



# 7 Turbidity in aquatic environments

## This Chapter

This chapter summarises investments supported by the NAP and the regional component of the Trust that have a major focus on the turbidity in aquatic environments matter for target. The first section of the chapter summarises priority action investments approved to the 30 June 2004. It also provides a summary of the type of activities supported by these investments and progress in the achievements of these activities to the 31 March 2004

The second section of this chapter summarises initial investments having a major focus on the turbidity in aquatic environments from regional strategies based on accredited regional plans to 30 June 2004. This section also details the specific turbidity in aquatic environments targets and related management action targets from the approved investments. It also provides a summary of the type of activities supported by these investments and progress in the achievements of these activities to the 31 March 2004.

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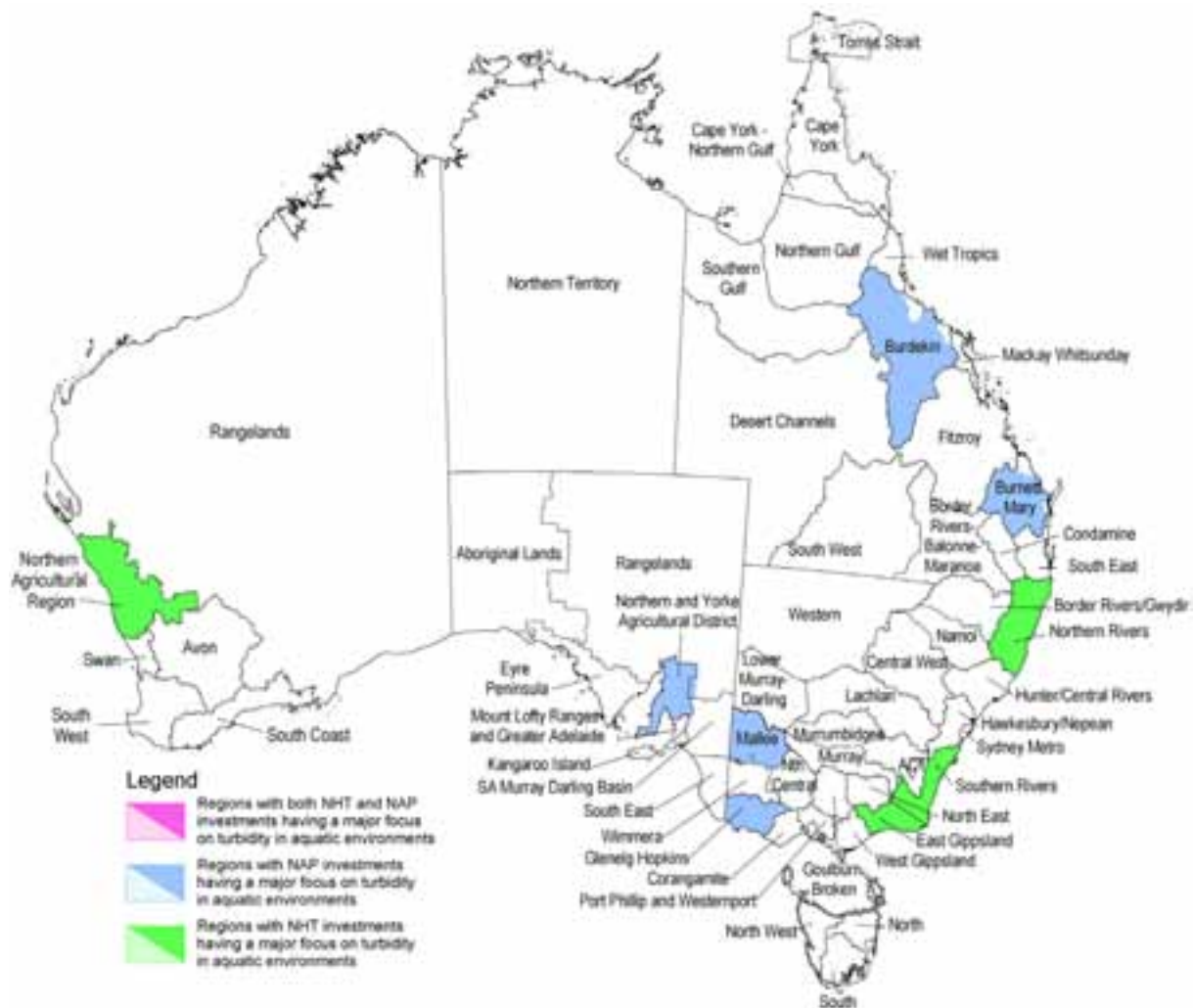
## Glossary

