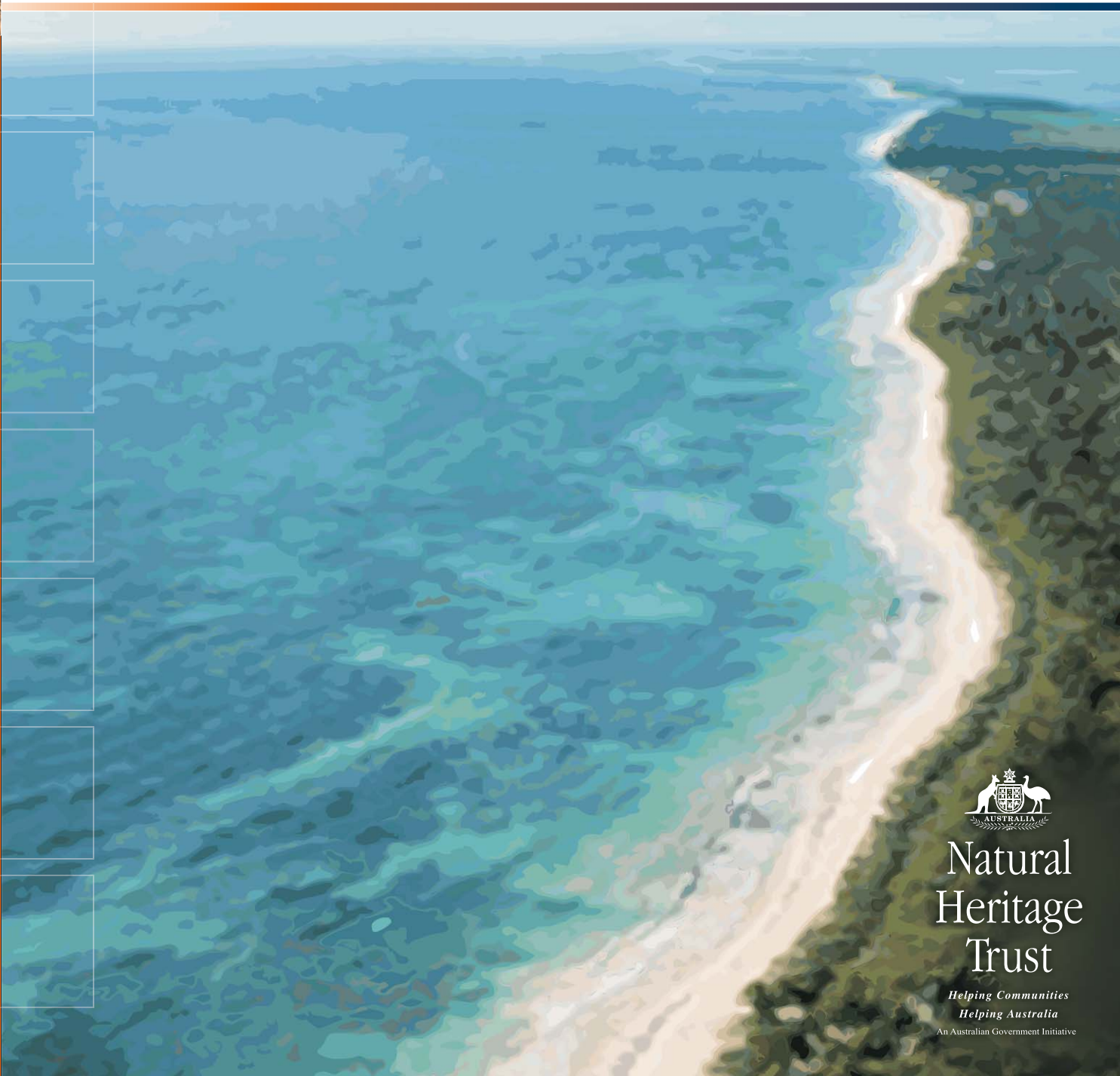


**INTEGRATED CATCHMENT (OR REGIONAL)
ASSESSMENT - NEEDS ASSESSMENT AND
OPTIONS FOR THE AUDIT**



**Natural
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Background

Significant government investment is being made in natural resource management (NRM). This includes Australian Government programs such as the National Action Plan for Salinity and Water Quality (NAP) and the Natural Heritage Trust (NHT), in addition to various State / Territory and local and regional initiatives.

