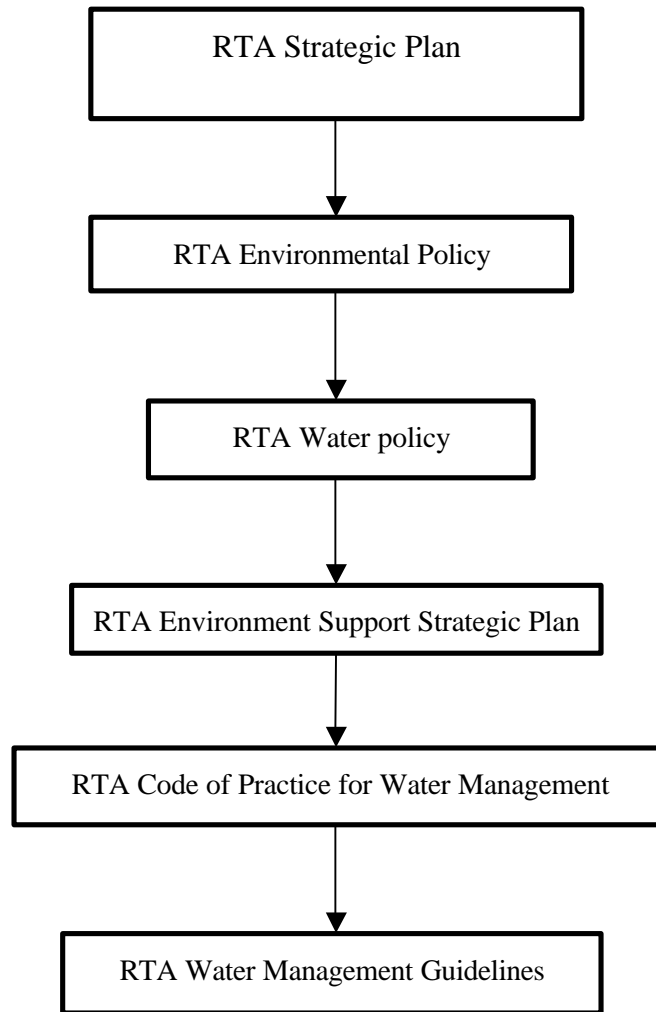


Figure 1: Hierarchy of RTA Water Management Planning Documents

1.2 SCOPE

Water management is an essential environmental responsibility of the RTA and is incorporated in the planning, design, construction, maintenance and traffic management of the State Road Network. The State Road network represents approximately 20,000 km of the State’s 190,000 km road system.

This CoP is equally applicable to maintenance activities undertaken from more than 100 major depots and sub-depots. It also includes contractors and Local Councils working on the RTA’s behalf, the maintenance and management of RTA owned bridges and stockpile sites and the activities undertaken at RTA motor registries and offices around the state.

This CoP presents the principles of good practice water management for integration into all RTA activities. These principles detail the RTA’s commitment for the control and reduction of both diffuse and point source water pollution.

1.3 INTRODUCTION TO THE RTA WATER MANAGEMENT

FRAMEWORK

The RTA Water Management Framework, shown in Figure 2, presents the continuous improvement cycle for water management on an organisational level. The design, planning and operational works for individual projects are therefore included in the implementation section of the framework. The planning component of the framework incorporates the RTA water management policies and the CoP. The detail of the Water Management Framework is presented in Appendix A.

Development of this CoP is also a component of the RTA’s evolving Environmental Management System (EMS).

