

*Lake Eyre Basin*

*Rivers Assessment*

**Implementation plan & business**

**governance model** *2010-2018*

# LEBRA purpose

The purpose of the LEBRA is to gain an understanding of the LEB's condition in order to:

- **underpin responses to condition**, including a range of on-ground management, government and industry policy, enterprise and personal decision making and local and regional resource planning responses
- **form consistent messages** appropriate to, and encourage constructive dialogue between, specific target audiences about condition, outlook and appropriate responses
- **guide ongoing research, investigation and monitoring** efforts so that they can form a reliable basis for evidence-based responses.

The participating government, community, industry and research partners will support this purpose by engaging in an adaptive management process. This process involves collaboration in undertaking the Rivers Assessment, interpreting its results in terms of required responses, influencing the implementation of responses and evaluating these responses.

# LEBRA principles

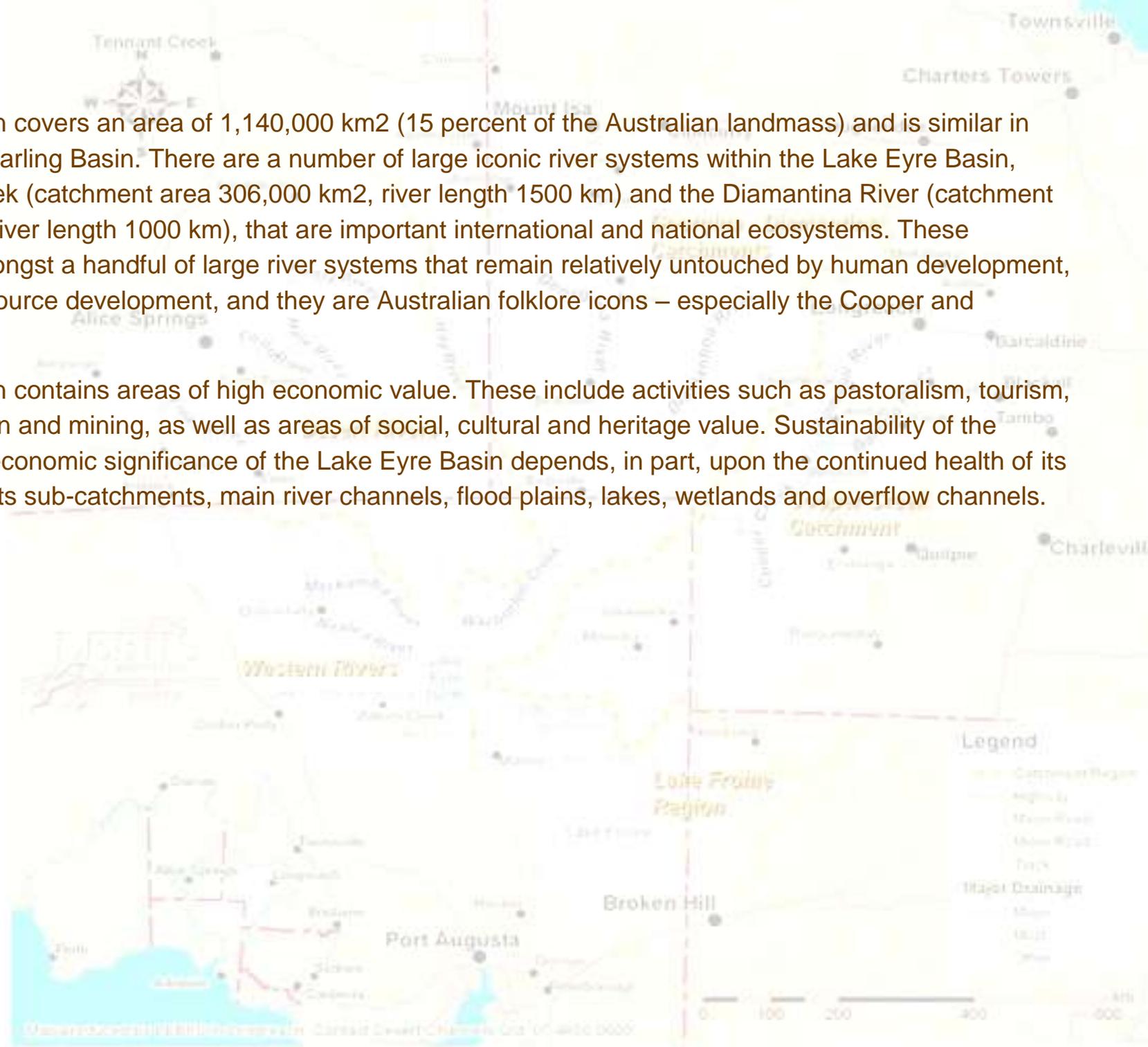
These principles should be used as criteria in decision making in respect to implementation of the LEBRA:

- **Transparent** – methods and governance arrangements should be open to scrutiny
- **Efficient** - roles, responsibilities, relationships and timelines must be very clearly defined
- **Clear definition of responsibilities (and rights)** - clear delineation of responsibilities must take into account separation of oversight, performance and review
- **Responsive** – processes should be adaptive and be at driving effective responses
- **Accountable** - clear lines of delegation, authority and reporting must exist
- **Inclusive** – those expected to respond should have the opportunity to participate and influence
- **Persistent (relevant and accepted)** –ongoing certainty should underpin community confidence
- **Respectful** – trust and respect must be the hallmarks of collaboration.

# Our Basin

The Lake Eyre Basin covers an area of 1,140,000 km<sup>2</sup> (15 percent of the Australian landmass) and is similar in size to the Murray-Darling Basin. There are a number of large iconic river systems within the Lake Eyre Basin, notably Cooper Creek (catchment area 306,000 km<sup>2</sup>, river length 1500 km) and the Diamantina River (catchment area 160,000 km<sup>2</sup>, river length 1000 km), that are important international and national ecosystems. These ecosystems are amongst a handful of large river systems that remain relatively untouched by human development, especially water resource development, and they are Australian folklore icons – especially the Cooper and Diamantina.

The Lake Eyre Basin contains areas of high economic value. These include activities such as pastoralism, tourism, oil and gas extraction and mining, as well as areas of social, cultural and heritage value. Sustainability of the environmental and economic significance of the Lake Eyre Basin depends, in part, upon the continued health of its riverine landscape; its sub-catchments, main river channels, flood plains, lakes, wetlands and overflow channels.



# Challenges & Implications

**Pressures** identified specifically in the State of Basin report 2008 include:

- Major water development proposals including mining and irrigation
- Cumulative impacts of minor water developments (including bores) and diversions
- Intensified land use around waterholes
- Presence and spread of introduced pest plants and animals, especially their impact on waterholes
- Isolation of floodplains through levee construction or roadway embankments
- Impacts of pastoral activities, tourism and mining
- Intensified surface water extraction and drawdown
- Impacts of climate change on water resources
- Modification of basin catchments, such as vegetation clearance and inappropriate grazing, soil management and cropping practices
- Stocking rivers and waterholes with non-local fish species.

These pressures represent challenges to the LEB at a whole-of-Basin scale, with pressures influencing landscape condition across different geographic boundaries as well as across State and institutional boundaries.

