

THE NATIONAL ACTION PLAN FOR SALINITY AND WATER QUALITY

A National Action Plan for Salinity and Water Quality (NAPSWQ) was endorsed by the Prime Minister, Premiers and Chief Ministers at the Council of Australian Governments on 3 November 2000. It involves a funding package of \$1.4billion from the Australian Government, States and Territories. The significant funding allocation is over a seven year period and complements the existing Australian Government's \$1.5billion Natural Heritage Trust.

Goal

The goal of the NAPSWQ is to motivate and enable regional communities to use coordinated and targeted action to:

- prevent, stabilise and reverse trends in salinity, particularly dryland salinity, affecting the sustainability of production, the conservation of biological diversity and the viability of our infrastructure
- improve water quality and secure reliable allocations for human uses, industry and the environment.

Key Mechanisms

The NAPSWQ builds on the work established under the Trust, the Murray Darling Basin Commission, State/Territory strategies and the COAG Water Agreement by implementing:

- targets and standards for natural resource management, particularly for water quality and salinity, with the States and Territories, either bilaterally or multilaterally, as appropriate. The targets and standards should include salinity, water quality and associated water flows, and stream and terrestrial biodiversity based on good science and economics
- integrated catchment /regional management plans developed by the community, in all highly affected catchments/regions where immediate action will result in substantial progress towards meeting State/Territories and basin wide targets to reverse the spread of dryland salinity and improve water quality. The Australian Government and States/Territories will need to agree on targets and outcomes for each integrated catchment/region management plan, in partnership with the community, and accredit each plan for its strategic content, proposed targets and outcomes, accountability, performance monitoring and reporting
- capacity building for communities and landholders to assist them to develop and implement integrated catchment/region plans, together with the provision of technical and scientific support and engineering innovations
- an improved governance framework to secure the Australian Government-State/Territory investments and community action in the long term, including property rights, pricing, and regulatory reforms for water and land use
- clearly articulated roles for the Australian Government, State/Territory, local government and the community to replace the current disjointed Commonwealth-State/Territory frameworks for natural resource management. This would provide an effective, integrated and coherent framework to deliver and monitor implementation of the NAPSWQ
- a public communication program to support widespread understanding of all aspects of the NAPSWQ so as to promote behavioural change and community support.

All elements must be acted on to make a real difference. It needs to be recognised that the issues being dealt with under the NAPSWQ are long term, with increased understanding

being acquired as issues are addressed. It is important that there is sustained commitment by the Australian Government, States, Territories and the community to NAP implementation and the development of markets, and that this be emphasised from the outset.

To measure and manage these investments and to provide proper accountability:

- Australian Government funding will only be made available to those States/Territories prepared to implement the NAPSWQ as a package, that is including the governance and capacity building initiatives as well as the support for the development of integrated catchment/region management plans which address salinity and water quality and other related natural resource management issues in an integrated way;
- implementation of the NAPSWQ will require a timetable jointly agreed by the Australian Government and the States/Territories;
- joint Australian Government and State/Territory accreditation of integrated catchment/region management plans should occur prior to block funding being made available to communities;
- regional communities will need to be organised into appropriate catchment/regional based bodies, and be accountable for the expenditure of public funds including block funding and for reporting against well defined delivery requirements;
- ongoing monitoring, measuring and reporting arrangements for the NAPSWQ building on the work of the National Land and Water Resources Audit undertaken under the Trust and State of the Environment reporting.

Australian Government, State, Territory, Local Government and Community Roles

Effective institutional arrangements are essential to successful implementation of the NAPSWQ. The Prime Minister and Premiers and Chief Ministers will need to be confident that the roles played by the Australian Government, States, Territories, local governments and communities are transparent and widely understood by all stakeholders.

The Australian Government is prepared to make a major financial contribution to implement the NAPSWQ. The States and Territories will be expected to match this contribution. The participating communities will also be expected to make appropriate contributions. The NAPSWQ is expected to enable significant progress over a six to eight year period. In some regions, however, the work required will take 10 years or more.

It needs to be recognised that the issues being dealt with under this NAPSWQ are long term, with increased understanding being acquired as Australian Government, States, Territories and the community to NAPSWQ implementation and the development of markets, and that this be emphasised from the outset. It would be prudent to revisit the level of investment in the Action Plan towards the conclusion of the program of investment.

It should also be noted that costs of implementation for individual catchments/regions will vary considerably depending on the nature of the issues to be addressed. Costs will be lowest in those catchments/regions where early preventive action can be taken. Conversely, costs will be highest in those catchments/regions that have been extensively cleared with significantly degraded waterways.

Community Role

The regional community role in the framework of the NAPSWQ is crucial and lies principally in the development of integrated management plans and the delivery of desired outcomes, including the negotiation of trade-offs needed to give effect to the plan.

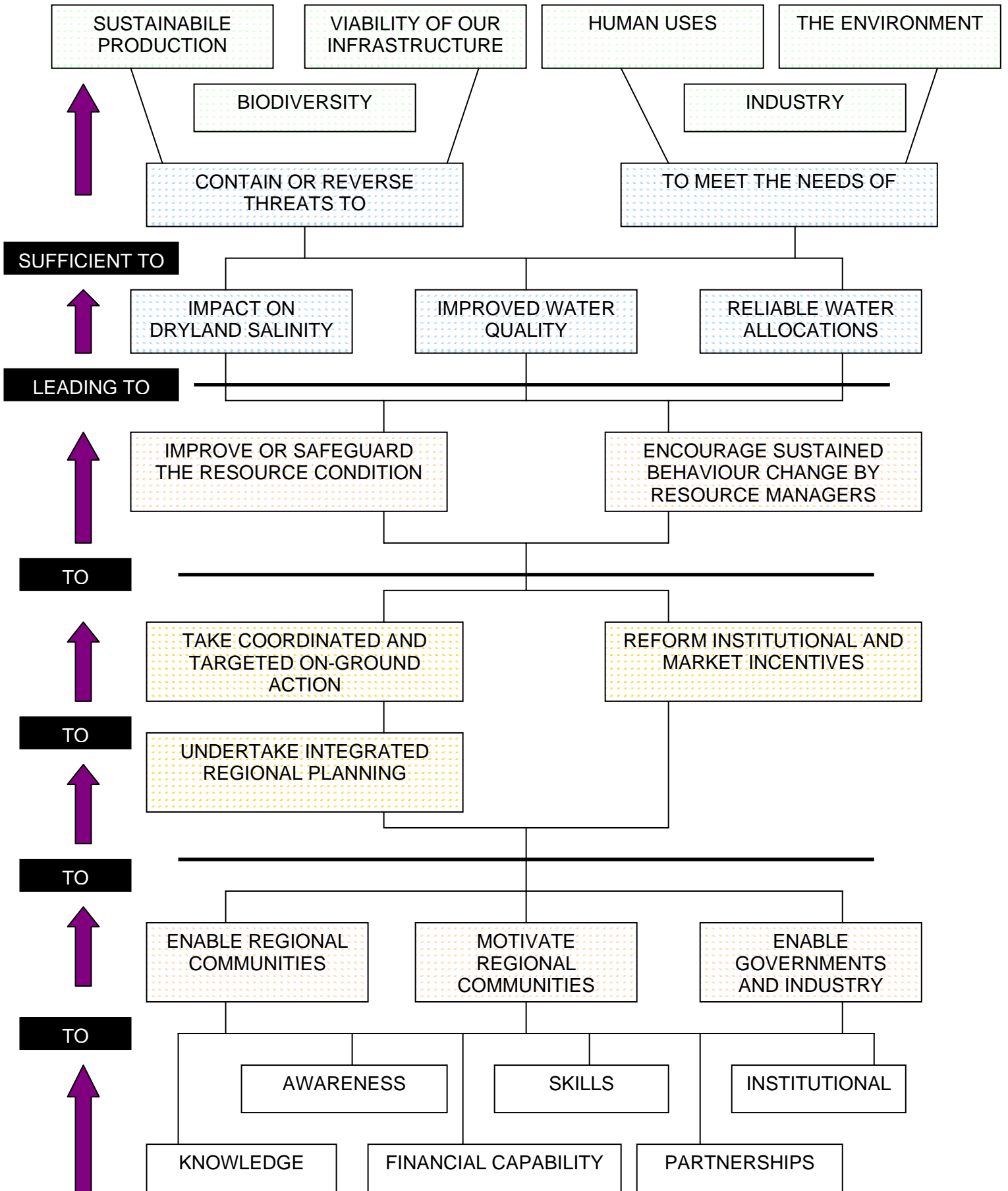
The requirements themselves will need to be agreed by the Australian Government and States and Territories in consultation with the community. The requirement will include targets for salt and nutrient levels, water quality and biodiversity that the community can pursue in their integrated plans.

The Australian Government and States and Territories will ensure that appropriate community bodies are in place to implement the NAPSWQ. These arrangements may vary from jurisdiction to jurisdiction.

Program Logic

An analysis of the mechanisms, assumptions and risks that underpin the NAPSWQ has been documented as a program logic diagram, which is included as **Annex B**. Monitoring of the NAPSWQ will be based on this logic to provide information on progress in implementing the program and provide an indication of progress towards the achievement of resource condition change. Evaluation of the NAPSWQ will test the underlying assumptions, and assess the extent to which the program has achieved its intended outcomes.