## 7.1 PRIORITY ACTIONS HAVING A MAJOR FOCUS ON ADDRESSING TURBIDITY IN AQUATIC ENVIRONMENTS

### Approvals and reported expenditure

Investments by the NAP and the regional component of the Trust in priority actions that have a major focus on turbidity in aquatic environments total approximately \$4m. Figure 7.1.1 shows the regions addressing turbidity in aquatic environments through this funding. Table 7.1.1 details the approved priority action funding for each region. Table 7.1.2 details the reported expenditure by each of these regions.

**Figure 7.1.1** Regions with priority actions having a major focus on turbidity in aquatic environments



**Table 7.1.1** Priority actions having a major focus on turbidity in aquatic environments approved to June 2004\*

State	Region	2003-04 Approvals (\$)		Total Approvals to June 2004 (\$)	
		NAP	Trust	NAP	Trust
New South Wales	Northern Rivers				511,500
	Southern Rivers				317,800
Queensland	Burdekin			500,956	
	Burnett - Mary	232,000		232,000	
South Australia	Northern and Yorke Agricultural District			75,000	
Victoria	East Gippsland				141,570
	Glenelg Hopkins			520,000	
	Mallee			1,770,000	
Western Australia	Northern Agricultural		41,261		41,261
<b>Total</b>		<b>232,000</b>	<b>41,261</b>	<b>3,097,956</b>	<b>1,012,131</b>

\* Figures reflect Australian Government and State/Territory Government approvals for NAP and only Australian Government approvals for the Trust. State/Territory Government cash and in-kind funding for the Trust is not included.

**Table 7.1.2** Reported expenditure for priority actions having a major focus on turbidity in aquatic environments

State	Region	Budgeted Activity Expenditure (\$)				Reported Activity Expenditure (\$)			
		July 03 - March 04		Total to March 04		July 03 - March 04		Total to March 04	
		NAP	Trust	NAP	Trust	NAP	Trust	NAP	Trust
New South Wales	Northern Rivers		153,450		153,450				
	Southern Rivers		79,450		79,450		6,247		6,247
Queensland	Burdekin	500,956		500,956		342,899		342,899	
	Burnett - Mary	492,748		492,748					
South Australia	Northern and Yorke Agricultural District	15,000		75,000				37,500	
Victoria	East Gippsland				141,570		106,178		106,178
	Glenelg Hopkins			520,000				414,084	
	Mallee			1,770,000		846,454		1,239,700	
<b>Total</b>		<b>1,008,704</b>	<b>232,900</b>	<b>3,358,704</b>	<b>374,470</b>	<b>1,189,353</b>	<b>112,425</b>	<b>2,034,183</b>	<b>112,425</b>

## Activities and achievements

### Funded activities

Funding for the types of priority action activities having a major focus on turbidity in aquatic environments supported by the NAP and the regional component of the Trust, is shown in Table 7.1.3.

**Table 7.1.3** Types of activities supported by priority actions having a major focus on turbidity in aquatic environments

Activity Type	Budgeted Activity Expenditure (\$)				Reported Activity Expenditure (\$)			
	July 03 - March 04		Total to March 04		July 03 - March 04		Total to March 04	
	NAP	Trust	NAP	Trust	NAP	Trust	NAP	Trust
Resource assessment	507,748		567,748				37,500	
Planning	500,956		500,956		342,899		342,899	
Capacity building		79,450	1,770,000	79,450	846,454	6,247	1,239,700	6,247
On-ground activities		153,450	520,000	295,020		106,178	414,084	106,178
Total	1,008,704	232,900	3,358,704	374,470	1,189,353	112,425	2,034,183	112,425

Funding for priority action activities having a major focus on turbidity in aquatic environments supported by NAP and the regional component of the Trust is described in Table 7.1.4.