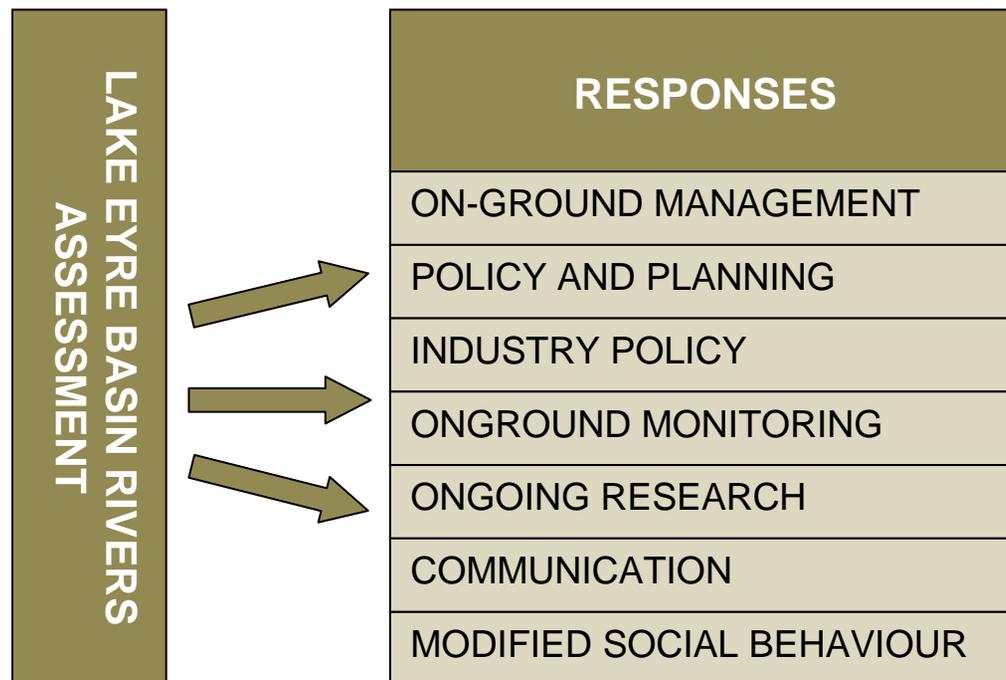
**Implications** for the LEBRA:

- Stakeholders of the LEB must gain a comprehensive baseline understanding of the condition of their Basin
- This baseline understanding should help define thresholds of potential concern to trigger required responses
- Decision makers require access to collated information on broad scale changes in the pressures
- Stakeholders of the LEB must have the opportunity to participate in interpreting LEBRA results to define these responses
- Governance arrangements must support the principles outlined in this plan, facilitate collaboration and participation, and guide, influence and wherever possible support responses
- The LEBRA should facilitate an adaptive learning process among LEB stakeholders, but must itself also have the capacity to learn and adapt.

## Focus on responses

The implications for the LEBRA, set out previously, emphasise the need for the assessment and ongoing monitoring to inform and guide a range of responses, examples of which are outlined in this Figure opposite. At the very least, the results should provide an understanding of the condition of the Basin and the potential implications of making informed decisions not to respond.

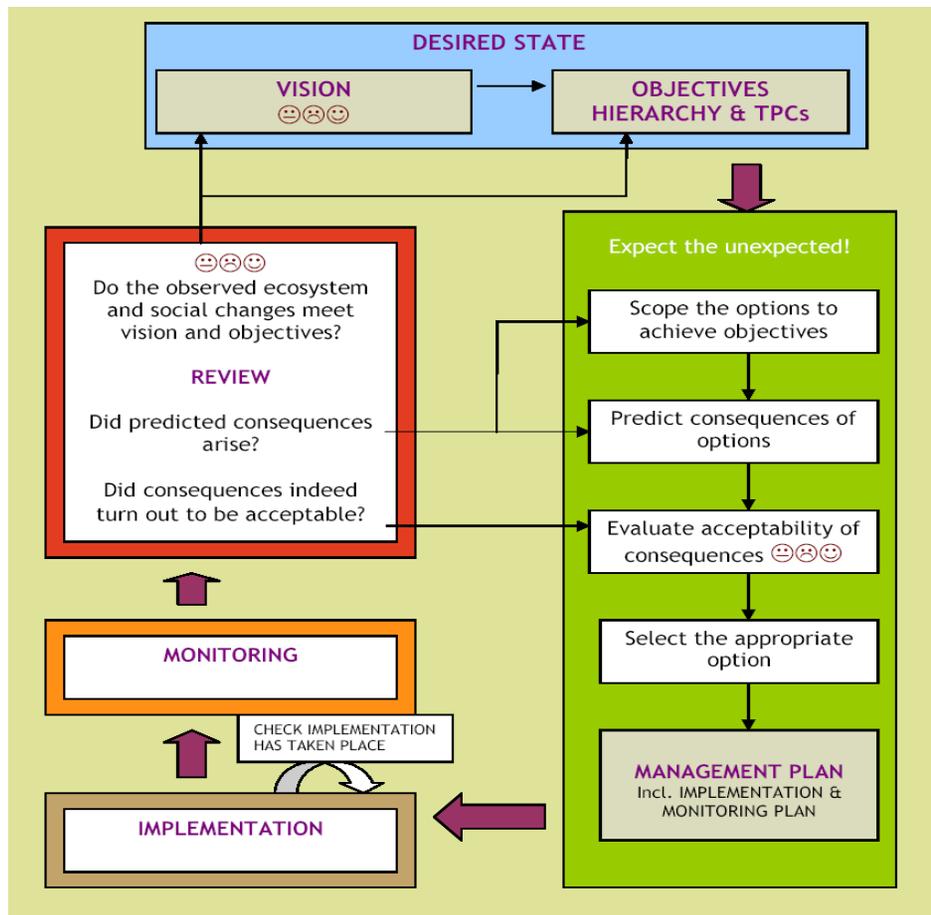
The conduct of a resource assessment in the LEB will not automatically elicit the range of responses required across the community. Voluntary responses by nebulous groups without clear stakeholder identification, communication, encouragement and, in some cases, incentives, are likely to be limited. For that reason, it is important the governance arrangements for the LEBRA take into account appropriate conduits to stimulate, facilitate and guide responses to LEBRA findings. Within the current structure supporting the LEBIA, these conduits are outlined in the Table below.



Conduits to desired responses to LEBRA findings	
Desired response	Conduit to desired response
On-ground management	Community Advisory Committee; Regional NRM boards
Policy and planning	Ministerial Forum; Senior Officers Group; Community Advisory Committee; Regional NRM boards
Industry policy	Community Advisory Committee
On-ground monitoring	Senior Officers Group; Community Advisory Committee; Scientific Advisory Panel; Regional NRM boards
Ongoing research	Scientific Advisory Panel; Senior Officers Group; Regional NRM boards
Communication	LEBIA Secretariat; Ministerial Forum; Regional NRM boards
Modified social behaviour	Community Advisory Committee; Regional NRM boards

# Taking a Strategic Adaptive Management (SAM) approach

The LEBRA will adopt SAM as a framework to guide its implementation. This takes into account the premise that an assessment is not considered complete without interpreting the results, identifying required responses and utilising the conduits for responses. Three key tenets form the basis for the management and decision-making process in SAM: i) strategic and value-based planning based on scientific and societal needs and values; ii) a learning-by-doing approach to management planning; and, iii) participatory engagement of all stakeholders to serve their needs, access their inputs and secure their cooperation.



☺☺☺ Stakeholder involvement crucial

Under the SAM framework, the LEBRA will involve the following six steps:

1. All stakeholders will be involved in the process of developing a vision for the desired state of LEB landscape condition.
2. A vision for the desired state of riverine landscape condition will be translated into an objectives hierarchy.
3. Thresholds of Potential Concern (TPCs) will be generated to define acceptable levels of change in LEB landscape form and function.
4. Research and observations of landscape form and function will be used to audit and understand LEB condition in relation to TPCs.
5. Management interventions will occur in the context of TPCs.
6. As learning-by-doing is an essential part of SAM, knowledge of LEB ecosystems will constantly be reviewed in order to update TPCs and management options.