NATIONAL ACTION PLAN FOR SALINITY AND WATER QUALITY – PROGRAM LOGIC



THE NATURAL HERITAGE TRUST EXTENSION (the Trust)

Lessons learnt from the first phase of the Trust and the establishment of the National Action Plan for Salinity and Water Quality (NAPSWQ) have been taken into account in the finalisation of the framework. There will be a fundamental shift in the Trust towards more strategic investment.

The model for regional investment under the extension of the Trust will be based on that used for the NAPSWQ, including bilateral and regional partnership agreements, investment against accredited regional plans, and the provision of foundation and priority funding.

Trust objectives

The Trust has the following three overarching objectives:

- **Biodiversity Conservation** - the conservation of Australia's biodiversity through the protection and restoration of terrestrial, freshwater, estuarine and marine ecosystems and habitat for native plants and animals.
- **Sustainable Use of Natural Resources** - the sustainable use and management of Australia's land, water and marine resources to maintain and improve the productivity and profitability of resource based industries.
- **Community Capacity Building and Institutional Change** - support for individuals, landholders, industry and communities with skills, knowledge, information and institutional frameworks to promote biodiversity conservation and sustainable resource use and management.

These overarching objectives are the basis for defining the four programs and the development of the ten areas of activity.

Trust programs

The Trust has four programs. These programs establish the resource condition outcomes that will be sought through Trust investment.

- **The Landcare Program** will invest in activities that will contribute to reversing land degradation and promoting sustainable agriculture.
- **The Bushcare Program** will invest in activities that will contribute to conserving and restoring habitat for our unique native flora and fauna which underpins the health of our landscapes.
- **The Rivercare Program** will invest in activities that will contribute to improved water quality and environmental condition in our river systems and wetlands.
- **The Coastcare Program** will invest in activities that will contribute to protecting our coastal catchments, ecosystems and the marine environment.

Scope of Activity

The following 10 areas of activity define the scope of Trust investment:

1. protecting and restoring the habitat of threatened species, threatened ecological communities and migratory birds;
2. reversing the long-term decline in the extent and quality of Australia's native vegetation;
3. protecting and restoring significant freshwater, marine and estuarine ecosystems;
4. preventing or controlling the introduction and spread of feral animals, aquatic pests, weeds and other biological threats to biodiversity;

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5. establishing and effectively managing a comprehensive, adequate and representative system of protected areas;
 6. improving the condition of natural resources that underpins the sustainability and productivity of resource based industries;
 7. securing access to natural resources for [productive purposes];
 8. encouraging the development of sustainable and profitable management systems for application by land-holders and other natural resource managers and users;
 9. providing land-holders, community groups and other natural resource managers with understanding and skills to contribute to biodiversity conservation and sustainable natural resource management; and
 10. establishing institutional and organisational frameworks that promote conservation and ecologically sustainable use and management of natural resources.

Natural resource management priorities will vary between regions and between States/Territories, as will the extent to which the areas of activity identified for Trust investment are addressed in regional plans. It is, therefore, not anticipated that each regional NRM plan will necessarily address all of the ten areas of activity. Similarly, equal emphasis may not be applied to all components of a single area of activity within a regional plan.

Investment under the Trust will be available for salinity and water quality measures across Australia, including in NAP regions. At least \$350 million of the Trust funds will be invested directly on measures to improve water quality.

Levels of investment

Investment under the Trust will occur at three levels: national/state; regional; and local. Transitional arrangements will be necessary to provide support for ongoing work consistent with expected regional priorities, to build on the outcomes of existing Trust investments, and to maintain momentum and continuity within communities.

National / State Investments

Investment at this level will address activities that have a broadscale, rather than a regional or local, outcome. This will include activities at the state-wide level, as well as those that cross over state and regional boundaries. It will also address matters of direct Commonwealth jurisdiction, such as those relating to Commonwealth waters.

National/State investments can be grouped together into three sets:

Commonwealth activities: giving effect to Federal Government environmental and natural resource responsibilities and priorities, and implemented solely by the Commonwealth or in partnership with other jurisdictions;

Joint Commonwealth and State/Territory activities: including cross-jurisdictional activities, identified and agreed jointly by the Commonwealth and the States/Territories; and,

State-wide and within-State activities: identified and agreed to jointly by the Commonwealth and the States/Territories.

Investment priorities are likely to cover National / State activities such as resource assessment, research, industry strategies, innovative approaches to managing NRM issues such as weeds, marine species and protected areas, reserve acquisitions, training and information, and national coordination/facilitation.

While at the National / State level the four programs will form four discrete funding sources, complementary outcomes will be pursued. Investment priorities will be funded from one or more of the four programs depending on the nature of the activity in question.

Regional investments

This will be the principal delivery mechanism for the Trust and will follow, as far as practical, the model developed for the NAP. Under this model, investment is made on the basis of an accredited, integrated NRM plan and investment strategy/proposal developed by the region.

Plans which seek accreditation for Trust investment will identify all of the NRM issues in a region (based on the best available scientific and technical information), develop actions to address these issues and then prioritise the most important issues for action. They will also set resource condition and management action targets based on agreed national standards.

The requirement that plans be based on rigorous scientific and technical information, and that they set achievable natural resource condition targets, will require the Trust to invest in research. As many plans will be based on existing regional and catchment plans, the nature and subject of the research for which funding may be provided will need to be carefully targeted and determined on a case by case basis.

Investment proposals for Trust funding submitted to the Commonwealth and relevant State/Territory after plan accreditation must demonstrate how the actions for which funding is sought meet the areas of activity for investment established for the Trust.

In the NAP priority regions the delivery of Trust and NAP funding will be integrated, subject to the requirements necessary to meet separate auditing and evaluation requirements for the two programs.

A process is currently under way to review the accreditation criteria developed by the NAP to ensure that plans accredited under the criteria can be used as a basis for investment under a range of programs including the NAP and the Trust.

At the regional level the four programs will be integrated and complementary outcomes will be pursued.

Regional boundaries will be established using the following principles:

- i. regions will be based on integrated NRM considerations
- ii. regions reflect, where possible, existing regional arrangements
- iii. relevant regions incorporate coasts and adjacent waters.

A consequence is that the NRM regions used for the Trust will not be inconsistent with the NAP arrangements.

Where regional arrangements are less well defined, for example in the rangelands, the Australian Government, rangelands States and the Northern Territory will jointly determine the approach to be taken. Cross border arrangements for any region would need to be developed on a case-by-case basis.

Trust investment in the rangelands may occur outside a regional framework, but still within the areas of activity identified for Trust investment.

Bilateral and Regional Agreements

The Trust bilateral agreements will be based primarily on the structure used for the NAP bilateral agreements, and will draw on the existing Trust Partnership Agreements and Memoranda of Understanding.

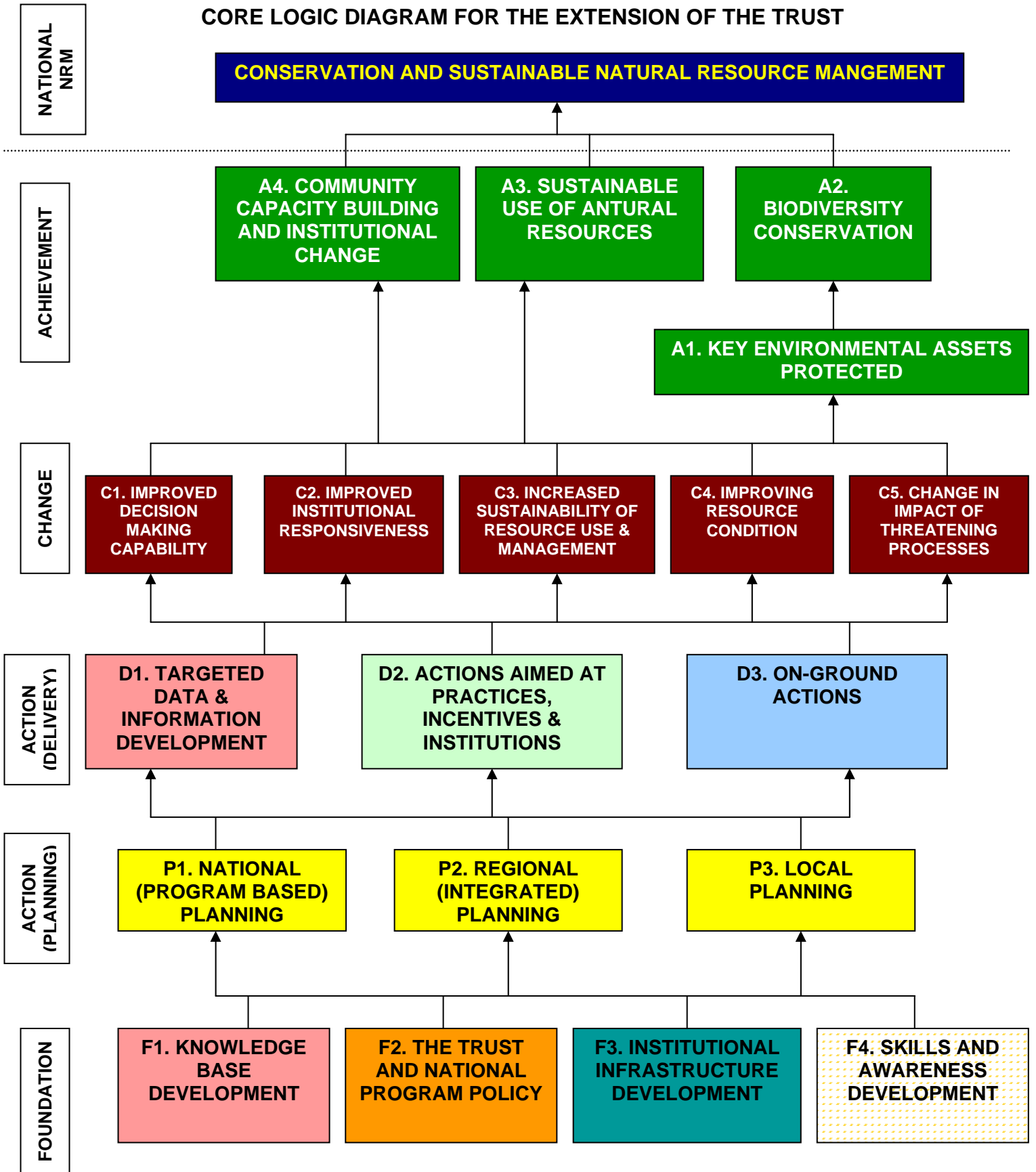
The bilateral agreements will establish a framework under which the Parties will work cooperatively for the purposes of section 19 of the *Natural Heritage Trust of Australia Act 1997*.