**Table 7.1.4** Funding for priority action activities having a major focus on turbidity in aquatic environments

Region	Activity Title	Budgeted Activity Expenditure (\$)				Reported Activity Expenditure (\$)			
		July 03 - March 04		Total to March 2004		July 03 - March 04		Total to March 2004	
		NAP	Trust	NAP	Trust	NAP	Trust	NAP	Trust
New South Wales									
Northern Rivers	Integrated Clarence Floodplain Natural Resource Management Project		153,450		153,450				
Southern Rivers	Southern Riparian Partnership Project		79,450		79,450		6,247		6,247
Queensland									
Burdekin	Improving Water Quality through Land Management changes in the Bowen - Broken River catchment: A Framework for Action	500,956		500,956		342,899		342,899	

Region	Activity Title	Budgeted Activity Expenditure (\$)				Reported Activity Expenditure (\$)			
		July 03 - March 04		Total to March 2004		July 03 - March 04		Total to March 2004	
		NAP	Trust	NAP	Trust	NAP	Trust	NAP	Trust
Burnett - Mary	Land and Vegetation Management - adapt and develop GLM package for B/Mary region	492,748		492,748					
South Australia									
Northern and Yorke Agricultural District	Detailed catchment planning in the Northern & Yorke Agricultural District	15,000		75,000				37,500	
Victoria									
East Gippsland	Mitigation of avulsion risk on the Combienbar River Project				141,570		106,178		106,178
Glenelg Hopkins	Stream Stabilisation Works			520,000				414,084	
Mallee	Community Capacity Building			1,030,000		481,880		736,816	
	Strategic Program Delivery			740,000		364,575		502,885	
Total		1,008,704	232,900	3,358,704	374,470	1,189,353	112,425	2,034,183	112,425

## Achievements

The outputs, or products and services produced by these activities, are summarised in four tables according to the types of outputs described in Chapter 1. Summaries of the outputs related to resource assessment, planning, capacity building and on-ground activities are shown in Table 7.1.5, Table 7.1.6, Table 7.1.7 and Table 7.1.8.

**Table 7.1.5** Priority action resource assessment outputs related to turbidity in aquatic environments

Standard Output	July 03 - March 04			Total to March 04		
	NAP	Trust	Joint	NAP	Trust	Joint
Baseline, trend or condition studies for targets						
Number of sites monitored	14			14		
Number of studies undertaken	2			2		
Decision support tools						
Number models, information management systems and other decision support tools developed	6			6		
Investigations (survey, inventory and mapping and data analysis)						
Number undertaken	4		6	4		6

**Table 7.1.6** Priority action planning outputs related to turbidity in aquatic environments

Standard Output	July 03 - March 04			Total to March 04		
	NAP	Trust	Joint	NAP	Trust	Joint
<b>Integrated catchment or sub-catchment plans</b>						
Number developed	1			1		

**Table 7.1.7** Priority action capacity building outputs related to turbidity in aquatic environments

Standard Output	July 03 - March 04			Total to March 04		
	NAP	Trust	Joint	NAP	Trust	Joint
<b>Awareness raising activities</b>						
Number of demonstrations, field days, study tours and other non-training forums held			10			10
Number of brochures, newsletters, displays and other non-training products developed	1			1		
Quantity of brochures, newsletters, displays and other non-training products distributed	500			500		
<b>Facilitation motivation and support activities</b>						
Number of active positions (FTE) supported	2		2	2		2
<b>Skills and training activities</b>						
Number of training sessions, workshops seminars and other events held	1		6	1		6

**Table 7.1.8** Priority action on-ground activity outputs related to turbidity in aquatic environments

Standard Output	July 03 - March 04			Total to March 04		
	NAP	Trust	Joint	NAP	Trust	Joint
<b>Indigenous vegetation enhanced/rehabilitated</b>						
Area (hectares) enhanced or rehabilitated	148			148		
Length (km) of streambank enhanced or rehabilitated	37			37		
<b>Revegetation with indigenous vegetation</b>						
Area (hectares) revegetated	163			163		
Length (km) of streambank revegetated	30			30		
<b>Riparian and waterway health</b>						
Length (km) of in-stream habitat established	1.5			1.5		