Figure from Rogers KH, Sherwill T, Grant R, Freitag-Ronaldson S, Hofmeyr M (2008) *A Framework for Developing and Implementing Management Plans for South African National Parks*. SANP, Pretoria

# Indicators: what are we looking at?

The LEBRA is intended to take a whole-of-basin approach to assessing the condition of the aquatic systems of the LEB. Assessments will be primarily based on *state* indicators, supplemented by key *pressure* indicators. This should provide the basis for interpreting results in terms of what, if any, responses are required. The selection of indicators has been based on recommendations of technical workshops conducted in the LEB over the past 5 years.

The seven indicator sets for LEB's state are: fish assemblages, waterbirds, vegetation (riparian), vegetation (nationally important wetlands), physical habitats, water quality and hydrology.

Information will also be collated on changes in the key pressures acting on the aquatic ecosystems. These cover: land use changes impacting on water use, management of grazing lands, invasive species, tourism and climate change.

State Indicator	How the indicator relates to condition
<b>Fish assemblages:</b> Species richness, abundance, abundance of alien species, recruitment, population size structure, abundance of detritivores and prevalence of disease	Antecedent flow conditions, waterhole condition , anthropogenic disturbance, phase, introductions of fish species, fish population dynamics
<b>Waterbirds:</b> Total abundance of colonial waterbirds, species richness of colonial waterbirds, abundance of functional groups of waterbirds, community composition, presence/absence of particular species, abundance of breeding birds and species richness of breeding birds	Altered water quality or flow regime, antecedent flow conditions, assemblage condition, changes in flooding regime, condition of habitat, condition of habitat and food supply
<b>Vegetation (riparian):</b> % cover of 3-5 dominant woody species in upper and middle (layers), % herbaceous ground cover, % cover aquatic vegetation (submerged, floating, emergent), % cover of exotics, native regeneration, width of riparian zone and longitudinal connectivity	Altered flooding regime, anthropogenic disturbance, altered water quality or flow regime, antecedent flow conditions, impacts of exotic species
<b>Vegetation (nationally important wetlands):</b> Floristic composition; species richness; % foliage cover of understorey species; % canopy cover; foliage cover; height ranges of vegetation layers (trees, shrubs, understorey); tree vigour; population size structure	Altered flooding regime or anthropogenic disturbance; antecedent flow conditions; altered flow regime or water quality; impacts of exotic species
<b>Physical Habitats:</b> Physical diversity and channel instability	Flow and sediment variability, loss of physical habitat diversity which may be deleterious to aquatic biota, overgrazing and land use which may be deleterious to aquatic biota, physical habitat
<b>Water Quality:</b> Conductivity, pH, dissolved oxygen (diel range), turbidity, water temperature (diel range)	Amount of suspended solids in water, deleterious effects to aquatic biota, health of aquatic biota, light penetration and primary production, pollution load, primary productivity, salinity
<b>Hydrology:</b> Total surface water availability, water storage capacity, water licensing, filling of terminal lakes, floodplain inundation, in-channel events, persistence of key waterholes	Climate change, floodplain development, land use change, presence of in-channel structures, water resources development

Pressure	Impacting activities associated with the pressure	Indicator areas
<p><b>Land use changes</b>, especially those impacting on water use;</p> <ul style="list-style-type: none"> <li>• Irrigated agriculture</li> <li>• Intensification of grazing</li> <li>• Mining and petroleum extraction</li> <li>• Road construction</li> <li>• Earthworks to harvest water</li> </ul>	<p>Water extraction, water storage and diversion, construction of barriers across floodplain surfaces and within the channel network, damming, conversion of floodplain lakes to storages, floodplain harvesting, pumping from shallow groundwater, pumping from water holes</p>	<p>Development applications, Environmental Impact Assessments, water permits issued, updates of water management plans</p>
<p><b>Management of grazing lands</b></p>	<p>Increased grazing pressure, vegetation management</p>	<p>Vegetation cover, burnt areas</p>
<p><b>Tourism</b></p>	<p>Recreational visitors, localized fishing impacts</p>	<p>Number of visitors</p>
<p><b>Invasive species</b></p>	<p>Establishment/spread of exotic animal and plant species (on the floodplains)</p>	<p>Occurrence of Weeds of National Importance, exotic fish species</p>
<p><b>Climate Change</b></p>	<p>Changes in the amount and pattern of rainfall and the associated changes in river flows, intensity of storm events</p>	<p>National level conclusions on changes in climate</p>

# Indicators: Thresholds of Potential Concern

Articulating a desired state for the LEB is important and should be based on a vision for desired future ecosystem conditions. Ecosystem conditions are not fixed but inherently dynamic. We can only aim to maintain natural variation and processes as the basis for resilient ecosystems, which are those able to absorb environmental stressors without undergoing an irreversible change in their state.

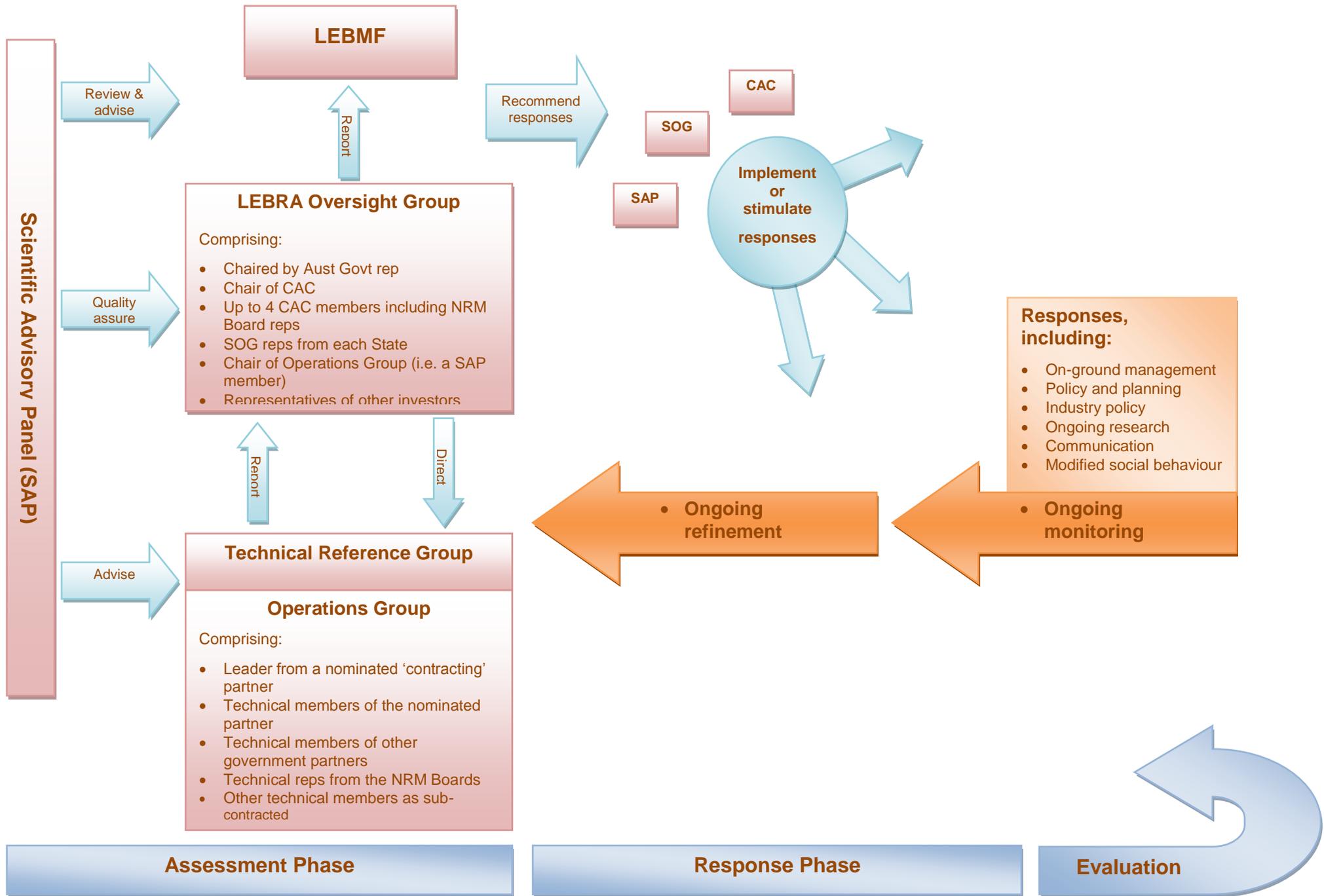
Some changes are undesirable as they form part of a long-term trend moving the ecosystem away from the desired state to another less preferred state. Over time this trend may become irreversible, and so it is important that preventative management action should be taken in response to certain triggers, in this case Thresholds of Potential Concern (TPCs). TPCs are upper and lower levels of change in selected indicators. If TPCs are reached it is very likely that the desired state will not be achieved or will not be able to be achieved into the future.