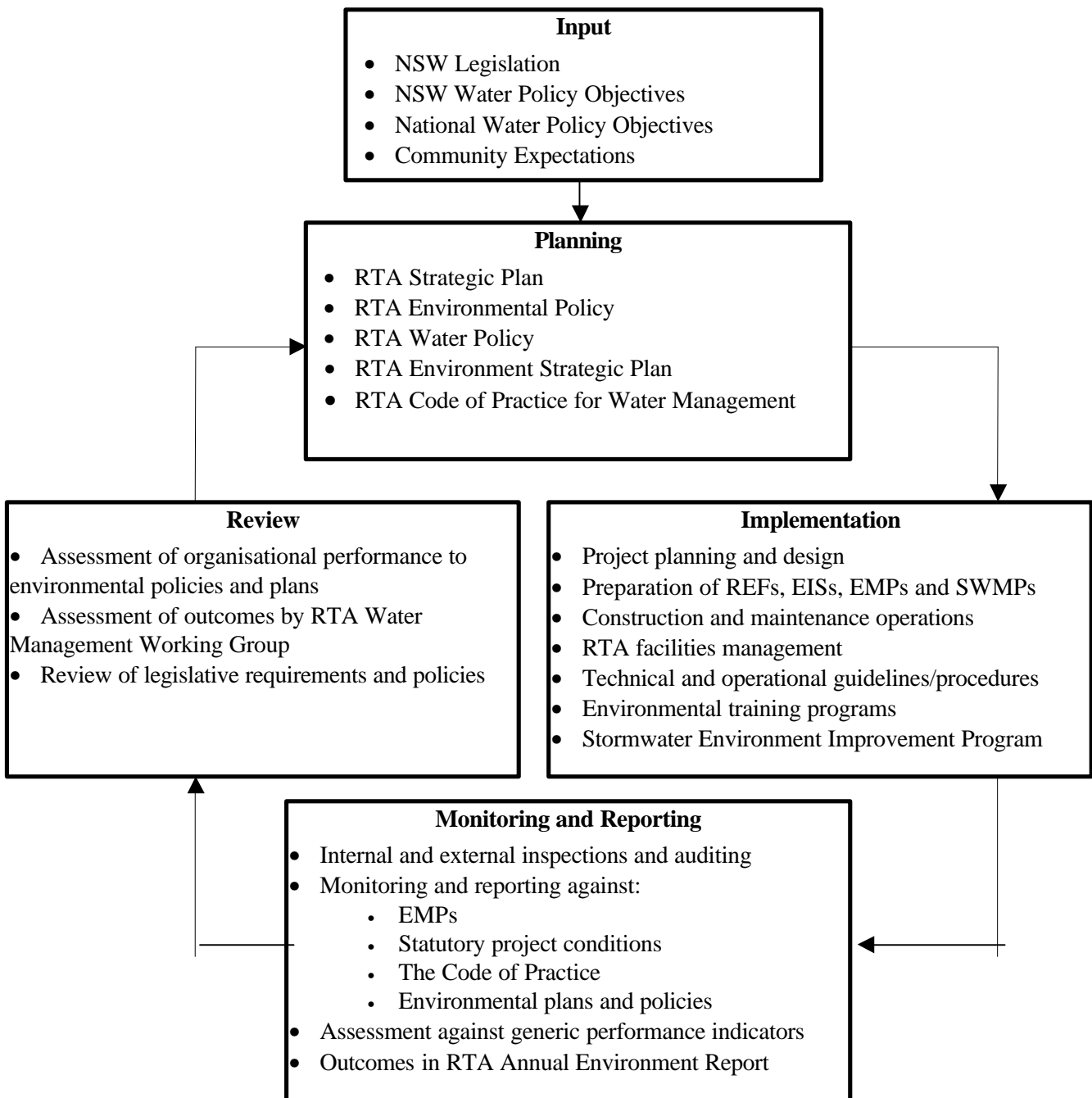


Figure 2: RTA’s Water Management Framework

SECTION 2 BEST PRACTICE PRINCIPLES

This Section provides RTA staff and contractors involved in water management with the principles that are to be followed when considering the relevant environmental issues at various stages of the road life. For the purposes of this manual these stages are detailed as follows:

- 2.1 Pre-Construction - Details the RTA's water management principals for the planning and design of construction projects and other works. Includes the requirements for environmental impact assessment and community involvement.
- 2.2 Construction – Provides principals for the management of on-site water quality, project management, incident reporting and environmental auditing.
- 2.3 Post-Construction – Provides direction for the operation and maintenance of the State Road System including the monitoring and inspection of water management systems.
- 2.4 Depots and other fixed sites – Provides principals specific to the management of RTA fixed sites.