Governments need information to be able to assess whether this investment is making a difference to the condition of our natural environment, as well as its social and economic impacts. At the same time land managers and regional groups need access to the best available data and information and tools to help make investment decisions and trade offs.

A National Monitoring and Evaluation Framework (NM&EF) has been developed by the Australian and State / Territory Governments to help monitor and report on the impact of the NAP and NHT. The NM&EF sets out broad “Matters for Target” which are to be reported on, using a range of possible indicators.

A key role for the second National Land and Water Resources Audit (Audit 2) is to report against these matters for target and indicators, with the aim of assisting, over time, the assessment of the effectiveness of the NAP and NHT.

While the Matters for Target represent a comprehensive set of natural resource issues, including social and economic aspects, they are still essentially theme based (eg salinity, soils, vegetation). For us to be able to make sense of all this information, we need to know how it can be integrated to give a better understanding of the overall condition of a catchment or region.

Integrated Catchment Condition Assessment undertaken by Audit 1

The first National Land and Water Resources Audit (Audit 1) supported a number of integrated assessments. These focussed primarily on integration within the biophysical fields rather than integrating the biophysical, social and economic aspects of NRM. Examples of previous Audit work on integrated assessment can be found in the following publications:

- *“Australian Catchment, River and Estuary Assessment 2002”* NLWRA 2000
- *“Assessment of Catchment Condition - The intensive land use zone in Australia”* CSIRO, NLWRA 2002
- *Landscape Health in Australia – A rapid assessment of the relative condition of Australia’s bioregions and sub regions.* Prepared by Gethan Morgan for Environment Australia and NLWRA 2001

It is important to reflect upon these assessments and to build on the lessons from this work. The Australian Catchment, River and Estuary Assessment, for example, provides clear guiding principles for subsequent assessments (page 306 of Volume 2).

The Assessment of Catchment Condition in the intensive land use zone provided a first national / regional approximation of catchment condition. It also laid a useful foundation for future assessments, provided consistent, quality data can be acquired. The report identified key data sets needed for future assessments. It also identified the potential to incorporate non biophysical attributes in future assessments. While the assessment provided a useful framework, and useful methodologies and ranking procedures for reporting integrated biophysical assessments, the scales of reporting limited regional application.

In an attempt to improve the capacity for integration at the regional / catchment scale, the Audit more recently commissioned a scoping study for a “Catchments to the Coasts” project. This was undertaken by four CRC’s and the CSIRO. The Audit Advisory Council endorsed the concept subject to an identification of potential users and their needs. The Audit then hosted a workshop to identify potential users and their needs.

Outcomes of the workshop on integrated catchment or regional assessment

The Audit hosted a workshop in Canberra on August 30 2004. Aims of the workshop were to:

- Identify national, state and regional needs for **reporting on integrated catchment condition** (that is the integration of biophysical, social and economic factors).
- Discuss the proposed **Catchments to Coasts** project proposal to see how far it would meet those needs.
- Identify where **partnerships** could be developed, leading to **co-investments** for agreed outcomes.

Forty representatives attended the workshop from Australian Government agencies, all states and territories, and selected regional organisations. These participants and their organisations are listed in **Attachment A**.

Prior to the workshop, the Audit sought informed comments via a questionnaire sent to participating agencies on jurisdictional needs for integrated catchment assessment reporting. A summary of responses is provided in **Attachment B**. The “Catchments to Coasts” proposal was also sent to participants.

The questionnaire and workshop highlighted the following broad issues:

- Jurisdictions generally supported improving and integrating biophysical assessments of catchment condition. Several investment or co-investment options for integrating catchment condition reporting were identified.
- Any approaches to integrated catchment assessment must be cost effective and directly serve the needs of decision makers.