In essence, TPCs should be seen as red flags to managers warning that management intervention could be necessary to defend the desired state. They also indicate what management actions should be done, where it should occur and when the actions should take place.

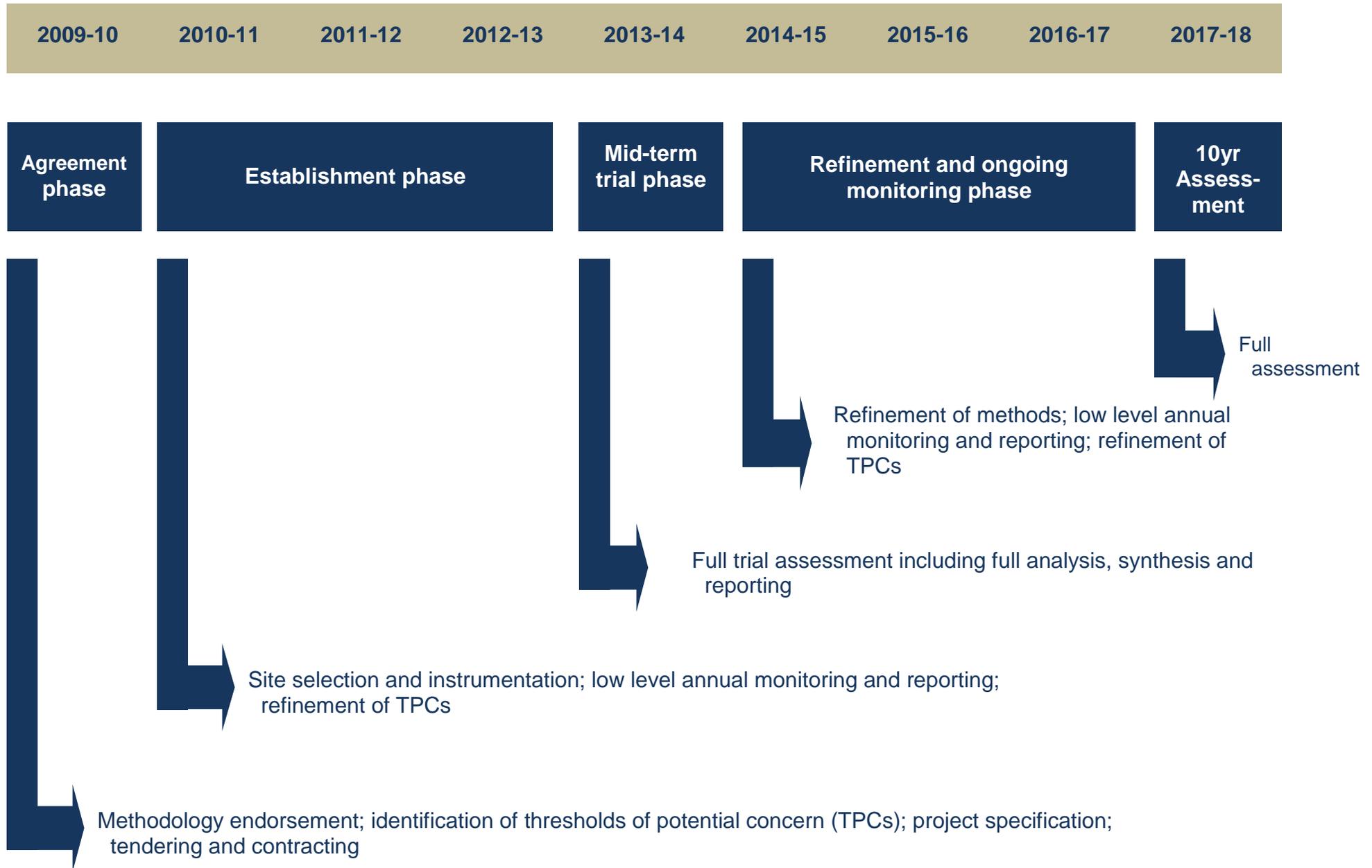
Examples of indicative TPCs for the Lake Eyre Basin are provided in the Table opposite. It is important that these indicative TPCs be refined through the stakeholder processes outlined in this Plan.

Trigger	Thresholds exceeded or expected to be exceeded
Reduction in waterhole persistence	Significant change in the cumulative duration of water availability within the key waterholes of the Lake Eyre Basin
In-channel flow events or flow pulses	Significant change in the flow duration curve of no flow events for gauging within the Lake Eyre Basin
Total surface water availability	Reduction in total annual volume of surface water expected from catchment rainfall at key gauging stations located throughout the Lake Eyre Basin
Silt and pollutant release episode from upstream mining operation	Increased turbidity in waterholes resulting in fish kills
River sedimentation	Loss of physical habitat diversity between and within waterholes
Change in community of native fish	New occurrence of an alien fish with a high index of potential threat  Significant change in size distribution of fish communities within the individual sub catchments of the Lake Eyre Basin
Change in riparian vegetation structure	- New occurrence of an alien plant with a high index of potential threat

# LEBRA governance: overview of the business model



# LEBRA governance: timeframe, phases and key actions



# LEBRA governance: roles and responsibilities

The LEBIA is presently supported by an enduring governance structure from which the oversight, implementation and review of the LEBRA, and the facilitation of responses to its findings, can easily be adapted. To maintain the principles of transparency, clarity, inclusiveness, accountability and persistence, the following governance components and responsibilities specific to the LEBRA are envisaged:

Group	Composition	Role
LEBRA Oversight Group (LOG)	Aust Govt rep (LOG Chair) Chair of CAC SOG reps (x4) Up to 4 CAC members including NRM Board reps Reps of other major investors Chair of Operations Group	<ul style="list-style-type: none"> <li>- Governance and due diligence</li> <li>- Drivers</li> <li>- Guiding engagement, TCP and SAM</li> <li>- Strategy of data management – where</li> <li>- Annual reporting to Min Forum informed by Ops Group Annual Report</li> <li>- Comms role to stakeholders - persistence</li> <li>- Assessment (State of LEB) to Min Forum &amp; SAM outcomes</li> </ul>
Technical Reference Group	Independent Chair by SAP Senior reps of Ops Group agencies, including the NRM agencies	<ul style="list-style-type: none"> <li>- Ongoing scientific steerage and coordination</li> </ul>
Operations Group	The full assessment team as identified by the LOG and sub-contracted by the lead assessment agency. NRM agencies should be involved as part of a wider team. The LOG will be lead by a national coordinator	<ul style="list-style-type: none"> <li>- Undertake monitoring and analysis</li> <li>- Periodic reporting (4 yr assessment)</li> <li>- Preparation of annual tech/data report</li> </ul>
Scientific Advisory Panel	As currently composed	<ul style="list-style-type: none"> <li>- Advice to LOG , Ops Group and LEBMF at critical stage</li> </ul>

These roles and responsibilities are defined further under the 'Key components' sections of this Plan. Funding arrangements should acknowledge that regional NRM agency participation is critical to the successful implementation of SAM.