2.1 PRE-CONSTRUCTION

2.1.1 Planning

2.1.1.1 Organisational Perspective

The RTA will continue to consult with the community and relevant State, Local Government and other agencies, for example the EPA, NSW Department of Land and Water Conservation (DLWC), NSW Fisheries, NSW Department of Urban Affairs and Planning (DUAP), NSW National Parks and wildlife Service (NPWS), Catchment Management Committees and Floodplain Management Committees. Consultation will be undertaken to develop an integrated approach to water management within the context of catchment-based water management principles and goals.

The RTA will also continue to co-operate with Councils in preparing and implementing Stormwater Management Plans.

In achieving the goals set out in our Strategic Plan, the RTA will:

- Continue the development and implementation of its environmental management system (EMS).
- Continue to develop and implement environmental training packages for all employees as necessary to support the successful implementation of this CoP and the RTA's broader Water Management framework.
- Continue to regularly and openly report on the RTA's environmental performance.

2.1.1.2 General Principles

The RTA will consult with the relevant authorities during all relevant phases of works to identify the licences or permits required and specific environmental requirements that need be considered.

The planning phase of road and bridge works shall consider the potential impacts on aquatic and riparian habitats, streamflow and water quality. Planning will consider the effects on physical and chemical characteristics of surface waters and ensure that any unavoidable impacts of the proposed works are clearly identified.

The RTA's Environmental Impact Assessment Guidelines (EIA Guidelines) (RTA, Sept. 1998, ISBN 0 7313 0057 2) will be used in the planning phase of all projects to;

- identify potential impacts on the environment during the planning stage of all projects to minimise the impact on aquatic and riparian environments
- establish project-specific requirements by the preparation of a review of environmental factors (REF) or an environmental impact statement (EIS) ; and,
- assess the legislative requirement for the preparation of other management plans (eg: stormwater management plans).

Community involvement will be undertaken on relevant environmental issues in accordance with the RTA's Community Involvement Practice Notes and Resource Manual (ISBN 0 7310 5487; 3 July, 1998).

2.1.1.3 Preparation of Environmental Management Plans

Environmental Management Plans (EMPs) will be prepared for all construction and maintenance activities in accordance with the EIA Guidelines.

Contractors undertaking construction and maintenance activities for the RTA are required to prepare a Contractor's EMP (CEMP) for the work under the Contract.

The CEMP will detail how soil and water will be managed throughout the works under Contract to comply with statutory and Contract requirements. Supplementary environmental plans may also be required by the Contract eg an Erosion and Sedimentation Control Plan (ESCP) or a Soil and Water Management Plan (SWMP). Guidance in the preparation of the soil and water management section of CEMPs may be obtained from the following documents:

- Managing Urban Stormwater: Council Handbook (EPA, 1998).
- Managing Urban Stormwater: Treatment Techniques (EPA, 1998).
- Managing Urban Stormwater: Source Control (EPA, 1998).
- The Constructed Wetlands Manual (DLWC, 1998).

ESCPs and SWMPs are to be prepared in accordance with Section 7, "Stormwater Management and Drainage Design", and Section 8, "Erosion & Sedimentation", of the RTA Road Design Guide, and Section 3 "Plan preparation" of the NSW Department of Housing "Managing Urban Stormwater - Soils and Construction", 1998 (the 'Blue Book').

2.1.1.4 Review of Environmental Management Plans

All EMPs, ESCPs and SWMPs will be reviewed internally by relevant RTA staff. CEMPs may also be reviewed by external organisations, under the provisions of the Environmental Planning and Assessment Act, 1979.

2.1.1.5 Acid Sulfate Soils

In the initial phases of project assessment, investigations must be made to determine the likely presence of acid sulfate soils (ASS).

If any of the following geological conditions are present on the site then a more comprehensive assessment of the presence of ASS will be prepared:

- sediments of recent (Holocene) geological age.
- soil horizons not more than 5m above high tide level.
- marine or estuarine settings.

As a minimum, the initial assessment of the potential for encountering ASS will include assessment of the ASS distribution maps produced by the Department of Land and Water Conservation.

If ASS are likely to be present, a management plan to identify the soil and water attributes of the area must be prepared in accordance with the Acid Sulfate Soils Management Advisory Committee (ASSMAC), "Acid Sulfate Soil Manual", 1998.