- At the national level the needs may include informing policy, or to allow comparison between regions as a basis for investment decisions.
- At the regional level, NRM managers need tools to provide a more integrated understanding of catchment condition and processes. This includes assessing trends in resource condition, likely causes and management options for improving condition.
- There was also general agreement that integrated assessments which included social and economic aspects were necessary, as NRM decisions and actions have to be consistent with the needs and perceptions of catchment communities and land managers.
- Regional reporting on natural resource management involving integration of biophysical, social and economic aspects is already being pursued in some regions. Even so, many jurisdictions indicated that this is not a simple process and that socio-economic data are expensive to collect and may change over time.
- Most jurisdictions indicated that they would be interested in being involved in a steering committee to guide the ongoing development of integrated catchment assessment tools and to ensure that this is meeting their specific needs.
- There is a need to build on existing work and not to “reinvent the wheel”

Options for Audit activity in integrated catchment assessment 2004 -2007

Following the workshop, further discussions were held with relevant Audit partners, including at the September 2004 Audit Advisory Council meeting.

Potential activities could take place at various scales (national, state/territory and regional) to serve various needs. For example, at the national and state level it may be important to be able to make comparisons between regions to assist in policy development and setting investment priorities. At the Regional level there is a need to understand processes and the likely impacts of management actions in order to inform investment decisions within a catchment.

This presents the Audit with a range of investment options. Some of the possible options that integrate most closely with the Audits operation plan are outlined below:

1 Develop nationally consistent, but regionally based integrated resource condition assessments for major zones across Australia

1.1 Intensive Land Use Zone

Undertake a **revision** (or second Approximation) of the “**Assessment of catchment condition**” carried out for Audit 1, building on the CatCon Catchment Condition Analysis System. This provided a national scale assessment of catchment condition for the intensive Land use zone of Australia

The second approximation could:

- Provide assessment and reporting at an agreed scale of resolution
- Use key additional, relevant data overlays where they exist
- Link more directly with the NM&EF indicators
- Include social and economic data
- Where possible provide an indication not only of catchment condition but also trends (what, where, direction and pace of change)
- Utilise more sophisticated scenario assessments (What if ?).

The first step in this process would be a scoping study.

1.2 Rangelands

Continue to develop the Australian Collaborative Rangeland Information System (ACRIS) and specifically **integrated reporting mechanisms for the rangelands** regions of Australia.

1.3 Coasts

Undertake an **assessment of coastal areas**, building on the Audit 1 work on estuaries assessment, but also including the coastline in between. There is a need to recognise that there is overlap with estuaries. They are an integral part of the coastline but are also at the end of the catchments, and must be included in any catchment assessment, in many places providing an indication of overall catchment health.

2 Establish an on-line “knowledge centre” or toolbox to assist regions with integrated assessment and adoption of appropriate management responses.

This could involve at least two specific projects:

2.1 Undertake an inventory of catchment condition models and tools available and currently in use, including an assessment of the information requirements for each tool and the availability of such information.

2.2 Compile case studies of regions / catchments where integrated assessments are being used successfully to aid in investment decisions at the regional level.

3 Develop and pilot a framework for integration at the regional / catchment scale, to understand the links between biophysical, social and economic aspects of catchments (along the lines of the “catchments to coasts project”)

This would require a systems approach, based on unbiased science (rather than being limited to specific individual “themes” as in the matters for target and indicators in the NM&EF).

This would include identification of key indicators, and required information for assessing catchment condition and the effectiveness of NRM. These indicators and information requirements would be tested for alignment against the NM&EF indicators.

The methodology would be trialled in selected areas, in partnership with State / Territory agencies and regional groups. A staged sequential approach is required to achieve a truly collaborative R&D project, with agreed outcomes and which would ideally involve jurisdictional co-investment with the Audit.

4 Develop partnerships with capacity building and knowledge enhancement projects to further develop regional use of tools and reporting on catchment condition.

This recognises that the Audit is not primarily involved in capacity building, and the importance of working with other groups to help apply information and methods that the Audit has identified and compiled.