# Coordination of the Implementation Plan

Phase	Timing	Coordination	Immediate Oversight	Reports
Agreement to LEBRA	October 2009 - June 2010	Secretariat.	Senior Officers Group	Agreed implementation plan including initial Thresholds of Potential Concern (TPCs).
Establishment	July 2010- June 2013	Operations Group lead by a part-time coordinator provided by a participating partner and guided by a Technical Reference Group.	LEBRA Oversight Group	Annual monitoring report (minimal analysis) incorporating LEBRA Oversight Group and SAP comments, including implications for responses and TPCs (requiring annual stakeholder workshops).
Mid-term trial	July 2013 - June 2014	Operations Group lead by a part-time coordinator provided by a participating partner and guided by a Technical Reference Group.	LEBRA Oversight Group	Mid-term assessment report incorporating LEBRA Oversight Group and SAP comments, including implications for responses and TPCs and implications for revising LEBRA methods (requiring a significant stakeholder workshop).
Refinement & monitoring	July 2014 - June 2017	Operations Group lead by a part-time coordinator provided by a participating partner and guided by a Technical Reference Group.	LEBRA Oversight Group	Annual monitoring report (minimal analysis) incorporating LEBRA Oversight Group and SAP comments, including implications for responses and TPCs (requiring annual stakeholder workshops).
10 year assessment	July 2017 - June 2018	Operations Group lead by a full-time coordinator provided by a participating partner and guided by a Technical Reference Group.	LEBRA Oversight Group	10 year assessment report incorporating LEBRA Oversight Group and SAP comments, including implications for responses and TPCs and implications for revising LEBRA methods (requiring a significant stakeholder workshop).

# Key component: LEBRA milestones

Yr	Component	Milestone
2009-10	Planning	<ul style="list-style-type: none"> <li>Implementation Plan endorsed</li> <li>Oversight, Technical ref and Operations groups identified</li> </ul>
	Assessment	<ul style="list-style-type: none"> <li>Conceptual models and TPCs identified</li> </ul>
	Evaluation and feedback	<ul style="list-style-type: none"> <li>Stakeholder workshop convened to identify &amp; gain buy-in on TPCs</li> </ul>
2010-11	Base monitoring	<ul style="list-style-type: none"> <li>All sites instrumented</li> <li>First year data recorded for all indicators, synthesised and reported</li> <li>Pressure indicator data-sets refined</li> </ul>
	Assessment	Not required
	Evaluation and feedback	<ul style="list-style-type: none"> <li>Annual stakeholder workshop convened to consider implications*</li> </ul>
2011-12	Base monitoring	<ul style="list-style-type: none"> <li>Second year data recorded for all indicators, synthesised and reported</li> </ul>
	Assessment	Not required
	Evaluation and feedback	<ul style="list-style-type: none"> <li>Annual stakeholder workshop convened to consider implications*</li> </ul>
2012-13	Base monitoring	<ul style="list-style-type: none"> <li>Third year data recorded for all indicators, synthesised and reported</li> </ul>
	Assessment	Not required
	Evaluation and feedback	<ul style="list-style-type: none"> <li>Annual stakeholder workshop convened to consider implications*</li> </ul>
2013-14	Base monitoring	<ul style="list-style-type: none"> <li>Fourth year data incorporated where possible into the mid-term assessment</li> </ul>
	Assessment	<ul style="list-style-type: none"> <li>Mid-term assessment completed covering all indicators, synthesised and reported</li> </ul>
	Evaluation and feedback	<ul style="list-style-type: none"> <li>Significant stakeholder workshop convened to consider implications*</li> </ul>

Yr	Year-end	Milestone
2014-15	Base monitoring	<ul style="list-style-type: none"> <li>Fifth year data recorded for all indicators, synthesised and reported</li> </ul>
	Assessment	Not required
	Evaluation and feedback	<ul style="list-style-type: none"> <li>Annual stakeholder workshop convened to consider implications*</li> </ul>
2015-16	Base monitoring	<ul style="list-style-type: none"> <li>Sixth year data recorded for all indicators, synthesised and reported</li> </ul>
	Assessment	Not required
	Evaluation and feedback	<ul style="list-style-type: none"> <li>Annual stakeholder workshop convened to consider implications*</li> </ul>
2016-17	Base monitoring	<ul style="list-style-type: none"> <li>Seventh year data recorded for all indicators, synthesised and reported</li> </ul>
	Assessment	Not required
	Evaluation and feedback	<ul style="list-style-type: none"> <li>Annual stakeholder workshop convened to consider implications*</li> </ul>
2017-18	Base monitoring	<ul style="list-style-type: none"> <li>Ninth year data incorporated where possible into the full assessment</li> </ul>
	Assessment	<ul style="list-style-type: none"> <li>Full assessment completed covering all indicators, synthesised and reported</li> </ul>
	Evaluation and feedback	<ul style="list-style-type: none"> <li>Significant stakeholder workshop convened to consider implications*</li> </ul>

\* 'implications' refers to the identification of required responses, refinement of TPCs and methods, communication messages and R&D priorities

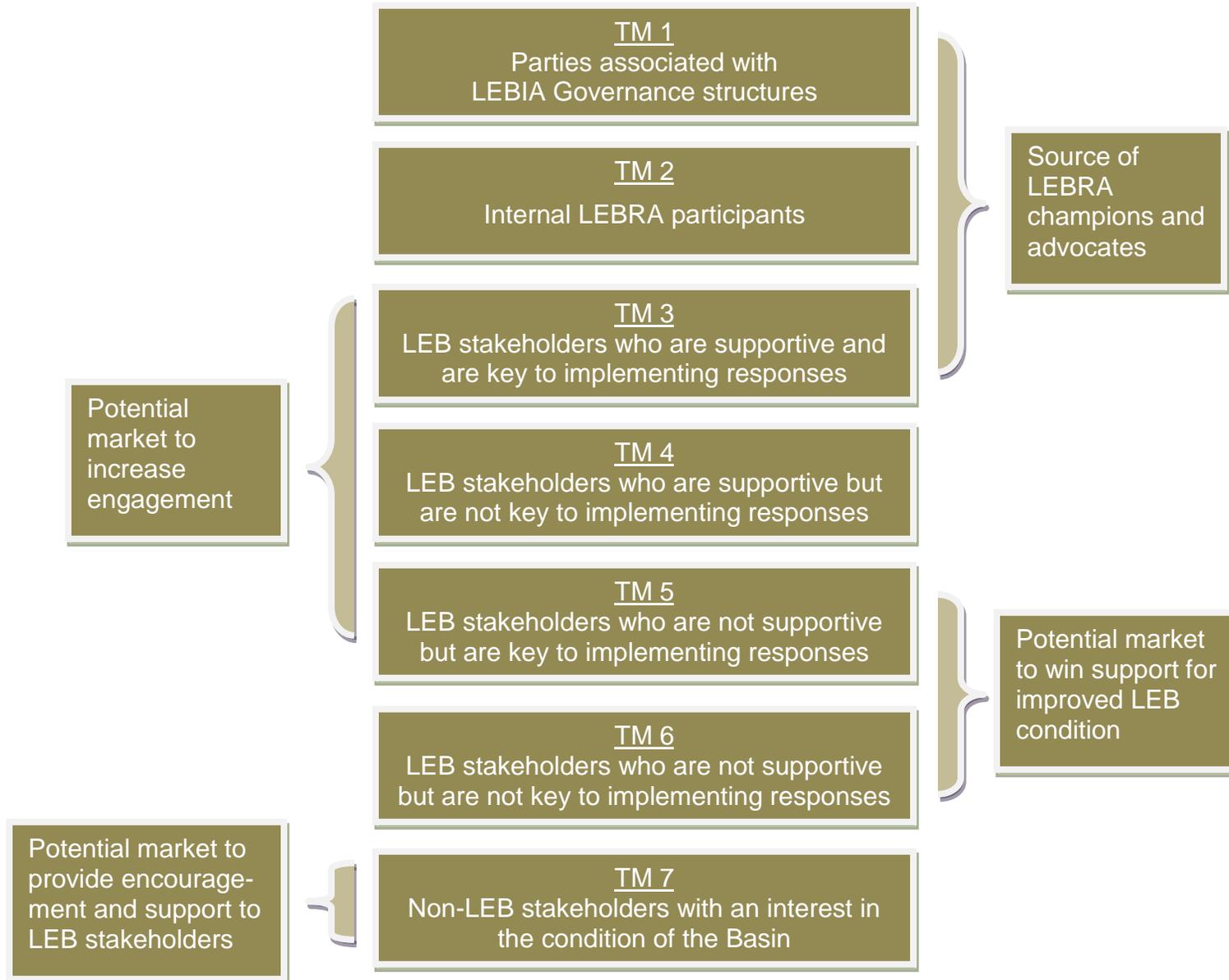
## Key component: Scientific review and quality assurance