The RTA will consult with the DLWC, relevant Catchment Management Trusts and Local Councils in the preparation of ASSMPs.

ASSMPs will include assessment of techniques for minimising disturbance, selection of treatment techniques for treating acid soil and leachate and a monitoring plan during the operational phase of the project.

2.1.2 DESIGN

2.1.2.1 General Principles

The project design is to target the minimisation of impacts on the existing natural overland flows and the groundwater regimes in and around road corridors.

Designs will incorporate appropriate techniques to contain and treat road run-off to avoid or minimise potential impacts to aquatic and riparian environments.

Projects will be designed to utilise source control techniques rather relying on treatment prior to discharge.

Where possible, the project design will plan that operational runoff is treated using “non-point source” or “dispersed” techniques. For example, allow road runoff to drain through table drains, grass buffer strips, grass swales, edge drains, grassed median strips.

The project design will incorporate appropriate provisions to minimise impacts on aquatic and riparian environments, including the passage of fish and other aquatic fauna.

The project design will incorporate the use of vegetative methods in preference to engineering structures for protecting eroding shorelines and streambanks wherever practicable.

Environmental controls that are incorporated into the road design will be reviewed by the business area that has the responsibility for ongoing maintenance.

2.1.2.2 Hydrology

Projects will be designed to:

- preserve natural ecological systems by maintaining existing stream/system hydrology.
- minimise changes to tidal flows or characteristics of estuaries.
- minimise the alteration of the sub-surface (groundwater) regimes and surface water movements including velocity distributions in watercourses.
- incorporate road runoff containment and retardation structures in areas where roads interact with drinking water catchment areas, natural water bodies, environmentally sensitive areas such as wetlands, endangered flora and fauna habitats and geotechnically sensitive areas.
- maintain natural drainage lines where possible.
- minimise the increase of flood levels.
- minimise the impact on community and personal assets.

2.1.2.3 Erosion & Sedimentation

Projects will be designed to prevent erosion at source rather than relying on sediment capture at discharge.

Projects will be designed to stage vegetation clearing to maintain as much natural vegetation wherever possible.

Projects will be designed to stabilise disturbed areas as soon as practicable following completion, or temporary cessation, of earthworks. Additional slope stabilisation measures will be provided where required.

Designs will include the installation of appropriate energy dissipaters or other scour prevention measures, downstream of culverts or other structures, as required to minimise erosion.

Rehabilitation design will utilise natural design features including existing vegetation, local plant seed, existing terrain and materials found in the area.

Projects will be designed to minimise runoff volume, velocity and peak flow rates, retain eroded sediment within the construction area and control loss of soil off site.

Projects will be designed to prevent mixing of uncontaminated and contaminated runoff by the use of diversion drains on the up-slope perimeter of the site. Such diversion drains must be designed and maintained to ensure that discharges do not cause erosion, scour or localised flooding.

Design specifications will include inspection, maintenance and follow-up programs for all water treatment devices and structures.

All water treatment structures will be designed to be accessible for structural and vegetation maintenance and for removal of sediments. Control structures will be designed to be stable in the predicted peak flow from the appropriate design storm event.

2.1.2.4 Route Planning and Location

Route planning and location selection are to consider and assess the environmental impacts of each option on aquatic and riparian environments. Avoid wetlands and other such areas where seasonal variations in ground water discharge and surface water ponding occurs.

The design must include minimising the impacts of road crossings on the movement of aquatic fauna and minimise any stream realignment. Where unavoidable, any stream realignments should be designed to the natural channel design.

Where the environmental impact assessment has determined that additional treatment of waters may be required in the post-construction phase, the project design will ensure that sufficient land is available for future treatment requirements. This is critical for sensitive and degrading environments. The road reserve width provided should be sufficient to contain all current and future temporary and permanent control measures including diversion drains, energy dissipaters, treatment equipment and access for maintenance.

2.1.2.5 Maintenance Issues

The project design must take into consideration the operational maintenance aspects and operating costs by consulting with Asset Management staff. The design will allow access for maintaining water quality improvement facilities.

2.1.2.6 Special Situations - Bridges

The project design will avoid construction that requires numerous river/water body crossings by siting and designing new bridges to avoid sensitive ecosystems, where practicable.