The bilateral agreements will address institutional change required to underpin Trust delivery. This will include the institutional reforms agreed under the NAP IGA being applied to Trust regions.

Where coastal areas are included in NRM regions, the NRM plans to be accredited under the extended Trust are to be developed in cooperation with the land managers/agencies that have statutory coastal management responsibilities within each jurisdiction.

All jurisdictions support the engagement of local government in the delivery of the Trust. To implement regional delivery of Trust investment, agreements will be developed with each agreed local government/regional group describing the management and accountability arrangements. The process for developing the agreements within each State and Territory will be determined through the bilateral agreements.

CORE LOGIC DIAGRAM FOR THE EXTENSION OF THE TRUST



ANNEX C

National Outcomes, Matters for Targets and Indicators

National Outcomes	Matters for which Regional Targets must be set	Indicators
	Resource Condition Matters for Targets	
1. The impact of salinity on land and water resources is minimised, avoided or reduced. 2. Biodiversity and the extent, diversity and condition of native ecosystems are maintained or rehabilitated. 3. Populations of significant species and ecological communities are maintained or rehabilitated. 4. Ecosystem services and functions are maintained or rehabilitated. 5. Surface and groundwater quality is maintained or enhanced. <i>See next page for (6) – (8)</i>	1. Land salinity. 2. Soil condition. 3. Native vegetation communities' integrity. 4. Inland aquatic ecosystems integrity (rivers and other wetlands). 5. Estuarine, coastal and marine habitats integrity. 6. Nutrients in aquatic environments. 7. Turbidity / suspended particulate matter in aquatic environments. 8. Surface water salinity in freshwater aquatic environments. 9. Significant native species and ecological communities. 10. Ecologically significant invasive species.	Area of land threatened by shallow or rising water tables. Soil condition. Native vegetation extent and distribution. Native vegetation condition. River condition. Wetland ecosystem extent and distribution. Wetland ecosystem condition. Estuarine, coastal and marine habitat extent and distribution. Estuarine, coastal and marine habitat condition. Nitrogen in aquatic environments. Phosphorus in aquatic environments. Turbidity / suspended solids. In-stream salinity. Selected significant native species and ecological communities extent and conservation status. Selected ecologically significant invasive species extent and impact.

National Outcomes (cont.)	Management Action Matters for Targets	Indicators
<p>6. The impact of threatening processes on locations and systems which are critical for conservation of biodiversity, agricultural production, towns, infrastructure and cultural and social values, is avoided or minimised.</p> <p>7. Surface water and groundwater is securely allocated for sustainable production purposes and to support human uses and the environment, within the sustainable capacity of the water resource.</p> <p>8. Sustainable production systems are developed and management practices are in place which maintain or rehabilitate biodiversity and ecosystem services, maintain or enhance resource quality, maintain productive capacity and prevent and manage degradation.</p>	<p>1. Critical assets identified and protected.</p> <p>2. Water allocation plans developed and implemented.</p> <p>3. Improved land and water management practices adopted.</p>	<p>Critical Assets Register</p> <p>Water Allocation Plans</p> <p>Adoption of sustainable Management Practices</p>

REPORTING CATEGORIES

Table 1

Reporting Categories MANAGEMENT ACTION TARGETS	
Category	Descriptor
Resource Assessment	Purpose: Informs capacity and decision-making Includes: Applied science, data collection, analysis and modelling
Planning	Purpose: Structure and sequence priorities and actions Includes: Document and plan development using resource assessment data and minor studies, and expert and community inputs
Capacity Building	Purpose: Develop people's decision-making capabilities and motivates their involvement Includes: Dissemination of information and knowledge to all levels (e.g. community to government)
Adoption of Improved Practice	Purpose: Progress towards improved land management practices Includes: Commitment to improved practices including industry codes of practice and recognised management practices
On-ground works	Purpose: Real time works or actions to achieve resource condition outcomes Includes: Works and actions on-ground, and management of private land covenants and agreements

Table 2

Reporting Categories OUTPUTS	
Category	Descriptor
Resource Assessment	Purpose: Informs capacity and decision-making Includes: Applied science, data collection, analysis and modelling
Planning	Purpose: Structure and sequence priorities and actions Includes: Document and plan development using resource assessment data and minor studies, and expert and community inputs
Capacity Building	Purpose: Develop people's decision-making capabilities and motivates their involvement Includes: Dissemination of information and knowledge to all levels (e.g. community to government)
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On-ground works	Purpose: Real time works or actions to achieve resource condition outcomes Includes: Works and actions on-ground, and management of private land covenants and agreements

Table 3

Reporting Categories and their Sub-Categories OUTPUTS	
Category	Sub-Category
Resource Assessment	Research and development studies (e.g. applied science – genetic, new methods) Investigations (e.g. surveying, inventory, mapping and data analysis) Baseline, trend and condition for targets (e.g. RC MfT, MATs, social & economic) Decision support tools (e.g. software) Other

Planning	Resource (management) plans Integrated (sub-) Catchment plans Property management plans Improved practice codes or guidelines (e.g. design or resource management guidelines) Other
Capacity Building	Awareness raising (e.g. media, agricultural show, display, leaflet) Skills and training (e.g. seminars, field demonstration, training kit) Facilitation and motivation (e.g. 'Care program) Institutional change (e.g. non-statutory change) Other
On-ground works	Private land conservation adjustment (e.g. major incentives to change/restructure) Conservation by private land agreements Protect, revegetate, regenerate or rehabilitate vegetation Native seedbank, seedling and nursery management Significant flora and fauna species management including freshwater Significant ecological community management Significant pest vertebrates control (including freshwater) Significant pest plant control – primary species (including freshwater and marine) Soil management Water contaminant management (e.g. chemical, nutrient, sediment, litter, metals) Water use efficiency Riparian, waterway, wetland & estuary management Salinity-control measures Coastal management Marine management Other

Table 4

Trial Reporting Categories, Sub-Categories, and Output Measures		
OUTPUTS		
Output Category	Subcategory	Output Unit of Measure
Capacity Building	Awareness raising activities	<ul style="list-style-type: none"> Number of non-training forums (eg demonstrations, field days, study tours, field trips etc) <u>and</u> number of participants in person-days. Number of non-training products or materials developed (e.g. brochures, newsletters, displays, etc.), <u>and</u> quantity distributed Number of media opportunities (articles, radio interviews) Number of websites developed
	Facilitation, motivation and support activities	<ul style="list-style-type: none"> Number (EFT) of active community support positions (e.g. facilitators, coordinators etc.). Number of community groups (e.g. Landcare) or community projects assisted.
	Skills and training activities	<ul style="list-style-type: none"> Number of skills and Training events (e.g. training sessions, workshops and seminars) held <u>and</u> number of participants in person-days. Number of key materials (e.g. workbooks, course notes etc.) developed <u>and</u> quantity distributed.