ATTACHMENT A Workshop Participants

Name		Organisation
Peter	Baker	BRS
Greg	Beeston	Ag WA
Karen	Cody	National Land and Water Resources Audit
Jim	Donaldson	Department of Agriculture Fisheries and Forestry
Brenda	Dyack	CSIRO Water for a Healthy Country
Russell	Flavel	SA Department of Water, Land & Biodiversity Conservation
Ian	Gordon	QLD Department of Natural Resources, Mines and Energy
Geoff	Gorrie	Chairman - National Land and Water Resources Advisory Council
Bruce	Gray	Department of Environment and Heritage
Pam	Green	NSW Southern Region CMA
Chris	Grose	Tas Department of Primary Industries, Water & Environment
Mike	Grundy	Qld DNRE
Alana	Innes	National Land & Water Resources Audit
Christine	Kilmartin	Vic Department of Sustainability and Environment
Ken	Lawrie	Geoscience Australia
Mike	Lee	Department of Agriculture Fisheries and Forestry
Peter	Lyon	Department of the Environment and Heritage
Megan	McFarlane	Goulburn Broken Catchment Management Authority
Bob	Newman	Murray Darling Basin Commission
Joanne	Nathan	Department of Environment and Heritage
Richard	Norris	CRC for Freshwater Ecology
Sharon	Occhipinti	Australian Bureau of Statistics
Ralph	Ogden	CRC Catchment Hydrology
Jon	Olley	CSIRO
Greg	Pinkard	TAS Department of Primary Industries, Water & Environment
Ian	Prosser	Land & Water Australia
Doug	Reuter	Reuter and Associates Pty Ltd
Rob	Richards	Western NSW Catchment
Les	Rowell	VIC Department of Sustainability and Environment
Helen	Sims	ACT Office of the Commissioner for the Environment
Phil	Strickland	Department of Environment and Heritage
Rob	Thorman	National Land and Water Resources Audit
Simon	Townsend	NT Department of Infrastructure, Planning & Environment
Lynne	Turner	Qld EPA
Joe	Walker	CSIRO
Leanne	Wilkinson	CRC for Freshwater Ecology
Ross	Williams	NSW Department of Infrastructure, Planning & Natural Resources
Mike	Williams	Mike Williams and Associates – Facilitator
Peter	Wilson	National Land and Water Resources Audit
Blair	Wood	National Land and Water Resources Audit

ATTACHMENT B SUMMARY OF AGENCY RESPONSES TO NLWRA QUESTIONNAIRE ON INTEGRATED CATCHMENT ASSESSMENTS

Note: Victorian responses were provided via responses from 3 catchment management authorities.

Q1: Does your agency/jurisdiction require integrated biophysical catchment assessments to inform NRM policies and decision making? If so, why?

Agency	Response	Reasons & Comments
Queensland	Yes	Planning & implementation of decisions (proactive & adaptive). Still uncertainties on purpose & approaches. Availability of critical data to meet needs. Need to assessments at regional/subregional scales.
NSW	Yes	Critical for trade-off decisions
Tasmania	Yes?	Develop system to collect, collate & report integrated NRM data. Concerns on how this will be achieved. Systems already exist or can be developed. Regions should access relevant data from the original source.
SA	Yes	Too difficult to describe all individual resources & their interactions – need for an integrated assessment. Interactions need to be known, since NRM policies are applied individually for an integrated effect.
WA	Yes	This is the starting point for all subsequent NRM actions (at policy & action levels).
NT	Yes	To account for inter-relationships between land & water use, sustainable development, biodiversity conservation, preservation of environmental & cultural values.
BRS	Yes	NRM decisions/investments need to be based on landscape understanding of the issues.
DEH	Yes	Defining strategic interventions & investments (NHT & NAP) for values & threats to biodiversity; distribution & scale of investment needed. Evaluation of regional INRM plans & investment strategies. Determining effectiveness of investment for public reporting & informing new policies & programs.
Gippsland*	Yes	Decisions need to be based on multiple criteria. Mustn't dilute critical information. Must be useful. Communication, support & training are important.
Goulburn*	Yes	Biophysical issues are inter-related (positive/negative impacts).
Corangamite*	Yes	Biophysical NRM issues are inter-related. Need to address multiple assets & threats.

* Catchment Management Authority.

Q2: While recognising that different regions will have different needs, are there benefits in developing a consistent national approach to integrated biophysical catchment assessment?