Bridges will be designed to minimise piling in waterways.

Runoff from bridge decks is to be diverted to land for treatment, where feasible.

2.2 CONSTRUCTION

2.3.1.1 General Principles

Effective water management practices and procedures will be implemented, in accordance with the CEMP/SWMP, as an integral part of on-site construction management to ensure that water quality and quantity impacts to the environment are minimised.

Where there is disturbance of ASS that was not previously identified, the process outlined in the Planning Section for ASS management is to be followed.

Ensure effective response procedures are in place to manage environmental incidents for each RTA construction site.

Comply with legislative requirements, project conditions of approval and relevant codes of practice.

2.3.1.2 Contract Management

Work is to be contracted to competent contractors with demonstrated ability to manage environmental issues, following the RTA contract specifications for environmental management.

Contractors and their sub-contractors are to demonstrate appropriate systems are in place that will allow them to meet all current environmental statutory obligations, as a minimum, during the road construction and post-construction stages.

As a minimum, the RTA will work to the requirements of the NSW Governments *Environmental Management System Guidelines* produced by the Construction Policy Steering Committee (CPSC, Nov. 1998 - ISBN 0 7310 6835 1).

The RTA will monitor and review its contract specifications for environmental management as required.

2.3.1.3 Erosion & Sedimentation Control Resources

A comprehensive account of up-to-date erosion and sedimentation prevention and control measures are given in the following documents:

- NSW Department of Housing, “Managing Urban Stormwater: Soils and Construction 3rd Edition, August 1998” (ISBN 0731310969).
- “RTA Road Design Guide, Section 8, “Erosion & Sedimentation” (July 1998).

2.3.1.4 Soil & Vegetation Management

The area of disturbed soil and vegetation will be minimised. Where possible, work will be undertaken in a staged manner to minimise the area of exposed soil at any one time, in accordance with the CEMP/SWMP.

Stockpiles will be located on stable surfaces and away from potentially sensitive areas, particularly areas of concentrated water flows. Erosion control measures will be implemented as appropriate.

Stockpiles will be located and maintained to avoid impacts on existing vegetation.

Disturbed soil will be protected with vegetative cover, mulch, or erosion resistant material. Materials used for such stabilisation will be selected, employed or otherwise managed to ensure that they are not easily washed away (eg: woodchips), thereby potentially causing a pollution problem in itself.

Buffer zones of dense vegetation will be established (where not existent) and maintained along watercourses and ephemeral natural watercourses, within the road reserve.

2.3.1.5 General Erosion and Sedimentation Control Principles

The SWMP is to be consulted at each phase of the project works.

Erosion and sedimentation controls are to be regularly inspected to ensure performance to the design criteria and maintained to design specifications. Controls are to be upgraded or altered if these objectives are found not to be satisfied.

Existing drainage lines are to be identified in design and construction drawings and protected by using appropriate measures such as sedimentation barriers, timber windrows, grassed areas or by directing the site drainage water to a sediment control structure.

All designed stormwater drainage pipes should be installed as soon as possible to control stream and gully erosion. Install appropriate measures such as silt fencing or litter screens near inlets to prevent the blockage of pipes, and energy dissipaters or scour protection at outlets as required to prevent erosion.

Clean water that may run onto the site should be diverted around the site to minimise the quantity of water that may require treatment prior to disposal or release. Water should be diverted along stable diversion drains, banks or bunds around or away from exposed areas of soil or loose material.

2.3.1.6 Acid Sulfate Soils

Where previously unidentified ASS and have been disturbed or identified on site, site works will be halted in that area and the project manager contacted immediately.

The extent of any previously unidentified potential acid sulfate soils must be determined and a management plan prepared that provides direction for the continuation of works.

2.3.1.7 The Use of Chemicals and Management of Wastes

RTA staff and contractors will follow appropriate guidelines for the bunding & storage of chemicals.

A bunded and impermeable area for washing plant and equipment should be provided with appropriate collection and treatment systems and the contents should be pumped out routinely and appropriately disposed of.

Bunded waste should be re-used on site, where practicable. Where disposal of bunded waste is required it will be undertaken in accordance with regulatory guidelines and contracted only to licensed waste disposal operators.