Trial Reporting Categories, Sub-Categories, and Output Measures
OUTPUTS

Output Category	Subcategory	Output Unit of Measure
On-ground works	Conservation by agreements	<ul style="list-style-type: none"> • Numbers of, <u>and</u> area (ha) covered by Legal Conservation covenants and other legal agreements • Numbers of, <u>and</u> area (ha) covered by Voluntary conservation agreements
	Indigenous Vegetation Protected by Fencing, (Riparian, Terrestrial & Coastal) <i>Protection provided through ; 'Conservation by agreements' is to be recorded against that output category</i>	<ul style="list-style-type: none"> • Area (ha) of indigenous/local-origin vegetation protected by fencing; by riparian, terrestrial or coast; • <u>and</u> Length (km) of riparian vegetation protected (provide both measures if riparian vegetation)
	Indigenous Vegetation enhanced / improved/ rehabilitated (Riparian, Terrestrial & Coastal)	<ul style="list-style-type: none"> • Area (ha) of indigenous/local-origin vegetation enhanced; by riparian, terrestrial or coastal • <u>And</u> Length (km) of riparian vegetation enhanced/rehabilitated (provide both measures if riparian vegetation)
	Revegetation with Indigenous Vegetation, (Riparian, Terrestrial & Coastal)	<ul style="list-style-type: none"> • Area (ha) planted to indigenous/local-origin species; by riparian, terrestrial or coastal • Length (km) of riparian vegetation protected (provide both measures if riparian vegetation)
	Revegetation with Non-Indigenous Vegetation, (Riparian, Terrestrial & Coastal)	<ul style="list-style-type: none"> • Area (ha) of non-indigenous perennial pastures; by whether it is riparian, coastal or terrestrial • Area (ha) of non-indigenous plantation; by whether it is riparian, coastal or terrestrial • Area (ha) of other exotic or mixed native/exotic (non-indigenous) vegetation planted; by whether it riparian, coastal or terrestrial
	Riparian and waterway health (Riparian Vegetation. <i>To record revegetation for this purpose use either the three Indigenous Vegetation' or 'Revegetation with Non-Indigenous Vegetation')</i>	<ul style="list-style-type: none"> • Length (km) of stream <u>bank</u> stabilised and number of structures. • Length (km) of stream <u>bed</u> stabilised and number of structures • Number of off-stream (alternative) watering sites installed • Length (km) of instream habitat established <u>and</u> number of large woody debris replaced. • Number of Fish barriers addressed • Length (km) of stream opened up to fish passage • Number of off-river stock watering points established
	Wetlands health protected or enhanced.	<ul style="list-style-type: none"> • Area (ha) of wetland protected • Area (ha) of wetland enhanced/rehabilitated • Area (ha) of wetlands with reinstated connectivity

Trial Reporting Categories, Sub-Categories, and Output Measures

OUTPUTS

Output Category	Subcategory	Output Unit of Measure
	Management of either Significant species of fauna or flora or significant ecological communities (Identify as Riparian, Terrestrial or Coastal).	<ul style="list-style-type: none"> • Area (ha) of Habitat management (eg ecological burns/fire hazard removal) • Area (ha) protected by fencing for the specific purpose of significant species/community protection.
	Significant pest plant control	<ul style="list-style-type: none"> • Area (ha) of pest plant control
	Significant pest vertebrate control	<ul style="list-style-type: none"> • Area (ha) of pest animal control, by type of pest animal (e.g. rabbits, foxes)
	Soil management <i>To record revegetation for this purpose use either 'Revegetation with Indigenous Vegetation' or 'Revegetation with Non-Indigenous Vegetation'</i>	<ul style="list-style-type: none"> • Area (ha) of land <u>and</u> number of sites treated for soil erosion through Engineering/works (eg: includes gully battering) • Area (ha) of land, <u>and</u> number of sites treated for soil erosion through Exclusion fencing • Area (ha) of treatment for Acid Sulfate Soils (ha) • Area (ha) of soil treatment for other than erosion, salinity, or acid sulfate soils (e.g. clay/chemical addition)
	Salinity control measures	<ul style="list-style-type: none"> • Area (ha) of land treated for rising groundwater through surface drainage <u>and</u> length (km) of drain • Area (ha) of land treated for rising groundwater through sub-surface drainage <u>and</u> length (km) of drain • Area (ha) of land treated for rising groundwater through groundwater pumping • Area (ha) of land treated by salt evaporation ponds
	Water contaminant management	<ul style="list-style-type: none"> • Number of, <u>and</u> volume (ML) or amount (tonnes) of effluent removed or contained by Sewage plant • Number of, <u>and</u> volume (ML) or amount (tonnes) of effluent removed or contained by human effluent disposal other than sewage plant e.g. septic • Number of, <u>and</u> volume (ML) or amount (tonnes) of effluent removed or contained by animal effluent control works – animal (e.g. dairy, settlement ponds, urban dog) • Number of stormwater quality control devices <u>and</u> constructed wetlands. • Number of new stormwater reuse systems added

Trial Reporting Categories, Sub-Categories, and Output Measures		
OUTPUTS		
Output Category	Subcategory	Output Unit of Measure
	Water Use Efficiency	<ul style="list-style-type: none"> • Area (ha) of land <u>and</u> number of land managers using improved irrigation practices (e.g. by using Upgraded Systems and/or Improved Management) • Volume (ML) of water saved <u>and</u> number of on-farm reuse system (where reuse system principally for improved irrigation use ha serviced in area of land using improved practice category) • Volume (ML) of water saved <u>and</u> number of land managers using on-farm water saving practice by drainage diversion • Volume (ML) of water saved using off-farm water mechanisms (e.g. piping of open channels, lining channels or storages) • <u>and</u> Length (km) of channel improved or piped if applicable
	Bore Capping (for recharge control, groundwater conservation and water quality)	<ul style="list-style-type: none"> • Number of groundwater bores capped.
Planning	Improved practice codes or guidelines <i>(eg sustainable farming, rabbit control, environmental)</i>	<ul style="list-style-type: none"> • Number of best management practice guidelines developed
	Integrated catchment or sub-catchment plans <i>(eg bioregional action plans, regional River Health Strategies, Land and Water Management plans, etc).</i>	<ul style="list-style-type: none"> • Number of plans developed
	Property management plans <i>(eg Whole Farm Plans)</i>	<ul style="list-style-type: none"> • Number of property management plans completed
	Species Recovery plans and Action Statements	<ul style="list-style-type: none"> • Number of endangered species action statements and recovery plans developed
Resource assessment	Baseline, trend or condition studies for targets	<ul style="list-style-type: none"> • Number of baseline, trend or condition Studies • Number of sites monitored (eg water quality, piezometers, asset evaluations, vegetation, wetlands etc).
	Decision support tools (eg models, information management systems)	<ul style="list-style-type: none"> • Number of decision support tools.

Trial Reporting Categories, Sub-Categories, and Output Measures
OUTPUTS

Output Category	Subcategory	Output Unit of Measure
	Investigations including survey, inventory and mapping and data analysis.	<ul style="list-style-type: none"> Area (ha) surveyed (eg vegetation mapping, salinity hazard mapping, marine surveys, soil surveys) <u>and</u> number of studies undertaken <u>and</u> length (km) surveyed if riparian (riparian needs to include both ha and km).
	Research and development studies	<ul style="list-style-type: none"> Number of Research and development studies undertaken

ANNEX E: Key Outcomes to be progressed at the State Level

E1. Management Actions

Key Outcomes by MAT Categories and Components		Measure	Responsible Agency/ Action Authority	Capture Mechanisms	Current Status	Monitoring Issues (Operational)	Evaluation Issues (Improvement)	Gaps	Actions/ Resources	
Management Actions	Resource Assessment	Monitoring								
		Monitoring data o Long term strategy to develop and maintain data for core set of agreed NRM indicators	Integrated ASAP cross-departmental agreement on NRM data capture responsibilities	NRM&E (NLWRA / MEWG advice)	Strategic data capture plan or MOU	Required datasets identified, discussion paper circulated. Ongoing discussion		Do datasets meet the needs of regional bodies as well as agencies?		
		Research & Development								
		Regional resource data o Existing State NRM datasets with simplified license arrangements available to regional bodies	Datasets available and accessed	NRM&E Information Policy (NAPSWQ Bilateral 16.1a, 17.6; IFA Clause 67)	<ul style="list-style-type: none"> State wide project IMO1 ENRII Data portal populated with interdepartmental datasets. 	Arrangements proceeding for NRM datasets	Available datasets only	Are the data sets appropriate and adequate?	To be determined	
		o State Social / Economic Datasets at regional scale available to regional bodies	Datasets available and accessed	NRM&E Social & Econ unit with OESR (NAPSWQ 16.1 & Attachment 2)	State wide project SEO 2 operational	<ul style="list-style-type: none"> OESR data accessible by regional bodies Portal Available in November 	Datasets cookie-cut social & economic data to new boundaries – some error inherent	Are the data sets appropriate and adequate?		
	Planning	Investigations								
		Mapping, surveys & inventories o Rapid salinity hazard assessment	Salinity hazard assessment information and maps available	Salinity SIPs / NRM&E (NAPSWQ Bilateral 16.1a, 20.5b)	State wide Salinity Project reports to Salinity Program Implementation Board	Salinity hazard maps under production for each NAPSWQ region - Balonne/ Maranoa, Fitzroy & Burdekin available.	Use of maps in creation of regional NRM plans	Usefulness of maps		
		Resource Management Plans								
		Water Resource Plans o WRP's in place across each NAP region	WRPs & ROPs in NAPSWQ / NHT2 regions	NRM&E (NAPSWQ Bilateral, 19.4(c) Attachment 5 & 19.5 c.)	Progress update from Water Planning	Burnett NAPSWQ region WRP and ROPs finalised: <ul style="list-style-type: none"> Approved WRP's finalised for the Moonie, Border Rivers and Fitzroy Catchments. 	Review Water Resource Plans (Water Act 2000) to ensure logical link with regional NRM plans; review regularly.			
		o Upgrade water entitlements registration database and establish Water Allocations Register	Database's currency	NRM&E (NAPSWQ Bilateral 19.6(a) and (b))	Progress updates from Water Planning	Completed				
Regional Vegetation Management Plans o RVMPs in place across each NAP region	RVMPs in NAPSWQ / NHT regions	NRM&E & RVMP Committees (NAPSWQ Bilateral 20.3)	Progress updates from Vegetation Planning	Of 11 RVMP's, draft plans in NAPSWQ priority investment regions have been released for public comment for: <ul style="list-style-type: none"> Southern Desert Uplands Einasleigh Uplands (S), Desert Uplands (N), Coastal Wide Bay, Inland Burnett, South- East Qld, and Southern Brigalow Bioregion 	Review and revise consistency between regional NRM plans and Regional Vegetation Management Plans (RVMP)					
Integrated Resource Management Plans										