Output	Timing / Frequency	Scientific / QA reviewer	QA process / evaluation
Implementation Plan	By June 2010	Scientific Advisory Panel	<ul style="list-style-type: none"> <li>Advise the SOG and LEBMF on the appropriateness of the indicators, methods and overall LEBRA framework proposed in the Implementation Plan.</li> </ul>
		Senior Officers Group	<ul style="list-style-type: none"> <li>Ensure the administrative and management components of the Implementation Plan are feasible and warrant LEBMF endorsement.</li> </ul>
Thresholds of Potential concern	Initially by June 2010	Scientific Advisory Panel	<ul style="list-style-type: none"> <li>Advise the SOG and LEBMF on the efficacy of the initial TPCs as appropriate for commencing a base monitoring program.</li> </ul>
	Revised TPCs by June annually	LEBRA Oversight Group	<ul style="list-style-type: none"> <li>Following the annual stakeholder workshop, ensure that adjustments to TPCs are appropriate to stakeholder requirements. Advise CAC, SOG and other stakeholders.</li> </ul>
Base monitoring reports	Annually each June 2011-13 and 2015-18	Scientific Advisory Panel	<ul style="list-style-type: none"> <li>Advise the SOG and LEBMF on the efficacy of the revised TPCs as appropriate for the continuing base monitoring program, and the mid-term and 10 year assessments</li> </ul>
		LEBRA Oversight Group	<ul style="list-style-type: none"> <li>Advise the Oversight Committee, SOG and LEBMF on the efficacy of the conduct, analysis and findings of the base monitoring effort.</li> </ul>
		Senior Officers Group / Secretariat	<ul style="list-style-type: none"> <li>Advise the SOG, CAC and other stakeholders on the extent to which the conduct, analysis and findings of the base monitoring effort meets stakeholder expectations.</li> </ul>
Reports on implications*	Annually each June 2011-13 and 2015-18	LEBRA Oversight Group	<ul style="list-style-type: none"> <li>Ensure the scientific and management milestones of the Implementation Plan have been followed through and that the baseline monitoring reports warrant LEBMF endorsement.</li> </ul>
		Senior Officers Group / Secretariat	<ul style="list-style-type: none"> <li>Advise the SOG, CAC and other stakeholders on the extent to which the conduct, analysis and findings of the base monitoring effort meets stakeholder expectations.</li> </ul>
Mid-term assessment	By June 2014	Scientific Advisory Panel	<ul style="list-style-type: none"> <li>(Pre-assessment) Advise the SOG and LEBMF on the appropriateness of the indicators, methods and overall LEBRA framework proposed for the mid-term assessment</li> <li>(Post assessment) Advise the Oversight Committee, SOG and LEBMF on the efficacy of the conduct, analysis and findings of the mid-term assessment</li> </ul>
		LEBRA Oversight Group	<ul style="list-style-type: none"> <li>Advise the SOG, CAC and other stakeholders on the extent to which the conduct, analysis and findings of the Mid-term Assessment effort meets stakeholder expectations.</li> </ul>
		Senior Officers Group / Secretariat	<ul style="list-style-type: none"> <li>Ensure the scientific and management milestones of the Implementation Plan have been followed through and that the Mid-term Assessment report warrants LEBMF endorsement.</li> </ul>
10 Year assessment	By June 2018	Scientific Advisory Panel	<ul style="list-style-type: none"> <li>(Pre-assessment) Advise the SOG and LEBMF on the appropriateness of the indicators, methods and overall LEBRA framework proposed for the 10 Year assessment</li> <li>(Post-assessment) Advise the Oversight Committee, SOG and LEBMF on the efficacy of the conduct, analysis and findings of the 10 Year assessment.</li> </ul>
		LEBRA Oversight Group	<ul style="list-style-type: none"> <li>Advise the SOG, CAC and other stakeholders on the extent to which the conduct, analysis and findings of the 10 Year Assessment effort meets stakeholder expectations.</li> </ul>
		Senior Officers Group / Secretariat	<ul style="list-style-type: none"> <li>Ensure the scientific and management milestones of the Implementation Plan have been followed through and that the 10 Year Assessment report warrants LEBMF endorsement.</li> </ul>

\* 'implications' refers to the identification of required responses, refinement of TPCs and methods, communication messages and R&D priorities

# Key component: Communicating this implementation plan

Target markets (TMs) for engaging with stakeholders (direct and indirect) in this implementation plan



### Target Market 1 – Parties associated with LEBIA Governance structures

Characteristics	Tactics	Key Messages	Desired Response
LEBMF, SOG, CAC and SAP who support and guide activities directly related to the implementation of the implementation plan.	Build internal collaboration, momentum and an energetic ethos supportive of the strategic adaptive management approach of the LEBRA through reporting and networking.	The LEBRA benefits all partners in the LEB, but requires goodwill and cooperation at the very highest levels, and recognition of effort by lower levels to be successful.  It is vital to understand where each partner is at in the stages of implementing the LEBRA.	Recognition of collaborating in the LEBRA is exciting and rewarding and a productive model for expansion to other NRM partnerships.

### Target Market 2 – Internal LEBRA participants

Characteristics	Tactics	Key Messages	Desired Response
Oversight Group, Technical Reference Group, Operations Group.	Personal invitation and engagement at the highest levels to participate in LEBRA activities and in championing the collaborative and innovative approach to the resource assessment process.	TM2 members will influence the direction and operation of one of the most innovative resource assessment processes in Australia, but this will require high degrees of trust, cooperation and integration.	Engagement and enthusiastic advocacy as champions for the LEBRA and its associated activities.  High degrees of cooperation ensuring successful implementation of the LEBRA.