Excess chemicals are to be appropriately stored in a secure location (preferably an off-site depot with suitable permanent chemical storage capacity).

The contract requirement to keep the site and adjacent areas tidy will be enforced at all times.

Machinery and vehicles will be regularly inspected for fuel oil or hydraulic fluid leaks as a component of preventative maintenance.

Vehicular ferry refuelling lines should incorporate automatic cut-off switches which are activated when tanks reach 90% capacity. Fuel links should include dry break couplings and cam-loc fittings.

2.3.1.8 Environmental Incident Reporting

RTA's procedures, relevant to environmental incident reporting, will be followed for reporting of water related incidents and for the necessary corrective action to be taken.

Any pollution incident will be reported to the relevant Site Manager immediately. The Site Manager will assess the need to report to the EPA under Sections 147-153 of the Protection of the Environment Operations Act, 1997. The Site Manager will implement incident-based training when appropriate.

On completion of each major project, the Project Manager will report the major environmental outcomes of the project to the RTA's Environmental and Community Policy Branch for use in the review of RTA water management policy and procedures.

2.3.1.9 Inspections and Audits

An environmental inspection checklist (against the EMP and SWMP) which covers the installation and maintenance of water management control measures will be used to

maintain consistency during the project.

All inspections and audits will be carried out by appropriately qualified individuals on a time frame specified in the CEMP and SWMP. Site inspection regimes will include a provision for inspecting pollution control devices following heavy rain.

The Site Manager will be responsible for implementing the recommendations resulting from audits and inspections.

For all recommendations which have not been implemented, a record of the decision detailing the relevant reasons will be signed off and maintained by the Site Manager.

2.3 POST-CONSTRUCTION

2.3.1.1 General Principles

The RTA will investigate and incorporate appropriate pollution control technologies on existing major roads and bridges to contain and treat road run-off, wherever practical and cost-effective, in order to minimise potential impacts on the environment.

The RTA or contractors will maintain effective containment and clean-up procedures to contain on-site spills and to dispose of spilt materials and/or any contaminated materials in an environmentally responsible manner.

The RTA will promote community ownership of the responsibility for not littering roads.

The RTA will promote good vehicle maintenance practices to minimise pollutants on roads.

The RTA will investigate the performance of the control techniques/measures on existing major roads to contain and treat road run-off.

2.3.1.2 Non-Structural Environment Improvement Measures

The RTA will implement non-structural measures working with other stakeholders or independently that include:

- Participation in Litter Control Programs such as Clean Up Australia Day in targeted areas.
- Improving housekeeping on all sites whether permanent or temporary.
- Improving traffic flows to minimise stationary time on roads.
- Reviewing and reducing the use of fertilisers, pesticides and herbicides.
- Reviewing and reducing the impact of routine maintenance works.

2.3.1.3 Maintenance

Maintenance contracts for State Roads and bridges are to contain environmental standards that are to be met and methods for measuring compliance against performance indicators.

The maintenance requirements for pollution control structures (if installed) will be

specified in the project specific SWMPs.

The RTA or Contractor will develop generic procedures for the maintenance and operation of pollution control structures. The procedures will cover the proper testing, handling and disposal of materials collected in pollutant traps, in accordance with appropriate legislation and guidelines.

SWMPs will incorporate maintenance standards and specify inspection frequency, intervention levels and response actions.

Maintenance procedures and works are to be planned and undertaken to achieve compliance with statutory requirements as a minimum.

Water re-use measures are to be implemented as appropriate through consultation with the appropriate authorities and the community.

2.3.1.4 Monitoring, Inspections and Reporting

SWMPs will include a monitoring plan for assessing the performance of the operational works in relation to the project specific performance indicators.

Periodic assessment of project outcomes will be undertaken by the RTA's Water Management Working Party to determine the benefits and disadvantages of water management techniques.

Records of reported environmental incidents and/or accidents will be kept as part of the project files. This information will be periodically provided to the Water Management Working Party for review.

The RTA's Environment and Community Policy Branch will report relevant information on the Intranet for easy flow of information within RTA.

The RTA will continue to publicly report relevant environmental issues, including any breaches of legislation, and any statutory reporting requirements in its Annual Report and Annual Environment Report.