Agency	Response	Reasons & Comments
Queensland	Yes?	Smaller number of attributes for national assessments (stating purpose). Broad bioregional assessments needed. Benefit/cost & opportunity costs. If regional bodies own NRM outcomes, no need for national approach. Improvements in resource condition targeted to regional needs. Some Framework indicators can be monitored at State/National scales. Independent auditing & prioritising of issues required. MEWG indicators are cumbersome.
NSW	Yes	Development of a conceptual model or agreed process will enable CMA to how best to integrate the various components together.
Tasmania	Unlikely	Probably can develop method for national reporting requirements. These national methods don't apply at regional/sub-regional scales. Given different needs, single method to address all needs is unlikely.
SA	Yes	Need for common language & understanding between resource managers, policy makers & investors.
WA	Yes	There is always a temptation to compare across regional & catchment boundaries.
NT	No	No benefits in "one size fits all" national approach. Should be based on overlays of bio-geographical-economic-cultural regions.
BRS	Yes/No	Already consistent national approaches in some areas. Need to build on these. Must recognise that all issues will not apply to all regions or to all scales.
DEH	Yes	Providing national picture of catchment condition & progress. Comparative assessment of issues, needs & progress across catchments (prioritising investment decisions).
Gippsland*	Yes	Huge benefits in aligned approaches/framework. Stakeholders need to be involved & work towards a common understanding.
Goulburn*	Yes?	Depends who needs to know. Common information needs at National/State levels needs to be first analysed before coordinated approach is rolled out.
Corangamite*	Yes/No	Benefits at State/National scales & very large catchments are recognised. Doubtful for smaller catchments. Integration approaches vary widely a catchment level ("horses for courses"). Scale is critical. Documentation of good integrated approaches would help catchment managers.

* Catchment Management Authority

Q3: Were the previous attempts by the Audit at integrated catchment assessment useful, & what could be done to build on these outcomes?

Agency	Response	Reasons & Comments
Queensland	Yes?	Useful start for assessing individual attributes. Raises challenges for integration. Needs links to socio-economic factors (biophysical framework plus socio-economic framework). Is first Audit information embedded in State/Regional policy & planning? Use tools/approaches to increase capacity at State/Regional levels.
NSW	Yes	Modelling activities were useful, particularly in areas where data were sparse or absent. The models also help catchment managers better understand how the components interact & what are the key drivers.
Tas	Yes?	Provided framework & tools to build methods suited to Tasmania. Need methods at sub-regional scales. Sub-regional case studies would be invaluable.
SA	Yes & No	Affirmed the goal & educated those involved. Not completely successful in the description. Demonstrated difficulty in attributing cause to an effect.
WA	Yes	Lack of data made the results of limited value at local level.
NT	Limited	Need regional assessments.
BRS	Yes?	Useful first pass. Identified gaps & need for future work. Level of resolution needs attention.
DEH	Yes	Landscape Health assessment was valuable (bioregion condition). Useful information on comparative landscape stress. One difficulty was reconciling catchment & IBRA regions. National biodiversity data are inadequate (some cases) & not comparable.
Gippsland*	?	Didn't know about Audit reports.
Goulburn*	?	Unsure how Landscape health outcomes would apply to regional assessments. Will Catcon apply at sub-regional scale?
Corangamite*	Yes	Raised awareness. Highlighted issues (extending across catchment boundaries). Need for more detailed catchment assessment/validation. Funding opportunities. Need to improve data resolution (1: 25K) & quality. Extend coverage. Increase coverage of NRM issues.

* Catchment Management Authority

Q4: Would an integrated regional reporting framework assist in meeting reporting requirements under the bilateral arrangements for National NRM programs?

Agency	Response	Reasons & Comments
Queensland	No	National NRM reporting requirements are much more simple. Objectives often open to interpretation. But an integrated Regional reporting Framework would assist State/Regional reporting.
NSW	Possibly	Provided that the required skills & information was available for this to occur. Without this, it will be of little use.
Tasmania	No?	Concerns on scale of reporting; ability of single method to meet all requirements. NLWRA should develop toolbox of options, demonstrated via case studies.
SA	No	SA regions need to report to their Boards & to the State (detail can be rolled up to national level). Co-investors can be an influence.
WA	?	Unsure of current process in WA.
NT	No	NAP/NHT will deliver core requirements
BRS	?	Matters for Target assist in meeting reporting requirements.
DEH	Yes	Must be linked to matters of target & NRM regional boundaries.
Gippsland*	Yes?	If it would replace current layers of complexity & better inform regional decisions & government investments. Must be acceptable to all stakeholders.
Goulburn*	No?	Not the first thing to do: more basic issues need to be addressed.
Corangamite*	Yes?	Standardisation at State/regional levels is slow process.

* Catchment Management Authority

Q5: Will the ability to integrate social and economic information with biophysical indicators assist in “unpacking key NRM issues and improve our capacity to implement on-ground action?”