			<ul style="list-style-type: none"> Number accredited NRM Plans RIS funding offered 	SCG & RCGs in support of regional bodies (NAPSWQ 6.1 & Attachment 2)	JSC decisions minuted	<ul style="list-style-type: none"> One NAPSWQ plan in penultimate draft form All NAPSWQ regions in planning process, funded for FF 			<ul style="list-style-type: none"> Guidelines for RIS incomplete Draft Plan Development guidelines still under review 	
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Key Outcomes by MAT Categories and Components		Measure	Responsible Agency	Capture Mechanisms	Current Status	Monitoring Issues (Operational)	Evaluation Issues (Improvement)	Gaps	Actions/Resources		
Awareness Raising / Information and Motivation											
Management Actions	Capacity Building	Communication o State wide NAPSWQ communication strategy in place and functioning	Communication Plan	NRM&E (JSC decision 4.9, Mtg 9 State wide project COM01)	Communication Plan approved in SCG minute	Endorsed by SCG		Ongoing effectiveness	Communications M&E Strategy		
		o Program acknowledgments	Acknowledgment protocols	All partners (NAPSWQ 31.1, 31.2; IFA Clause 64,65)	Self report	As Annex in Activity Agreements for RB					
		Motivation o Market-based approaches commonly adopted	Uptake of market-based instruments	NRM&E, SPRA Policy Team (NAPSWQ Bilateral 16.1d)	Detailed in Plans	11 pilot projects underway by December around Australia, 2 in Queensland. Learnings to be shared across jurisdictions.				No advice documents available for RB	
		Information o Relevant R&D info available to Regional Bodies, esp. new sustainable production systems	Availability of new sustainable production systems	JSC (State wide projects NAPSWQ Bilateral 24.7)	Agricultural SIPs	Ag SIP approved, developing Schedule 2					
		o Agreed data access & management protocols in place	Version of ANZLIC Data Access & Management protocols	NRM&E Information Policy (NAP Bilateral 17.6; IFA Clause 67)	MOU in place	Under negotiation			Due 1/11/02		
		Information capture o Annual reporting by regional bodies on progress to QLD & Australian Government	MER Information & structures	NRM&E MER & MERRWG (NAPSWQ Bilateral 17.2e)	Coordinated system or common database Reporting templates used	Scoping project for ISRA Agreed reporting formats & templates in development	Sensible & useful to all stakeholders	Meets multiple objectives: • GIS, publicity, financial, communication, project management needs		Still in development	
		o Annual reporting by regional bodies on progress to QLD & Australian Government	Annual Reports	NRM&E (NAPSWQ Bilateral 30.3(b)) & 30.4 (a) – (e); IFA Clauses 59-62; NHT Act 1999 (Att3))	Annual NAPSWQ & NHT reports submitted to Ministers & NRM Ministerial Council	2002-2003 NHT Report under production 2002-2003 NAPSWQ Report under production	Development of adequate informative performance monitoring system and forms	Informative to all stakeholders	Reporting forms under development; reporting sub-categories & metrics to be trialled in 2003/4		
		Skills & Training									
		Knowledge, skills and abilities o Support for enhanced knowledge, skills and abilities for all partners to the NAP incl. S&E assessment and interpretation	State wide capacity building projects	NRM&E & SIP coordinators & leaders (NAP Bilateral 24.7)	NAPSWQ SIP reporting / agreed SIP evaluations	On-going	SIP evaluation under development • Outputs ID'd • Cap Bldg guide produced ready for consultation	Appropriateness of matters for state wide capacity-building project		Social & Economic SIPs across the board	

o Range of guidance materials available, including guidelines to the accreditation criteria for development of Regional NRM Plans and for the development of regional investment strategies.	Guidance materials publicly available	NRM&E to coordinate through PAWG (NAPSWQ Bilateral 12.8, 13.5)	On Website	Completed Planning Guidance documents -- 8 of the 14 planned* guidance documents, including Plan Development are available, remaining 6 are currently under development				
	Decision-support systems	JSC or plan accreditation / RIS endorsement body (NAPSWQ Bilateral 16.1)	Regional NRM Plans					
o Build capacity to use data for improved decision-making	Development of Landholder Monitoring Guide	NRM&E – Natural Resource Sciences with RGC, M&E Working Group, MERRWG and others	Self Report	Publication Stage 1 by June 2004 – ongoing	Reports to Project Steering Group, NRM&E Review and Approval protocol established	Consistent with national state and regional standards		
Institutional Change								
Regional Arrangements established o RB level Administrative arrangements agreed & in place	<ul style="list-style-type: none"> NAPSWQ regional bodies accredited NHT regional bodies designated 	JSC with NRM&E (NAPSWQ Bilateral 6.1, 6.2) (IFA Clause 39, 40, 42)	JSC minuted decisions	<ul style="list-style-type: none"> Complete -- 6 NAPSWQ bodies accredited On-going 		Continuous improvement commitment in regional NRM plans		
o State level Administrative arrangements agreed & in place	<ul style="list-style-type: none"> Agreed identification, auditing & reporting arrangements to match AG funds w/ cash and in-kind IAG established CY IAG established 	NRM&E lead with all agencies NAPSWQ (JSC Financial Management Protocol; IFA Clauses 14, 17) / (IFA Clause 54) / (IFA Clause 48)	<ul style="list-style-type: none"> Financial Management Protocol in place IFA functioning/ advising CY IFA functioning 	<ul style="list-style-type: none"> Under negotiation Functioning well Pending 	<ul style="list-style-type: none"> Ease of reporting Managing expectations 			
o Effective regional arrangements to deliver integrated NRM outcomes	Long-term effectiveness evaluation	CRC Tropical Savannahs w/ NRM&E (HRA paper)	Regional Arrangements Improvement Strategy	On-going				

Key Outcomes by MAT Categories & Components		Measure	Responsible Agency	Capture Mechanisms	Current Status	Monitoring Issues (Operational)	Evaluation Issues (Improvement)	Gaps	Actions/Resources
On-ground Works	Governance o Regional bodies at least incorporated and continuing to progress governance capabilities	<ul style="list-style-type: none"> Continuous improvement in governance capabilities Business excellence framework tailored to regional body business 	JSC (IFA Clauses 39, 42)	<ul style="list-style-type: none"> Bi-annual reporting against checklist Use of tailored framework 	<ul style="list-style-type: none"> Biannual reporting tool in place SEO3 project adaptation endorsed by RGC, pilot studies in 4 regions being designed 	<ul style="list-style-type: none"> Incorporate into Plan Continuous Improvement system 			
	Partnerships o Effective participation with partners including with research & development	Effective partnerships w/in region	NRM&E w/ RCGs (HRA paper)	Business excellence framework tailored to regional body business	Adaptation endorsed by RGC, pilot studies being designed				
	o Develop framework for Partnership Agreements	Partnership Agreement template	NRM&E w/ SCG and JSC (NAPSWQ Bilateral 14.1 & 30.3)	JSC signoff on template	Accreditation criteria prerequisite underway. MER requirements agreed for trial.				
Incentive works									

Regional NRM Planning Guidance available to date:

- o Plan Development Guidelines (v.2)
- o Forms of Planning
- o Integration of Regional Planning Process
- o Integrated Capacity Building Guidelines in Regional Planning
- o Corporate NRM Governance
- o Supporting Integration of Regional Vegetation Management Planning with Regional NRM plans and arrangements
- o Economic and Social Issues in Regional Natural Resource Management Planning
- o Guidelines for involving Aboriginal and Torres Strait Islander peoples in: The establishment of natural resource management bodies, The development of the regional natural resource management plan and investment strategy. .