2.4 DEPOTS AND OTHER FIXED SITES

The relevant water management principles contained in this document are applicable to the management of all RTA fixed sites.

The RTA will identify potential water pollution sources at maintenance depots, heavy vehicle inspection stations and other fixed sites, and implement effective water treatment systems and management procedures. These will be detailed in the EMPs that will cover the depot or work site.

APPENDIX A — THE RTA WATER MANAGEMENT FRAMEWORK

The RTA Water Management Framework is presented diagrammatically in Figure 2 (Section 2) of this CoP. The Water Management Framework for the RTA consists of four key areas;

1. Planning;
2. Implementation;
3. Monitoring and Reporting; and,
4. Review.

PLANNING

The planning phase of the water management framework incorporates the RTA's Strategic Plan, Environmental Policy, Water Policy, Environment Plan and this CoP for Water Management.

Inputs to the above documents may be made following a review undertaken through either the development of RTA's EMS, in response to community expectations or as a result of changes to;

- NSW legislation;
- National water policy objectives; and/or,
- NSW water policy objectives.

The RTA will continue to participate and consult with relevant agencies to continuously improve water management outcomes. The agencies include Statutory Authorities such as the EPA and DLWC, Research Organisations such as CSIRO and ARRB and universities and non-government organisations.

National and NSW Water Policy Objectives

The RTA Water Policy has taken into account the policies and principles outlined in the National Water Quality Management Strategy developed by the Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) and the Australian and New Zealand Environment and Conservation Council (ANZECC).

The RTA, in developing this CoP, has taken into account the principles of ecologically sustainable development and the key water management objectives and goals outlined in the NSW Government's Water Reform Package and NSW State Rivers and Estuaries Policy.

NSW Legislative Requirements

There are number of Acts which currently impose pollution controls in NSW. Those relevant to water quality and with potential implications for RTA operations from 1 July 1999 are:

- Protection of the Environment Administration Act 1991
- Protection of the Environment Operations Act, 1997
- Environmental Planning and Assessment Act 1979
- Local Government Act 1993
- Soil Conservation Act 1938
- Fisheries Management Act 1994
- Rivers and Foreshores Improvement Act 1948
- Catchment Management Act 1989

Details on the applicable sections of the above Acts are available in summary format for RTA staff on the Legislation Database on the RTA Intranet. The Protection of the Environment Operations Act, 1997, commenced on 1 July 1999 and repealed the following:

- Clean Waters Act, 1970.
- Environmental Offences and Penalties Act, 1989.
- Pollution Control Act, 1970.
- Noise Control Act, 1975.
- Clean Air Act, 1961.
- Elements of the Waste Minimisation and Management Act, 1995.

The RTA's Water Policy

RTA's Water Policy seeks to ensure that water regulatory requirements associated with all RTA activities are addressed and consistently complied with by the RTA, its contractors and sub-contractors. It should be noted that depending on the scope of the project, the provisions of Part 4 and/or Part 5 of the Environmental Planning & Assessment Act 1979 will be triggered.

The RTA's Water Policy identifies a set of objectives for the management of water issues related to planning, design, construction, operation and maintenance. The Water Policy objectives will be achieved by maintaining compliance with the environmental principles outlined in this CoP.

This CoP aims to link the objectives of the environmental plan to the principles the RTA will adopt and to provide guidance to the practical implementation of guidelines and procedures.

The RTA's 5 Year Environment Business Support Strategic Plan

The Environment Strategic Plan sets directions for the RTA to meet the outcomes specified in the RTA Strategic Plan and to deliver the Government's environmental priorities relevant to the RTA's business. It sets:

- clear directions for environmental management to 2004.
- strategies to meet the environmental requirements identified in the RTA's Environment Policy.

IMPLEMENTATION

The implementation phase of the water management framework includes:

- the planning and design of specific projects
- the assessment of potential water management issues during the environmental assessment phase
- the construction of RTA roads and other facilities
- the physical maintenance and management of the State Road system and RTA depots, facilities management, offices, registries, inspection stations and other buildings
- implementation of RTA's Stormwater Environment Improvement Program

The principles outlined in this CoP provide direction for the manner in which these operations are to be undertaken. NSW legislation, regulations and associated guidelines provide direction for many of the procedures undertaken in the implementation of RTA projects. The RTA is currently consolidating NSW EPA, RTA and other procedural guidelines for water management to provide guidelines for internal water management procedures.