### Target Market 3 – LEB stakeholders who are supportive and are key to implementing responses

Characteristics	Tactics	Key Messages	Desired Response
Stakeholder groups represented on the CAC, individuals, organisations and companies who see value in the LEBRA and are in a critical position to interpret and implement required responses	Close engagement in the commensurate and annual workshops aimed at identifying responses.  Regular communication, encouragement and positive feedback on contributions made by TM3.	An innovative and participatory LEBRA process has been designed specifically with you in mind because you are vital to the future of the LEB.  You will have a say about what the LEBRA findings are telling us and how you and others can best respond.	Increase in access to and use of LEBRA information as a means of informing required responses.  Voluntary contribution of monitoring activities or data.

#### Target Market 4 – LEB stakeholders who are supportive but are not key to implementing responses

Characteristics	Tactics	Key Messages	Desired Response
Stakeholder groups in the LEB who see value in the LEBRA and are less critical to the success of the LEBRA (schools/community groups)	Demonstrate the value of the LEBRA to the broader LEB community and the potential benefits of helping those with a more critical role.	The LEBRA benefits all stakeholders in the LEB, but these benefits increase to those who are closely engaged.	Increase in access to and use of LEBRA information as a means of informing required responses.  Voluntary contribution of monitoring activities or data.

#### Target Market 5 – LEB stakeholders who are not supportive but are key to implementing responses

Characteristics	Tactics	Key Messages	Desired Response
Stakeholder groups who are sceptical about the value of the LEBRA and or disagree with the priorities reflected in it.	Demonstrate the value of active engagement in the LEBRA, including the chance to help interpret the findings as a means of influencing a broad range of stakeholder responses in the LEB.	Alternative views are respected and you still have the opportunity to influence TPCs and responses on a regular basis.  The LEBRA benefits all stakeholders in the LEB, but these benefits increase to those who are closely engaged.	Increase in support, access to and use of LEBRA information as a means of informing required responses.

#### Target Market 6 – LEB stakeholders who are not supportive but are not key to implementing responses

Characteristics	Tactics	Key Messages	Desired Response
Stakeholder groups who are sceptical about the value of the LEBRA but are less critical to LEBRA success	Demonstrate the value of the LEBRA to the broader LEB community and the potential benefits of helping those with a more critical role.	Alternative views are respected. The LEBRA benefits all stakeholders in the LEB, but these benefits increase to those who are closely engaged.	Increase in support, access to and use of LEBRA information as a means of informing required responses.

#### Target Market 7 Non-LEB stakeholders with an interest in the condition of the Basin

Characteristics	Tactics	Key Messages	Desired Response
Industry bodies, community and nrm groups with a wider remit than the LEB but can gain cooperative benefit.	Personal invitation and engagement at the highest levels to participate in relevant activities.	The values of the LEB are relatively unique and are worth protecting and enhancing.	Effective and mutually rewarding partnerships with non-LEB organisations.

# Key component: Evaluation framework

The evaluation framework has seven levels, where the first level is a simple accounting of resources, and the seventh level is an assessment of the social, financial and environmental impacts resulting from the plan's implementation. The lower levels are easiest to monitor and report on and happen quickest, while the higher levels are more difficult, happen more slowly but are more meaningful for evaluation.

Hierarchical Level	Stated purposes of the LEBRA			Timing
	1: Underpin responses to LEB condition	2: Form consistent messages about LEB condition	3: Guide ongoing research, investigation and monitoring	
<u>Level 7</u> Impacts and outcomes during the life of the plan	No net decline in the condition of the LEB over the life of the Implementation Plan.	LEB stakeholders are aware of the condition of the LEB and are adapting their responses as required to ensure that there is no net decline in the condition of the LEB over the life of the Implementation Plan.	LEB research and monitoring is making a tangible contribution to ensuring that there is no net decline in the condition of the LEB over the life of the Implementation Plan.	June 2018
<u>Level 6</u> Changes in practice	Management actions are adapting and consistent with responses identified in the LEBRA monitoring and assessment findings.	There is enhanced and consistent communication about the condition of the LEB, and potential respondents are aware of any responses required	Research, investigations and monitoring activities are adapting to the priorities identified by LEBRA findings.	2014-2018
<u>Level 5</u> Changes in Knowledge, Attitudes, Skills and Aspirations	Stakeholders in the LEB have an increased respect for the values of the Basin and show willingness to adapt their actions in response to LEBRA findings.	Stakeholders are more aware of LEB condition and the responses required of them.	The research community is aware of LEB condition and the responses required of them. It is generally positive about the innovative approach being taken by the LEBRA.	June 2014
<u>Level 4</u> Initial reactions	Participating in LEBRA activities is seen as rewarding in itself, and there is optimism that benefits will arise from participation	Consistent messages are being delivered regularly to stakeholder target markets	The research community is aware of the LEBRA process and understands its strategic adaptive management approach.	June 2013
<u>Level 3</u> Participation	All key stakeholder groups critical to implementation of responses are actively engaged in the LEB process.	LEBIA communication plan activities are guided towards motivating participation in the LEBRA process.	Research and monitoring groups are cooperating in the implementation of the LEBRA.	June 2012
<u>Level 1 &amp; 2</u> Activities, strategies and resources	Activities outlined in this plan are resourced and contracted / delegated.	The LEBIA communication plan is reviewed and revised to support the LEBRA implementation plan.	Appointments are made to the Operations and Technical Reference groups are identified and contracted.	June 2011

# The Implementation Plan Budget



# The investment proposition

The natural resources and beauty of the Lake Eyre Basin are unique, and while not a fully pristine landscape, the Basin represents a significant proportion of Australia that has maintained its essential essence. The Lake Eyre Basin Intergovernmental Agreement (LEBIA) represents the voice of Australians, who through their governments, seek to maintain this essence for future generations.

Investment in an enhanced LEBRA process will result in at least three outcomes:

- Resilient communities that understand the pressures on their surroundings, the impacts these are having and the responses required to mitigate them;
- Resilient landscapes that are monitored and managed to maintain and enhance the Basin's features valued by so many Australians; and
- Resilient indigenous and industry enterprises that have learnt to profit from the Basin while reversing the negative impacts upon the Basin's full diversity of values.

The investment sought to cover the cost of the LEBRA averages around \$0.9 million per year, of which the governance component is around \$250,000 per year. If the proposed LEBRA methodology stopped simply at monitoring, then this would be a high price to pay. However, the methodology proposed in this plan ensures that monitoring and assessment activities are not ends in themselves, but rather conduits to responses. An assessment cannot be considered complete without required responses identified and appropriate partnership action rallied. The Strategic Adaptive Management (SAM) process outlined in the plan therefore seeks to provide a positive return on investment in the LEBRA.

The proposed budget combines what are likely to be cash and in-kind sources of funding so as to make the true cost of investment transparent. Wherever possible, the monitoring methods selected are based on those already being undertaken, or easily adapted to existing efforts of State and regional partners so as to minimise the cost burden. In other words, while the true cost is around \$0.9 million per year, the budget impact on partners is likely to be significantly less. This, however, will need to be negotiated through processes established under the LEBIA.

While the LEBRA is an action-oriented program, its basis in SAM potentially makes it the world's largest application of this approach, and so in some senses it is an experiment with global value. It is also an experiment at a massive scale that is about prevention rather than cure. This should path the way for encouraging investment streams via innovative research programs, such as the Commonwealth Environmental Research Fund, as well as environmental outcome-based programs such as Caring for Our Country.