TERRESTRIAL ECOSYSTEMS										
Resource condition Matter for Target	Indicator headings (TEMPLATE Reference) ¹	Indicators	Responsible Agency	Existing Monitoring	Current Status	Monitoring issues Eg. scale, timing, frequency	Evaluation Issues	Gaps	Actions / Resources	
Extent and distribution of regionally significant ecosystems	Native vegetation extent and distribution (DRY 01) (For regionally significant native vegetation that is the subject of targets in regional plans)	The extent of native vegetation by IBRA ² subregion measured in hectares.	EPA	EPA vegetation survey and mapping report on remnant vegetation. NRM&E report on SLATS report on area of woody vegetation ³ .	On-going	<ul style="list-style-type: none"> Reported every 2 years. Reported data is 2 years old. 		Nil		
		The extent of each present native vegetation type by IBRA subregion measured in hectares.	EPA	EPA vegetation survey and mapping report on area of remnant vegetation by regional ecosystem.	On-going	<ul style="list-style-type: none"> Reported every 2 years. Reported data is 2 years old. Only covers 60% of Qld. 		Requires: <ul style="list-style-type: none"> Completion of Regional Ecosystem mapping by accelerating current program 		
			NRM&E	Land Use mapping, which will enable reporting on non-woody and non-native vegetation cover e.g. cropping, horticulture, residential/rural-residential, and information on grazing in cleared and wooded areas.	SIP Project	NAPSWQ priority catchments are currently being mapped.		Requires: <ul style="list-style-type: none"> Non-NAP catchments to be mapped. 		
		EPA	The proportion of each native vegetation type by IBRA subregion measured as a percentage of the pre-European extent.	EPA	EPA vegetation survey and mapping report on area of remnant vegetation by regional ecosystem as a proportion of pre-clearing ⁴ extent.	On-going	<ul style="list-style-type: none"> Reported every 2 years. Reported data is 2 years old. Only covers 60% of Qld. 		Requires: <ul style="list-style-type: none"> Completion of Regional Ecosystem mapping by accelerating current program 	
	Native vegetation condition (DRY 02) (For regionally significant native vegetation that is the subject of targets in regional plans)	The proportion of each native vegetation type in each IBRA subregion that is estimated to be in specific condition classes based on a selected set of attributes.	EPA	No State wide assessment					<ul style="list-style-type: none"> An agreed set of indicators for vegetation condition. High resolution remote sensing tools that map vegetation structure. Disturbance mapping for the State. Completion of Regional Ecosystem mapping. Re-establishment of site based monitoring program. 	
			EPA	Some project specific work focussed in the Brigalow Belt to test condition-mapping methodology.	Completed	<ul style="list-style-type: none"> Based on point source data, which can be difficult to extrapolate, and disturbance mapping which requires regular updating. No plans to continue monitoring effort at a number of site based vegetation condition monitoring plots in State Forest due to tenure change. 				
			EPA	Project specific work - Desert Uplands Biodiversity Planning Assessment Project.	Completion by June 2004	Based on remote sensing techniques. If method successful assessment could be extended to other rangeland bioregions i.e. where open vegetation occurs.				

¹ Further detail is provided in the draft Guidelines for Target Setting for Regional NRM Planning (September, 2003).

² Note that information collected using the Queensland bioregion classification system can be used to reported against the Interim Biogeographic Regionalisation of Australia (IBRA), and the Regional Vegetation Management Planning process.

³ Note remnant vegetation as defined by the Vegetation Management Act includes mature regrowth. Specifically, >70% height of undisturbed canopy and >50% canopy cover of vegetation.

⁴ Note that Queensland uses the term pre-clearing which native vegetation present on 1960s aerial photos, and modelled using historic aerial photos where cleared.

TERRESTRIAL ECOSYSTEMS									
Resource condition Matter for Target	Indicator headings (TEMPLATE Reference) ¹	Indicators	Responsible Agency	Existing Monitoring	Current Status	Monitoring issues Eg. scale, timing, frequency	Evaluation Issues	Gaps	Actions / Resources
Conservation status of significant ecological communities and native species	Selected significant native species and ecological communities extent and conservation status. (DRY 03)	For regionally significant species that are the subject of targets in regional plans:	Biodiversity status – EPA	Regional Ecosystem Biodiversity Status –based on REDD data.	On-going	Assessment based on expert opinion and updated intermittently.	No cost effective method currently exists for large areas. Remotely sensed data does not provide information on understorey condition.	Requires: • Investigation of cost-effective method to assess condition over large areas	
		• Range, area and location of each species. • Area, location and condition of key habitat of each species. • Relative abundance of each species.	Flora – EPA	Regular review by Threatened Species Committee, based on collected records	On-going			Requires: • Completion of Regional Ecosystem mapping by accelerating current program • Development and implementation of Recovery Plans for rare and threatened species	
		For significant ecological communities that are the subject of targets in regional plans:		No State wide assessment.	—				
		• Extent of each ecological community; estimated area (in hectares). • Condition of each ecological community	Fauna – EPA	Fauna surveys (using standardised, repeatable, systematically located methods) in SEQ and Brigalow Bioregions.	On-going	Since no re-survey planned, relies on one-off assessment.		Requires: • Development and implementation of recovery plans for species classified as endangered, vulnerable and rare. • Repeat surveys at strategically located sub-set of survey sites.	
Ecologically significant invasive species	Selected ecologically significant vertebrate and vegetation invasive species extent and impact (DRY 04)	⁵ Reduction in the impact of regionally significant vertebrate pests. The areal extent and density of weeds under selected regulatory controls that are being addressed by regional bodies or community projects.	⁶ Class 1 Pests ⁷ – NRM&E	Individual areas of infestation are assessed.	On-going	Monitoring reflects areas under complete control or areas of emerging distribution.		Class 2 Pest monitoring could be improved by: • Ground truthing representative geographic areas or pests. • Inclusion of other pest species possibly on the basis of regional significance.	
			Class 2 Pests ⁸ – NRM&E	Annual pest assessment.	On-going	• Mapped on scale of approx. 50 km ² . SEQ mapped on a scale of approx. 12.5 km ² . • 2003/04 is the first year of this assessment. • Future assessments will need to assess change from previous.	Expert / local opinion based on 6 categories of extent and impact.		
			Class 3 Pests ⁹ – NRM&E	No State wide assessment.					
			EPA	Some project specific work				Requires: • More comprehensive inventory.	

⁵ Note that the Australian Weeds Committee has recommended a revised set of indicator headings, which are likely to be adopted by the National Monitoring and Evaluation Working Group. These are:

- Area under management – For a community group, what is the areal extent of invasive vegetation (weeds) that they are actively managing.
- Reduced weed impact on threatened species or communities – The areal extent of threatened species habitat or threatened community in which a threatening weed or weeds has been contained or reduced in extent.
- Preventing the establishment of weeds – Detecting the establishment of weeds that are previously unknown in the management/project area and eradicating while still at a small scale.

⁶ Refer to Table E3 for location of declared pests in the landscape. **To be completed.**

⁷ A Class 1 pest is not commonly present in Queensland and, if introduced, would cause an adverse economic, environmental or social impact.

⁸ Class 2 pests are established in Queensland and have, or could have, an adverse economic, environmental or social impact. The management of these pests requires co-ordination and they are subject to local government-, community- or landowner-led programs.

⁹ Class 3 pests are established in Queensland and have, or could have, an adverse economic, environmental or social impact. A pest control notice can only be issued for land that is, or is adjacent to, an environmentally significant area. Thus, the impact of species in this class is primarily environmental.

LAND USE AND MANAGEMENT									
Resource condition Matter for Target	Indicator headings (TEMPLATE Reference ¹)	Indicators	Responsible Agency	Existing Monitoring	Current Status	Monitoring issues E.g. scale, timing, frequency	Evaluation Issues	Gaps	Actions / Resources
Land Salinity	Area of land threatened by shallow or rising groundwater tables (USE 01)	Depth to groundwater	NRM&E	<ul style="list-style-type: none"> Ambient groundwater bore monitoring program. Monitoring bores installed in upland areas (outside of alluvial areas) through NAPSWQ. 	On-going	<ul style="list-style-type: none"> Bores located in alluvium areas will continue to be monitored. Only limited monitoring of bores installed in upland areas to date. Funding is only available for a further 18 months. 		Requires: <ul style="list-style-type: none"> Increased density of bore sites. (This is partly addressed by the NAPSWQ drilling program.) Increased frequency of sampling. Secure funding for long term monitoring of existing (and newly installed) bores. Further investigation of methods to extrapolate information to other parts of the catchment. 	
		Deep Drainage (below root zone) & loss/gain in soil salinity/chloride	NRM&E	No current State wide monitoring Project specific work: <ul style="list-style-type: none"> Dryland cropping / grazing: Current in Eastern QMDB, starting in Fitzroy & southern Burdekin. Irrigation: in cotton (Condamine-Balonne, Emerald), in sugar (Burdekin) 	<ul style="list-style-type: none"> Most soil sites sampled once only. Few sampled over time. Limited period(s) of monitoring 	Requires: <ul style="list-style-type: none"> Good sampling protocols, well located sites Drainage is measured for specific periods – need models to extent data in time & space. 	Need good land use/irrigation history	<ul style="list-style-type: none"> Many gaps Further implementation of methods to extrapolate information to other parts of the catchment. 	
		Groundwater salinity	NRM&E	Ambient groundwater bore monitoring program. On-going	Limited to a small percentage of existing bores. Current sampling program insufficient to impacts and change at the catchment scale.	Requires: <ul style="list-style-type: none"> Regular monitoring, at least biannual. 		<ul style="list-style-type: none"> Increased number of bores sampled. 	Further investigation of methods to extrapolate information to other parts of the catchment.
		Location and size of salt affected areas	NRM&E	No current Statewide monitoring		Use of satellite imagery to identify salt affected areas is unlikely to be satisfactory in Queensland due to low resolution.		Requires: <ul style="list-style-type: none"> Development of Statewide database to record known salinity sites. Investigation of remote sensing techniques to record sites. 	
				Area of identified salinity based on visual assessment in the field.	On-going				

¹⁰ Further detail is provided in the draft Guidelines for Target Setting for Regional NRM Planning (September, 2003).