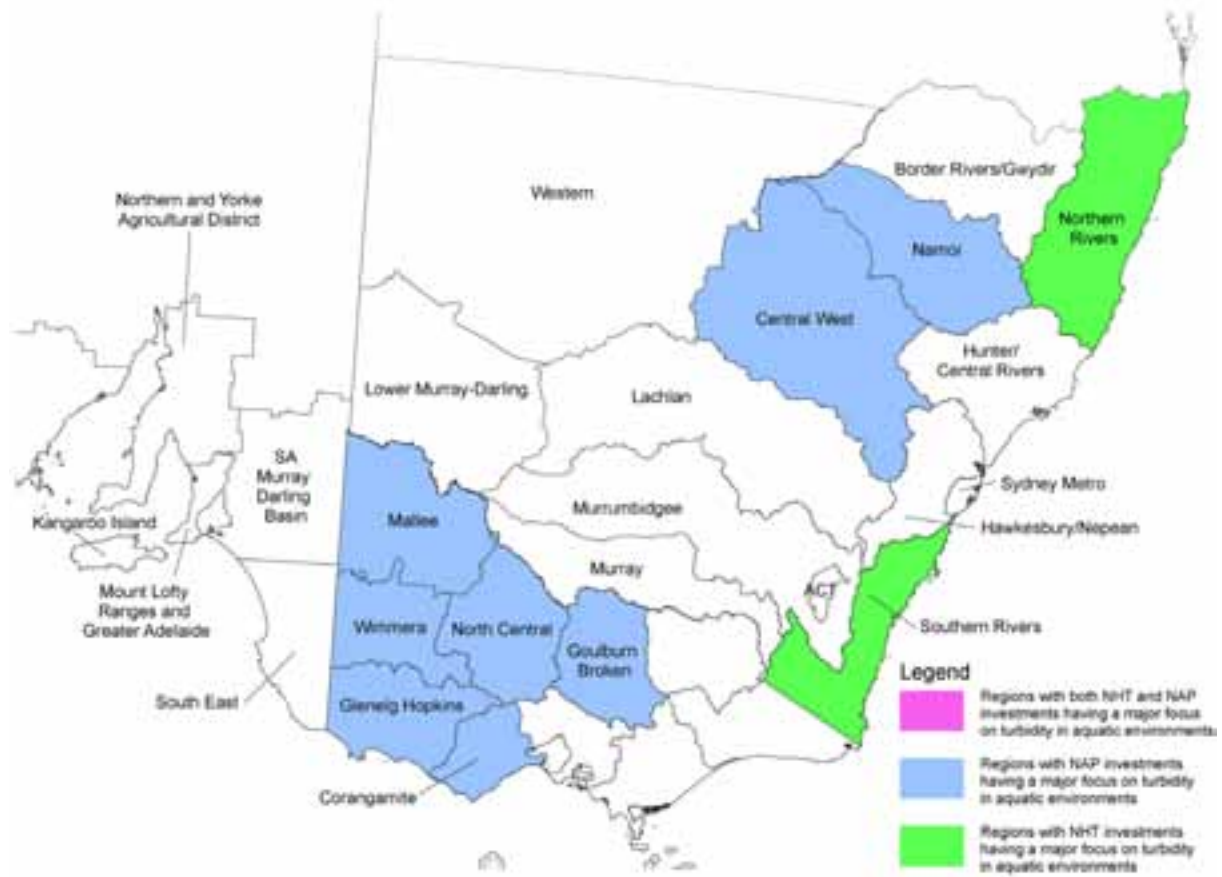
## 7.2 REGIONAL INVESTMENTS HAVING A MAJOR FOCUS ON TURBIDITY IN AQUATIC ENVIRONMENTS

### Approvals and reported expenditure

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Funding through regional investment strategies based on accredited regional plans commenced after 30 June 2003. Investment strategies based on accredited regional plans have been approved for regions in the Australian Capital Territory, New South Wales, South Australia and Victoria. Up to 30 June 2004, investments having a major focus on turbidity in aquatic environments total approximately \$2.4m. Figure 7.2.1 shows the regions having a major focus on turbidity in aquatic environments through this funding. Table 7.2.1 and Table 7.2.2 respectively show the approved funding and the reported expenditure by region through its investment strategy.