Agency	Response	Reasons & Comments
Queensland	Yes	Must understand social, economic and biophysical linkages to make correct/best planning/implementation decisions. Integration will increase feasibility of activities & increase community acceptance. Must improve broader understanding of NRM drivers & complexities of outcomes.
NSW	Yes	But only provided that the necessary data & skills exist either in State agencies or in CMA.
Tasmania	Yes?	If tools are provided to facilitate integration & understanding trade-offs.
SA	Yes	Depends on getting investor to buy an indicator change. Capacity building in SA communities is a key component of integration - requires information on social infrastructure (physical & human).
WA	Yes	Mainly to improve capacity to implement on-ground action.
NT	Yes	Must be based at regional scales.
BRS	Yes	Will help to identify barriers to adoption & how to address these.
DEH	Yes	NRM is about people & decision-making. NRM is driven by regulations, land use management, profitability, incentives, community awareness & action. Capacity of communities to respond is linked to socio-economic factors (which affects ability of government to implement policies & programs).
Gippsland*	Yes	Definitely need integration mechanisms.
Goulburn*	?	Is automatically done, but fair way from <i>quantifying</i> socio-economic integration with NRM. NRM staff are not responsible for improving social or economic well-being of catchments.
Corangamite*	Yes?	Scale & information needs important. Is automatically done as part of NRM. Land users make the decisions mainly on socio-economic grounds rather than “duty of care”. Need to understand attitudes & behaviour for NRM outcomes. Major land use changes have occurred.

* Catchment Management Authority

Q6: Have you any good examples of where integrated (biophysical, social and economic) Catchment reporting has helped with NRM policy development and decision making?

Agency	Examples
Queensland	Moreton Bay Catchment & Waterways annual Report Card. Socio-economic framework incomplete.
NSW	No
Tasmania	No answer supplied
SA	River Murray Catchment Water Management Board (26 indicators identified; 20 evaluated; presented as a pattern & as a single value, integrated assessment).
WA	Salinity Investment Framework (SW region; Drainage Basin). Rural Towns Project (Catchment scale). Blackwood Basin Zone Strategy (Catchment scale).
NT	Mary River Integrated Catchment Management Plan (assessed environmental, economic & social-cultural impacts).
BRS	Spatially referenced baseline social & economic data on landholder perceptions of salinity & salinity discharge maps (Catchment & sub-catchment scales).
DEH	Regional Forest Agreements (integrated management for multiple objectives). DEH/DAFF NRM profiles (NAP & NHT regions) – identification of issues & priorities for NHT plans & investments when programs are first established). NRM standards & Targets and M&E frameworks (NRM regions) – biophysical & social indicators for reporting progress, effectiveness of NHT & future investments. NHT National Project on “Integration of Biodiversity Conservation in regional planning – identification of effective integration mechanisms at a range of scales.
Gippsland*	Gippsland Natural Resources Report Card (multi regional environmental condition & stewardship ratings). Plans for socio-economic assessments. Regional River Health Strategy (integrated TBL information for river reaches to aid future priority setting). Regional Catchment Strategy (addressing 7 asset classes using land, water, biodiversity, atmosphere & climate, people & communities, infrastructure & production).
Goulburn*	Catchment Indicators (State scale). SIRCIS ten year Review (2002) – environmental & economic assessments at sub-catchment scales. Goulburn Broken Annual Report (2003/04) – integrated biophysical assessments at catchment scales.
Corangamite*	Corangamite Regional Catchment Strategy (2003) – 5 subregions & 4 river basins. Draft Corangamite River Health Strategy (16 landscape zones & 4 river basins). Draft Corangamite Salinity Action Plan (12 salinity target zones). Corangamite native Vegetation Plan (2004) (5 bioregions & 67 ecological vegetation classes). Corangamite CMA Annual Report.

* Catchment Management Authority

Q7: If integrated (biophysical, social, economic) catchment assessment has been attempted what were the drivers, and what have been some of the useful outcomes and limitations?