Soil condition	Soil condition								A monitoring program could be designed to address a number of soil condition indicators simultaneously. This would require: <ul style="list-style-type: none"> Review of land use and soil mapping to assess adequacy for site selection. Network of permanent soil monitoring sites across the State. 	
		Soil acidity (USE 02)	NRM&E	No Statewide monitoring				"Downstream" impacts of discharge of acidic waters in waterways need to be considered.	Requires: <ul style="list-style-type: none"> Statewide risk assessment based on land use and soil type to identify priority areas for further investigation. Monitoring of soil pH through the profile at "hot spots", at least biannually. 	
				Some project specific work focussed on prone land use / soil combinations (e.g. low pH soil, banana cropping).	On-going		Data assessment is required for this information to be useful to the regional NRM planning process.			
		Land erosion (water) (USE 03)	NRM&E	Surface water ambient network for stream flow.	On-going	<ul style="list-style-type: none"> Only limited stations have automated samplers. Current monitoring may not capture change in sediment concentration during storm events. Event sampling is resource intensive and the operator safety issues need to be carefully considered. 	<ul style="list-style-type: none"> Difficult to separate accelerated erosion from natural/baseline erosion. Data needs to be interpreted using land use and land management data. 	Requires: <ul style="list-style-type: none"> Increased intensity of sampling sites Increased frequency of event sampling Integrated assessment of current and historic project results Further investigation of sediment tracing techniques trailed in SEQ and Fitzroy Catchments 		
				Some project specific work e.g. neighbourhood catchments work in Fitzroy Catchment, Glenburn, Springvale, Brigalow Catchment Study, DPI&F grazing trials.	On-going					
		Wind erosion (USE 04)	NRM&E (information sourced from Griffith University)	No Statewide monitoring.				Difficult to separate land use from baseline wind erosion.	Requires: <ul style="list-style-type: none"> A network of dust monitoring sites. Method to discriminate accelerated wind erosion (from baseline) 	
				Some project specific work in the Channel country and other wind-prone regions.	On-going					
		Soil organic carbon Soil nutrient status (USE 05)	NRM&E	No Statewide monitoring				Soil carbon can be used as a surrogate measure of soil quality to assist the regional NRM planning process. Soil quality assessment combines fertility and soil condition but data are limited to topsoil only.	Requires: To be completed	
				Some project specific work in cropping lands.						
		Soil physical condition	NRM&E	No Statewide monitoring					Requires:	

		(USE 06)		Identified soil structural problems mostly based on visual assessment in the field.					<ul style="list-style-type: none"> Statewide risk assessment based on land use and soil type to identify priority areas for further investigation. 	
		Soil hydrophobicity (USE 07)	NRM&E	Use of this indicator for Queensland NRM is considered a low priority.						
		Soil biota (USE 08)	NRM&E	No Statewide monitoring.					Requires: <ul style="list-style-type: none"> Development of baseline information on baseline and responses to impacts, and tools for landholder use. 	
				Some project specific work in Qld Murray Darling Basin and through Rainforest CRC, Griffith Uni and UQ.		Responsive to change/management of local ecosystems. Generally not suitable for catchment scale indicator of soil health. Presents good indicator landholder use				
		Acid sulfate soils (ASS) (USE 09)	NRM&E	No Statewide monitoring (Some specific work at one site near Cairns).				Interpretation of water quality data from regional waterways needs to link to potential occurrence of ASS.	Requires: <ul style="list-style-type: none"> Statewide risk assessment mapping. Mapping of identified areas of actual ASS. Monitoring of land disturbance in ASS risk areas. Monitoring to determine effectiveness of management of potential ASS and remediation of actual ASS. 	
				ASS Risk mapping to identify monitoring locations is limited to SEQ and parts of Central Queensland (Gladstone and Mackay areas).	Limited to SEQ and parts of Central Queensland (Gladstone and Mackay areas)	Episodic nature of acid events requires the installation of automated monitoring stations for pH, EC and DO. Automated monitoring stations have high maintenance requirements due to high iron coatings. Monitoring of land disturbance in ASS risk areas could be done annually using Landsat remote sensed imagery.				
Ground Cover	Ground Cover	Extent of cover	DPI&F	No Statewide monitoring (Some scattered remaining Q-Graze monitoring sites remain)						Grazing Lands Monitoring Package ('Stocktake') being developed for NAPSWQ regions under Ag SIP Grazing Lands Management theme (Project 9)
		Condition of Cover	DPI&F	No Statewide monitoring						

AQUATIC ECOSYSTEMS									
Resource condition Matter for Target	Indicator headings (TEMPLATE Reference)	Indicators	Responsible Agency	Existing Monitoring	Current Status	Monitoring issues E.g. scale, timing, frequency	Evaluation Issues	Gaps	Actions / Resources
INLAND AQUATIC ECOSYSTEMS (River, Wetland)									
Extent and	River and Wetland	Extent of regionally	NRM&E	No Statewide monitoring.				Requires:	

distribution of regionally significant ecosystems	(WET 01)	significant rivers	EPA	Some project specific work on conservation vales in the Burnett Catchment.	Completed.			<ul style="list-style-type: none"> Agreed definition (and indicators) of Statewide regionally significant rivers. Agreed scale for consideration of significant rivers (eg. reach, stream order, sub-catchment). Statewide assessment of rivers of regional significance. 			
		Extent of regionally significant wetlands	EPA	<ul style="list-style-type: none"> No Statewide monitoring Some project specific work in SEQ, Northern Brigalow Belt and Qld Murray Darling Basin 	Completed.	Remotely sensed data needs to be calibrated to delineate wetlands. Timing and scale of remote sensing will determine the types of wetlands are identified.		Requires: <ul style="list-style-type: none"> Agreed definition of wetlands. Agreed classification method for Qld wetlands. Agreed definition (and indicators) of Statewide regionally significant wetlands. Statewide assessment of wetlands of regional significance. 			
Inland aquatic ecosystems integrity	(WET 02) (For regionally significant reach based issues that is the subject of targets in regional plans, the indicators are:)	Benthic macro-invertebrate community assemblages	NRM&E	Ambient Biological Monitoring and Assessment Program.	Ongoing	Statewide	Data are assessed against the AUSRIVAS model.	Requires: <ul style="list-style-type: none"> Increased density of sampling sites. 			
			NRM&E	Freshwater Ecological Health Monitoring Program (EHMP).	Annual renewal likely for approx 3 year period	SEQ only. Focuses on streams <10 m wide.	Data are assessed against SEQRWQMS guidelines for freshwater, which are different to AUSRIVAS.	Sufficient for SEQ for small streams (ie. 2 nd or 3 rd order)			
		Fish community assemblages	DPI&F	Freshwater Long Term Monitoring Program (LTMP)	Ongoing annual surveys.	Limited to 10 coastal and inland river systems. Future funding may be limited to biennial surveys.		Requires: <ul style="list-style-type: none"> Increased number of catchments to be sampled. 			
			NRM&E	Freshwater EHMP	Annual renewal likely for approx 3 year period	SEQ only	Data is assessed against SEQRWQMS guidelines for freshwater, which are different to AUSRIVAS.	Sufficient for SEQ			
		Benthic diatom community assemblages	Use of this indicator for Queensland regional NRM is seen as a low priority.								
		Riparian vegetation community assemblages	NRM&E	The State of the Rivers program assesses some components of riparian vegetation e.g. width, height, succession.	Historic assessments. NAPSWQ SIP Project (WQ05?) to undertake assessment in some NAP region catchments.	Variable detail of information across catchments.	Once off assessment, not repeated through time.	Requires: <ul style="list-style-type: none"> Agreement on indicators for riparian vegetation condition (eg. floristics cf. function) Statewide assessment of riparian vegetation condition. 			

		Riverine physical structure and instream habitat	NRM&E	State of the Rivers	Historic assessments. NAP SIP Project (WQ05?) to undertake assessment in some NAP region catchments.	Variable detail of information across catchments.	Once off assessment, not repeated through time.	Requires: <ul style="list-style-type: none"> Integration with other aquatic ecosystem assessment, dependent on monitoring objectives (e.g. species specific habitat requirements, reach or stream assessment). 		
		Water quality (physical-chemical indicators)	NRM&E	Surface Water Ambient Network (SWAN)	Ongoing	Statewide	EPA is currently developing water quality guidelines for data assessment, based on the approach recommended in the National Water Quality management Strategy.	Requires ¹¹ : <ul style="list-style-type: none"> Increased density of sampling sites. Increased frequency of sampling events. Increased range of parameters¹² 		
		Hydrology	NRM&E	SWAN	Ongoing	Statewide	Modelled data is used to assess change from natural flow regime.	Requires: <ul style="list-style-type: none"> Review of gauging station locations to provide information for water quality and aquatic ecosystem health monitoring objectives² Longer length of flow record. Refining data collection to calibrate hydrology models. 		
Inland aquatic ecosystems integrity	Wetland condition (WET 03)	Benthic macroinvertebrate community assemblages	NRM&E	To be completed						
		Fish community assemblages	DPI&F							
		Benthic diatom community assemblages	Use of this indicator for Queensland regional NRM is seen as a low priority							
		Wetland vegetation community assemblages	EPA	No Statewide monitoring				The detail of information varies between wetlands. There is only intermittent update with potential for long lag times between collection and reporting.	Requires: <ul style="list-style-type: none"> Wetland condition monitoring to be designed in the landscape context, to build an understanding of wetland function. It also needs to take account of the extreme variability that occurs within wetland ecosystems and between wetland types. 	
		Water quality	EPA	<ul style="list-style-type: none"> No Statewide assessment Spot samples focussed on assessing impact of human use (e.g. industrial discharge, run-off from roads). 	Ongoing.			Information is available by opportunity (not design).		
		Hydrology	EPA	<ul style="list-style-type: none"> No Statewide assessment Some local government work for stormwater quality control. 	Ongoing.			Information is available by opportunity (not design).		