**Figure 7.2.1** Regions with regional investments having a major focus on turbidity in aquatic environments



**Table 7.2.1** Regional investments having a major focus on turbidity in aquatic environments approved to June 2004\*

State	Region	2003-04 Approvals (\$)		Total Approvals to June 2004 (\$)	
		NAP	Trust	NAP	Trust
New South Wales	Central West	409,000		409,000	
	Namoi	175,000		175,000	
	Northern Rivers		20,000		20,000
	Southern Rivers		130,000		130,000
Victoria	Corangamite	10,000		10,000	
	Glenelg Hopkins	30,000		30,000	
	Goulburn Broken	150,000		150,000	
	Mallee	225,000		225,000	
	North Central	1,117,000		1,117,000	
	Wimmera	95,000		95,000	
<b>Total</b>		<b>2,211,000</b>	<b>150,000</b>	<b>2,211,000</b>	<b>150,000</b>

\* Figures reflect Australian Government and State/Territory Government approvals for NAP and only Australian Government approvals for the Trust. State/Territory Government cash and in-kind funding for the Trust is not included.

**Table 7.2.2** Reported expenditure for regional investments having a major focus on turbidity in aquatic environments

State	Region	Budgeted Activity Expenditure (\$)				Reported Activity Expenditure (\$)			
		July 03 - March 04		Total to March 04		July 03 - March 04		Total to March 04	
		NAP	Trust	NAP	Trust	NAP	Trust	NAP	Trust
New South Wales	Central West	228,500		228,500					
	Namoi	42,532		42,532					
	Northern Rivers		20,000		20,000				
	Southern Rivers		40,000		40,000				
Victoria	Corangamite	10,000		10,000					
	Glenelg Hopkins	30,000		30,000		22,500		22,500	
	Goulburn Broken	150,000		150,000		112,500		112,500	
	Mallee	225,000		225,000		100,333		100,333	
	North Central	1,117,000		1,117,000		480,000		480,000	
	Wimmera	95,000		95,000		25,409		25,409	
<b>Total</b>		<b>1,898,032</b>	<b>60,000</b>	<b>1,898,032</b>	<b>60,000</b>	<b>740,742</b>		<b>740,742</b>	

## Activities and achievements

### Funded activities

Funding for the types of regional investment activities having a major focus on turbidity in aquatic environments supported by the NAP and the regional component of the Trust, is shown in Table 7.2.3.

**Table 7.2.3** Types of activities supported by regional investments having a major focus on turbidity in aquatic environments

Activity Type	Budgeted Activity Expenditure (\$)				Reported Activity Expenditure (\$)			
	July 03 - March 04		Total to March 04		July 03 - March 04		Total to March 04	
	NAP	Trust	NAP	Trust	NAP	Trust	NAP	Trust
Resource assessment	30,000		30,000		22,070		22,070	
Capacity building		20,000		20,000				
On-ground activities	1,868,032	40,000	1,868,032	40,000	718,672		718,672	
Total	1,898,032	60,000	1,898,032	60,000	740,742		740,742	

Funding for regional investment activities having a major focus on turbidity in aquatic environments is described in Table 7.2.4.

**Table 7.2.4** Funding for regional investment activities having a major focus on turbidity in aquatic environments

Region	Activity Title	Budgeted Activity Expenditure (\$)				Reported Activity Expenditure (\$)			
		July 03 - March 04		Total to March 2004		July 03 - March 04		Total to March 2004	
		NAP	Trust	NAP	Trust	NAP	Trust	NAP	Trust
New South Wales									
Central West	Management of Stream Bank Erosion	84,500		84,500					
	Sediment Management	144,000		144,000					
Namoi	Floodplain Plans	42,532		42,532					
Northern Rivers	Clarence Floodplain and Estuary Partnership		20,000		20,000				
Southern Rivers	Bega River Catchment Rehabilitation & Sediment Management Program		40,000		40,000				
Victoria									
Corangamite	Otway Ranges High Values Coastal Stream Protection	10,000		10,000					
Glenelg Hopkins	Carp Program	30,000		30,000	22,500		22,500		
Goulburn Broken	SEDNet Target Program (Sediments & Nutrients)	150,000		150,000	112,500		112,500		