MONITORING AND REPORTING

For each project undertaken by the RTA, monitoring against the following, as a minimum, is required:

1. the water management principles included in this CoP.
2. the requirements of a site specific SWMP.
3. all statutory licence, permit and approval conditions.

Monitoring will generally be completed as a function of specified internal and external compliance audits. The level of monitoring and reporting will depend on the works and the environmental conditions in which the works are to take place. Detailed monitoring and reporting will be required against SWMPs for any project that requires a statutory licence or approval. Monitoring and reporting requirements may also be incorporated into the approval or licence conditions.

The environmental performance of RTA maintenance work and site environmental management will be reported internally through the RTA's Environmental Management System (EMS).

The RTA encourages those involved in water management to set response triggers wherever possible to predict any unnecessary environmental impacts so that corrective action can be taken pro-actively. An example of pro-active corrective action is preventative maintenance to machinery and water treatment structures.

REVIEW

Review of performance in relation to the principles outlined in this CoP is required on a regular basis. Project specific reviews will be provided on many construction projects as a function of CEMPs, SWMPs and statutory requirements. Periodic review is required for depots and maintenance works as specified in the depot environmental management plans.

Summary reports on environmental performance will be forwarded to the RTA's Environment and Community Policy Branch. The information from these summary reports will be collated and used to:

- Provide environmental performance data for the annual RTA Environment Report
- Assess performance against the performance indicators on an organisational perspective.
- Identify areas of concern for which changes to guidelines, procedures or policy documents may be required.

Any necessary changes to the RTA's water management planning documents will be made following consideration by the RTA's Water Management Working Party. Any recent changes to applicable legislation or water management policy objectives will also be considered in this process.

APPENDIX B — GLOSSARY

Acid Sulfate Soils

Acid sulfate soils are acidic soil layers that have been formed as a result of exposure of pyrite (iron sulphide) in soil to oxygen. When water passes through such soils acidic water is produced.

Aquatic

Belonging to water, or living in water.

Catchment

The area which will contribute to the discharge of a stream after rainfall at the point under consideration.

Contaminant

An undesirable, or a harmful impurity in water or soil.

Detention basin

A storage with a restricted outlet which, when placed in a drainage channel system, has the effect of detaining, or slowing down, the passage of stormwater flows.

Ecologically Sustainable Development (ESD)

ESD is defined as the “use, conservation and enhancement of the community’s resources so that the ecological processes on which life depends are maintained and the present and future total quality of life can be sustained”.

Ecosystem

System which includes all the organisms of an area and the environment in which they live.

Environmental Impact Statement (EIS)

A structured document which is prepared to identify and assess the environmental impacts of a proposed activity which is either designated development or “likely to significantly affect the environment”.

Habitat

The living space of a species or community, providing a particular set of environmental conditions.

Heavy metals

A group of metals with high atomic weights which are generally toxic; some are always toxic and others are toxic at high concentrations.

Herbicide

Chemical substance used for killing plants.

Leachate

Liquid containing dissolved solids which has percolated through soil.

Organic pollutants

Pollutants based on carbon and hydrogen.

Potable

Suitable for human consumption.

Run-off

The portion of precipitation (rain, hail, snow) which flows across the ground surface as water; major agent of water erosion.

Review of Environmental Factors (REF)

An internal RTA document which is prepared to identify likely environmental impacts and outline preventive measures for a proposed activity; and form the basis for deciding whether the activity is “likely to significantly affect the environment”.

Riparian

Situated on or belonging to stream bank.

Sedimentation

Material of varying size, both mineral and organic, deposited away from its site of origin by the action of water, wind, gravity or ice.

Swale

A shallow, grass lined roadside or median stormwater conveyance channel that is used to transport run-off and trap some pollutants.

Total Catchment Management (TCM)

The co-ordinated and sustainable use and management of land, water vegetation and other natural resources on a catchment basis to balance resource utilisation and conservation.