¹¹ The NAP SIP Project WQ01 has engaged CSIRO Land and Water to review the Qld Government's water quality and aquatic ecosystem health information requirements.

¹² Note this could be addressed to some extent if funding for the draft Cabinet Submission *Enhancing Aquatic Ecosystem Health Assessment in Queensland* is approved.

Nutrients in aquatic environments	Nitrogen in aquatic environments (WET 04)	Total nitrogen and flow leaving catchment or whole catchment	NRM&E	<ul style="list-style-type: none"> SWAN Sediment transport monitoring program which measures bed load (i.e. coarse sediment movement) 	Ongoing.	11 locations across Qld.		Requires: <ul style="list-style-type: none"> More events monitoring, including intense sampling through flood events. 	
	Phosphorus in aquatic environments (WET 04)	Total phosphorus and flow leaving catchment or whole catchment	NRM&E	<ul style="list-style-type: none"> SWAN Sediment transport monitoring program, which measures bed load (ie. coarse sediment movement). 	Ongoing.	11 locations across Qld.			
Turbidity / suspended solids in aquatic environments	Turbidity / suspended solids (WET 04)	Turbidity or Total suspended solids and flow	NRM&E	<ul style="list-style-type: none"> SWAN Sediment transport monitoring program, which measures bed load (ie. coarse sediment movement). 	Ongoing.	11 locations across Qld.	Difficult maintaining probe for continuous turbidity data collection.	Requires: <ul style="list-style-type: none"> More gauging stations to be equipped with sampling mechanism 	
Surface water salinity in freshwater aquatic environments	Instream salinity (WET 04)	Total dissolved solids or Electrical conductivity and flow	NRM&E	SWAN	Ongoing.			Requires: <ul style="list-style-type: none"> Evaluation of spatial distribution of data collection. 	
Conservation status of significant ecological communities and native spp	River and wetland (WET 05)		EPA	<ul style="list-style-type: none"> No Statewide monitoring. Some project specific work e.g. assessment of migratory birds in far western wetlands, Coopers Creek Catchment. 				Requires: <ul style="list-style-type: none"> ??? 	
Ecologically significant invasive species	River and wetland Selected ecologically significant vertebrate and vegetation invasive species extent and impact (WET 06)	¹³ Reduction in the impact of regionally significant vertebrate pests. The areal extent and density of weeds under selected regulatory controls that are being addressed by regional bodies or community projects.	¹⁴ Class 1 Pests ¹⁵ – NRM&E	Individual areas of infestation are assessed.	On-going	Monitoring reflects areas under complete control or areas of emerging distribution.		Class 2 Pest monitoring could be improved by: <ul style="list-style-type: none"> Ground truthing representative geographic areas or pests. Inclusion of other pest species possibly on the basis of regional significance. 	
			Class 2 Pests ¹⁶ – NRM&E	Annual pest assessment.	On-going	Mapped on scale of approx. 50 km ² . SEQ mapped on a scale of approx. 12.5 km ² . 2003/04 is the first year of this assessment. Future assessments will need to assess change from previous.	Expert / local opinion based on 6 categories of extent and impact.		
			Class 3 Pests ¹⁷ – NRM&E	No Statewide assessment.					
			Fish – DPI&F	To be completed					

AQUATIC ECOSYSTEMS									
Resource condition Matter for Target	Indicator headings (TEMPLATE Reference)	Indicators	Responsible Agency	Existing Monitoring	Current Status	Monitoring issues Eg. scale, timing, frequency	Evaluation Issues	Gaps	Actions / Resources

¹³ Note that the Australian Weeds Committee has recommended a revised set of indicator headings, which are likely to be adopted by the National Monitoring and Evaluation Working Group. These are:

- Area under management – For a community group, what is the areal extent of invasive vegetation (weeds) that they are actively managing.
- Reduced weed impact on threatened species or communities – The areal extent of threatened species habitat or threatened community in which a threatening weed or weeds has been contained or reduced in extent.
- Preventing the establishment of weeds – Detecting the establishment of weeds that are previously unknown in the management/project area and eradicating while still at a small scale.

¹⁴ Refer to Table E3 for location of declared pests in the landscape. To be completed.

¹⁵ A Class 1 pest is not commonly present in Queensland and, if introduced, would cause an adverse economic, environmental or social impact.

¹⁶ Class 2 pests are established in Queensland and have, or could have, an adverse economic, environmental or social impact. The management of these pests requires co-ordination and they are subject to local government-, community- or landowner-led programs.

¹⁷ Class 3 pests are established in Queensland and have, or could have, an adverse economic, environmental or social impact. A pest control notice can only be issued for land that is, or is adjacent to, an environmentally significant area. Thus, the impact of species in this class is primarily environmental.

SALTY AQUATIC ECOSYSTEMS (Estuary, Coastal, Marine)									
Extent and distribution of regionally significant ecosystems	Estuary, Coastal and Marine (WET 07)		Estuaries – EPA	Classification and mapping by Digby (1998) ¹⁸ and Banks (2001) ¹⁹ .	Complete			Requires: • Agreed classification system for estuaries. • Regular update of mapping.	
			Costal wetlands (mangroves, salt marsh) – DPI&F	(Statewide baseline mapping completed at 1:100,000 scale in 2001.)	Complete	Monitoring of change at key sites undertaken on an ad hoc basis.	Remapping of Port Curtis to be completed by April 05 (Coastal CRC project).	Key sites only monitored as funds become available.	
			Seagrass – DPI&F	• Statewide baseline maps on GIS • Community/Agency monitoring at 90+ sites	• Ongoing since 1984 • Ongoing since 1999	• As required • Quarterly		Survey updates require funding	Supported by industry and the Reef CRC
			Dunes and beaches – EPA	No Statewide monitoring (ceased approx. 1995)		Width of dunal systems is very narrow and difficult to remotely sense. Subject to rapid change, which is not detected.		Requires: • Agreed classification system for dunes. • Regular monitoring?? To be completed	
Aquatic ecosystems integrity	Estuary, coastal and marine condition (WET 08)	Benthic macroinvertebrate community assemblages	Estuarine – EPA	No Statewide monitoring	To be completed				
			Reef lagoon – GBRMPA / AIMS	Spot surveys on Reef	To be completed				
		Introduced Marine Pests	CRC Reef / DPI&F	Marine pest surveys in Queensland ports	As required	• Surveys are currently infrequent, generally once-off baseline surveys in most locations • A number of on-going, targeted surveys in Cairns and Thursday Island		• More frequent / periodic surveys are needed to screen for incoming marine pests. • Non-port risks are not assessed.	Industry funded
		Fish community assemblages	DPI&F	Long Term Monitoring Program – barramundi, mud crab abundance in estuaries, prawn recruitment and coral reef fish off northeast coast.	Annual – ongoing	• 10 coastal and inland river systems (freshwater) sites. • 7 estuarine barramundi sites. • 11 mud crab estuarine sites. • Coastline north of Cairns and Torres Strait for prawns. • 21 reef sites off central and north Qld coast for reef fish. • Funding may limit to biennial surveys.		Requires: • Increased number of sampling sites (to expand geographic coverage). • Annual monitoring.	
		Benthic diatom community assemblages	Use of this indicator for Queensland regional NRM is seen as a low priority						
		Estuarine and marine vegetation community assemblages	Mangroves, salt marsh – DPI&F	To be completed					
			Seagrass – DPI&F	To be completed					
			Dunes and beaches – EPA	To be completed					
		Water quality	Estuarine –EPA	Ambient WQ Program -	Ongoing		Covers SEQ and some	Requires (for estuarine	

¹⁸ Digby (1998) Reference to be completed

¹⁹ Banks (2001) Reference to be completed

							parts of Mary-Burnett only	waters): <ul style="list-style-type: none"> Increased intensity of sampling sites Increased frequency of sampling events Increased range of parameters¹ 	
			Reef lagoon – GMRPA	To be completed					
Conservation status of significant ecological communities and native spp	Estuary, coastal and marine (WET 09)		EPA	No Statewide monitoring.	To be completed				
Ecologically significant invasive species	Estuary, coastal and marine (WET 10) Selected ecologically significant vertebrate and vegetation invasive species extent and impact (DRY 04)	³ Reduction in the impact of regionally significant vertebrate pests. The areal extent and density of weeds under selected regulatory controls that are being addressed by regional bodies or community projects. Reduction in impact of regionally significant invasive vertebrate pests (note that Qld is including pest fish species).	Class 1 Pests ⁵ – NRM&E	Individual areas of infestation are assessed.	On-going	Monitoring reflects areas under complete control or areas of emerging distribution.		Class 2 Pest monitoring could be improved by: <ul style="list-style-type: none"> Ground truthing representative geographic areas or pests. Inclusion of other pest species possibly on the basis of regional significance. 	
			Class 2 Pests ⁶ – NRM&E	Annual pest assessment.	On-going	<ul style="list-style-type: none"> Mapped on scale of approx. 50 km². SEQ mapped on a scale of approx. 12.5 km². 2003/04 is the first year of this assessment. Future assessments will need to assess change from previous. 	Expert / local opinion based on 6 categories of extent and impact.		
			Class 3 Pests ⁷ – NRM&E	No Statewide assessment.					
			Fish – DPI&F	To be completed					
			Invertebrates – EPA	Monitoring in ports and harbours.	To be completed				