Region	Activity Title	Budgeted Activity Expenditure (\$)				Reported Activity Expenditure (\$)			
		July 03 - March 04		Total to March 2004		July 03 - March 04		Total to March 2004	
		NAP	Trust	NAP	Trust	NAP	Trust	NAP	Trust
Mallee	Victorian Mallee Salinity and Water Quality Management Plan - Water Quality Implementation 1.) Implementation of Stormwater Management Plans	225,000		225,000		100,333		100,333	
North Central	Holland's Bank - Reduction of Flood Recharge	70,000		70,000					
	Stream stabilisation and gully erosion control works in high priority areas across the North Central Region	1,047,000		1,047,000		480,000		480,000	
Wimmera	Managing pest plants and animals to minimise their impact on the Wimmera River assets	27,000		27,000		1,313		1,313	
	Managing the impacts of pest plants and animals on the terminal lakes	11,000		11,000		713		713	
	Minimising pest plant and animal impacts on the wetlands and waterways of the Millicent Coast Basin.	27,000		27,000		1,313		1,313	
	Researching the impacts of various land uses on the water quality entering our waterways and wetlands.	30,000		30,000		22,070		22,070	
<b>Total</b>		<b>1,898,032</b>	<b>60,000</b>	<b>1,898,032</b>	<b>60,000</b>	<b>740,742</b>	<b>-</b>	<b>740,742</b>	<b>-</b>

## Achievements

The outputs, or products and services produced by these activities, are summarised in tables according to the types of outputs described in Chapter 1. Summaries of the outputs related to on-ground activities are shown in Table 7.2.5.

**Table 7.2.5** Regional investment on-ground activity outputs related to turbidity in aquatic environments

Standard Output	July 03 - March 04			Total to March 04		
	NAP	Trust	Joint	NAP	Trust	Joint
<b>Indigenous vegetation protected by fencing</b>						
Length (km) of streambank protected				105		

## Turbidity in aquatic environments targets

### Resource condition targets related to approved investment activities

Turbidity in aquatic environments targets are shown in Table 7.2.6

**Table 7.2.6** Resource action targets related to turbidity in aquatic environments

Region	Resource condition target
<b>New South Wales</b>	
Central West	By 2012, improve surface and groundwater system health across the catchment as measured by: 20% improvement on current turbidity levels, 50% of the time in the Macquarie, Cudgegong, Castlereagh and Bogan Rivers
	By 2012, improve surface and groundwater system health across the catchment as measured by: Chemicals and hazardous substances to be reduced below ecosystem protection levels at all times
Lachlan	By 2012, maintain and/or restore the health and function of the surface water and groundwater systems by 10% improvement on current turbidity levels on the upland landscape and hold or reduce current levels in the remaining areas of the catchment
Murrumbidgee	By 2012, in the Murrumbidgee River and its main tributaries, suspended sediment levels will be reduced so that they meet the interim NSW Water Quality Objectives.
<b>South Australia</b>	
Aboriginal Lands	Introduced plants and animals not impacting significantly upon natural biodiversity by 2015
Eyre Peninsula	Recover 5% of priority native vegetation and habitat threatened or damaged by pest plants and animals by 2015
	Reduction in average and peak nutrient loads (N&P), turbidity and salinity levels in surface waters throughout the region with clear targets established by 2006
	5% increase in native vegetation cover on Eye Peninsula by 2010
	All 24 identified wetlands and other water dependent ecosystems protected and have appropriate water flow regimes to maintain ecosystem processes by year 2020
	No further fragmentation of remnant vegetation through clearance or grazing by 2020
	Conservation status of nationally threatened species maintained or improved by 2020
	Water regimes restored to a level sufficient to sustain significant dependent ecosystems throughout the region and to provide required water supplies within sustainable limits to community and industry, with clear targets established by 2006