Agency	Drivers	Useful Outcomes	Limitations
Queensland	Legislation System understanding	Public reporting Campaign to publicise science	Socio-economic assessments just started.
NSW	None undertaken		
Tasmania	No answer supplied.		
SA	Decision by Catchment Board to meet its reporting obligations (catchment levy).	Demonstrated completeness.	Useless in understanding the meaning of the indicator.
WA	Developing Salinity Investment Framework (public investment to protect assets of high public value). Protection of rural town infrastructure & assessments of actions & costs. Community understanding of complex interactions within the Blackwood catchment	Provision of strategic framework for planning future actions.	Have not been widely applied through the total process. Social data are hard to correlate to catchments.
NT	TBL impacts on tidal salt water intrusions.	Clearer vision & objectives for NRM mgt & intervention. Improved integration of action.	Low capacity/commitment to implement actions.
BRS	Spatial baseline socio-economic data on salinity & discharge. Landholders perceptions of issue.	Good landholder awareness (sites) New salinity sites identified. Spatial socio-economic data accrued.	Seeking to link biophysical to social data Expensive & time consuming
DEH	National Forest policy statement & regional Assessments Commonwealth & States conservation objectives (all stakeholders, high resolution regional assessments) Regional profile briefings on key NRM issues & priorities, solutions. Accrediting regional plans & allocating investments.	Comprehensive regional assessments. Assessment information useful in regional NRM planning & management More effective planning & strategic investments Increased understanding & capacity of decision makers	Large cost for robust assessment. Ownership of assessments – desirable that information is used & maintained; critical that assessments are used as tools in on-going management. Some assessment aspects could not easily be translated into developing options for negotiating NRM scenarios. Quality assessments depended on available data. Still difficult to make trade-offs between objectives.

Q 7 (cont)			
Agency	Drivers	Useful Outcomes	Limitations
Gippsland*	Gippsland Forum required Report on catchment health	Broad discussion on NRM condition & Stewardship. Regional pride. Focus for State of Gippsland NR. Useful communication tool.	Accessing information for ratings. Insufficient detail for decision-making.
Goulburn*	10 year Review. Importance of non-biophysical Indicators. Continued improvement in integrated assessments	Provided environmental achievements. Economic benefits from 10 years work. Importance of consistent data to aggregate across issues & time.	Some incomplete data. Qualitative social assessments. Many data sources & formats. Agency requirements differ. Complexity demands cautious conclusions. Expensive exercise.
Corangamite*	ID key regional assets, pressures & threats. ID NRM priorities for investment & action. Funding opportunities.	ID key assets, pressures & threats. Framework for NRM.	Semi-qualitative/qualitative assessments (esp. socio-economic) limited NRM applications. Limited baseline condition/trend information. Very limited coastal information.

* Catchment Management Authority

Q8: Why wouldn't you attempt integrated (biophysical, social, economic) catchment assessments and reporting?

Agency	Comments
Queensland	Must clarify ownership, accountability and vision. May obscure components of strategic relevance if unduly weighted in towards one component. Potential confusion in representing increased complexity & providing simple messages. Apportionment of limited resources to the 3 components. Delivery time (2 – 3 years) does not equate with longer-term improvements.
NSW	The need for cumulative assessment &/or environmental risk assessment precludes any serious scientific effort, due to severe data shortages & cause-effect relationships being quantified. State investment in information collection is being reduced.
Tasmania	High cost & effort versus perceived benefit.
SA	Investor is not confident in what they are investing in will have the desired effect Need to educate the investor. Need to have indicators in investor terms.
WA	Lack of data.
NT	No clear, strong commitment from stakeholders.
BRS	Difficult & expensive to obtain socio-economic data @ catchment scale. Is the catchment the right unit for integration (governance issue)? Need more flexible concepts (eg industry performance), but NRM at catchment scales.
DEH	Data held by various agencies. Different boundaries for information. High costs (situations are dynamic & changing). Few objective analytical tools (difficulties in integrating & interpretation). Must involve stakeholders to make trade-offs & set priorities. Risk that assessments are not owned by decision-makers (thus why spent \$?).
Gippsland*	Overwhelming, confusing interpretations & too many approaches, too hard. Needs to be justified & supported by stakeholders.
Goulburn*	Very expensive & may not deliver benefits. Integrated assessment limited by the poorest data sets. Can social information be quantified (“gut feeling”). What are good social indicators? Governmental changes in reporting.
Corangamite*	Socio-economic factors are extremely complex in type, space & time. Change is the key factor. Indicators are still under development. Simplification destroys critical information & inconsistencies prevent aggregation.

* Catchment Management Authority