Region	Resource condition target
Kangaroo Island	No new pests and diseases established on Kangaroo Island
	Tourism operations having minimal impact on the natural resources of the region (on-going)
	A trend of progressive improvement in the condition and integrity of areas within the protected areas network, through a progressive reduction in pests and diseases by 2010
	Pests and diseases eliminated (where practical) contained, managed and no further species introduced by 2020
	Priority pests and diseases eliminated (where practicable) contained and managed on primary production land by 2020
	Pests, diseases and problems animals eliminated (where possible) managed and controlled to have minimal impact in key biodiversity areas by 2020
Mount Lofty Ranges	Pests (plants and animals) and diseases contained and managed and no increase in impact upon terrestrial and aquatic biodiversity (including marine) by 2022
	A progressive reduction in turbidity levels and sediment, and nutrient loads in streams throughout the region with clear targets determined by June 2006
	Water regimes sufficient to sustain wetland and watercourse ecosystems of particular biodiversity significance by 2017
Rangelands	No net loss (extent and condition) of remnant vegetation communities and an increase in areas managed to enhance habitat quality by 2014
	Review of research and data collation needs to improve the understanding and sustainable use of water resources in the Rangelands
	Strategic planning and policy framework established for the integrated management of potential and existing pest plants and animals by 2005
	Strategic planning and policy framework established to manage biodiversity and important habitat areas by 2007
	No further loss of threatened communities, populations or species and a measurable population increase by 2014
	Review of research and data collation needs to improve biodiversity management and prevent further habitat loss or ecosystem modification, completed by 2006
	Point and diffuse source pollution risks to surface and groundwater resources identified by 2005 and control targets developed and implemented by 2007
	Overall land condition across the region will be maintained or improved by identifying priority issues and undertaking priority remedial works by 2020
	Reduction in average and peak nutrient loads (N&P), turbidity and salinity levels in surface waters throughout the region with clear targets established by 2006
	All 24 identified wetlands and other water dependent ecosystems protected and have appropriate water flow regimes to maintain ecosystem processes by year 2020
South East	Maintain the water quality in the Blue Lake at the 2002 beneficial use category
	Sustainable groundwater use in the Blue Lake Capture Zone achieved by 2020
	Achieve sustainable groundwater use by 2020 and beyond
	Maintain the quality of urban water supplies at standards defined by the Water Quality EPP until 2020 and beyond

## Management action targets related to approved investment activities

Accredited regional plans detail management action targets primarily related to turbidity in aquatic environments targets. Management action targets are shown in Table 7.2.7

**Table 7.2.7** Management action targets related to turbidity in aquatic environments

Region	Management action target
<b>Australian Capital Territory</b>	
Australian Capital Territory	By 2014, measures to reduce the intensity of and the volume of urban stormwater flows so that the runoff event that occurs on average once every 3 months is no more than predevelopment size will be implemented
<b>New South Wales</b>	
Central West	By 2012, control streambank erosion and bed lowering in 10% of identified priority streams and manage flow regimes to minimise streambank erosion in all regulated river systems
	By 2012, stabilise and manage 40% of active gully systems in identified priority sub-catchments to control sediment migration within the upland catchment
Hunter - Central Rivers	At least an additional 60km of 4th order (and above) "green" rated streams are protected and enhanced, and 125km of 'red' and 'yellow' rated streams are rehabilitated (based on red/yellow/green assessment method for geomorphology and vegetation)
	Stock access to waterways is restricted through voluntary management activities, such as establishing riparian fencing and or off-stream watering and or provision of shade over 250 km of river bank by 2012
Northern Rivers	85kms of streambanks rehabilitated and protected on targeted steam sections by 2012
	Best Management Practices (BMPs) to address water quality issues - developed and promoted for the key industries and local government by 2007, and adopted by local government and a minimum of 30% of those involve in key industries by 2009
Southern Rivers	By 2012, primary sediment inputs to priority rivers and streams from roads, tracks and laneways will be reduced by at least 50%
Sydney Metro	By 2006, achieve control and mitigation of sediment input into aquatic systems throughout the Board area
	By 2006, minimisation of sediment load from the catchment through active erosion and sediment control strategies
Western	Voluntary management of 40% of priority areas (as identified by the Riparian Zone Health Survey) on Western Catchment rivers, leading to incremental improvement in native vegetation, within 10 years of Blueprint approval
<b>South Australia</b>	
Mount Lofty Ranges	Develop and apply the Risk Assessment Framework for Water Resource Management to develop priorities for investment in on-ground actions, investigations, extension and compliance programs
South East	Complete the water balance assessments in the Blue Lake Capture Zone by 2004
	Define an acceptable water level range in the Blue Lake resulting from licensed extractions by 2006
	Define the risks to the quality and quantity of water supplies to at least 5 towns in the region from the groundwater and land-use management regimes by 2006
	Develop and implement a plan for capacity building to support planning and action on priority natural resource management issues by December 2005
	Implement an appropriate groundwater management regime within the BLCZ within the five years following the definition of an acceptable water level range