# Overview of the budget and potential cost sharing

Phase	Year	Base level monitoring				Governance				Total
		LEB Assessment	Preparation	Surveys	Analysis	Governance <sup>1</sup>	Coordination	Adaptive Mngt <sup>2</sup>	Communication	
Establishment and monitoring	2009 - 10					\$55 800			\$10,000	\$65 800
	2010 - 11		\$259 000 <sup>3</sup>	\$485 000	\$141 000	\$75 600	\$100 000	\$70 000	\$10,000	\$1 140 600
	2011 - 12			\$485 000	\$141 000	\$75 600	\$100 000	\$70 000	\$10,000	\$881 600
	2012 - 13			\$485 000	\$141 000	\$75 600	\$100 000	\$70 000	\$10,000	\$881 600
Mid-term assessment	2013 - 14	\$325 000		\$485 000	(see assessment)	\$75 600	\$100 000	\$70 000	\$10,000	\$1 065 600
Refinement & monitoring	2014 - 15			\$485 000	\$141 000	\$75 600	\$100 000	\$70 000	\$25 000	\$896 600
	2015 - 16			\$485 000	\$141 000	\$75 600	\$100 000	\$70 000	\$10,000	\$881 600
	2016 - 17			\$485 000	\$141 000	\$75 600	\$100 000	\$70 000	\$10,000	\$881 600
10 year assessment	2017 - 18	\$325 000		\$485 000	(see assessment)	\$75 600	\$200 000	\$70 000	\$25 000	\$1 180 600

<sup>1</sup> Includes costs for the LEBRA Oversight Group, Technical Reference Group and Operations Group

<sup>2</sup> Includes costs associated with running an annual workshop with stakeholders to reflect on results, identify responses and refine TPCs

<sup>3</sup> Includes \$139,000 for equipment installation for 'state' datasets and \$20,000 for identification of 'pressure' data-sets

The collaborative model of governance proposed by the Scientific Advisory Panel relies substantially on the partners under the LEBIA contributing to the technical component of the LEBRA. Essentially this will mean that the initial monitoring investment of around \$885,000, ongoing monitoring investment of \$626,000 and Assessment year monitoring investment of around \$950,000 would be shared between the four government partners under the LEBIA, possibly as in-kind contributions.

The governance costs of around \$250,000 per year essentially constitutes the cash component of the LEBRA, supporting coordination and SAM workshop arrangements as well as enabling the participation of cash-poor regional bodies that are essential to the success of the Plan.

# 2009-2010

Component	Milestone	Budget		
		Item	Unit	Costs
Planning and governance	<ul style="list-style-type: none"> <li>Implementation Plan refined</li> <li>Oversight, Technical ref and Operations groups establish</li> <li>Conceptual models and TPCs refined</li> </ul>	LEBRAOG meeting (x1)	Travel (x12) Catering (x1)	\$12,000 \$1,000
		TRG meeting (x1)	Travel (x8) Catering (x2)	\$8,000 \$800
		Ops Group meeting (x1)	Travel (x30) Catering	\$30,000 \$2,000
Communication	<ul style="list-style-type: none"> <li>Communication plan prepared</li> <li>Awareness of LEBRA created across key stakeholders</li> </ul>	Printing, design and other		\$10,000
<b>TOTAL</b>				<b>\$63,800</b>

Notes and assumptions: Costs for meetings assume these are self standing for the purposes of the LEBRA implementation. Overall LEB costs can be reduced by adjoining meetings to other LEB events.

# 2010-2011

Component	Milestone	Budget		
		Item	Unit	Cost
Planning and governance	<ul style="list-style-type: none"> <li>Oversight, Technical ref and Operations groups oversee critical first year</li> </ul>	LEBRAOG meetings (x2)	Travel (x12x2) Catering (x2)	\$24,000 \$2,000
		TRG meetings (x2)	Travel (x8x2) Catering (x2)	\$16,000 \$1,600
		Ops Group meetings (1)	Travel (x30) Catering	\$30,000 \$2,000
Assessment	<ul style="list-style-type: none"> <li>Nil this year</li> </ul>	n/a	n/a	n/a
Adaptive management	<ul style="list-style-type: none"> <li>Stakeholder workshop convened to identify &amp; gain buy-in on TPCs</li> </ul>	Workshop costs	Facilitation Room & catering	\$6,000 \$4,000
		Travel	Stakeholder LEBRAOG/TRG/Ops	\$30,000 \$30,000
Base monitoring first year	<ul style="list-style-type: none"> <li>All sites instrumented</li> <li>First year data recorded for all indicators, synthesised and reported</li> <li>Pressure datasets identified</li> </ul>	Preparation	Equipment installation	\$259,000
		Surveys	Salaries and travel (see detailed methods)	\$485,000
		Analysis	Salaries (see detailed methods)	\$141,000
Coordination	<ul style="list-style-type: none"> <li>Annual milestones of the LEBRA are met</li> </ul>	Coordinator fees	Fees (part-time)	\$80,000
		Travel and disbursements	Travel & costs	\$20,000
Communication	<ul style="list-style-type: none"> <li>Communication plan objectives met</li> </ul>	Printing and other		\$10,000
<b>TOTAL</b>				<b>\$1,140,600</b>

Notes and assumptions: Costs for meetings assume these are self standing for the purposes of the LEBRA implementation. Overall LEB costs can be reduced by adjoining meetings to other LEB events.

# 2011-2012

Component	Milestone	Budget		
		Item	Unit	Costs
Planning and governance	<ul style="list-style-type: none"> <li>Oversight, Technical ref and Operations groups oversee second year</li> </ul>	LEBRAOG meetings (x2)	Travel (x12x2) Catering (x2)	\$24,000 \$2,000
		TRG meetings (x2)	Travel (x8x2) Catering (x2)	\$16,000 \$1,600
		Ops Group meetings (1)	Travel (x30) Catering	\$30,000 \$2,000
Assessment	<ul style="list-style-type: none"> <li>Nil this year</li> </ul>	n/a	n/a	n/a
Adaptive management	<ul style="list-style-type: none"> <li>Stakeholder workshop convened to consider first year monitoring results, identify responses and refine TPCs</li> </ul>	Workshop costs	Facilitation Room & catering	\$6,000 \$4,000
		Travel	Stakeholders LEBRAOG/TRG/ Ops team	\$30,000 \$30,000
Base monitoring second year	<ul style="list-style-type: none"> <li>Second year data recorded for all indicators, synthesised and reported</li> </ul>	Preparation	<ul style="list-style-type: none"> <li>Nil this year</li> </ul>	n/a
		Surveys	Salaries and travel (see detailed methods)	\$485,000
		Analysis	Salaries (see detailed methods)	\$141,000
Coordination	<ul style="list-style-type: none"> <li>Annual milestones of the LEBRA are met</li> </ul>	Coordinator fees	Fees (part-time)	\$80,000
		Travel and disbursements	Travel & costs	\$20,000
Communication	<ul style="list-style-type: none"> <li>Communication plan objectives met</li> </ul>	Printing and other		\$10,000
<b>TOTAL</b>				<b>\$881,600</b>

Notes and assumptions: Costs for meetings assume these are self standing for the purposes of the LEBRA implementation. Overall LEB costs can be reduced by adjoining meetings to other LEB events.

# 2012-2013

Component	Milestone	Budget		
		Item	Unit	Costs
Planning and governance	<ul style="list-style-type: none"> <li>Oversight, Technical ref and Operations groups oversee third year</li> </ul>	LEBRAOG meetings (x2)	Travel (x12x2) Catering (x2)	\$24,000 \$2,000
		TRG meetings (x2)	Travel (x8x2) Catering (x2)	\$16,000 \$1,600
		Ops Group meetings (1)	Travel (x30) Catering	\$30,000 \$2,000
Assessment	<ul style="list-style-type: none"> <li>Nil this year</li> </ul>	n/a	n/a	n/a
Adaptive management	<ul style="list-style-type: none"> <li>Stakeholder workshop convened to consider second year monitoring results, identify responses and refine TPCs</li> </ul>	Workshop costs	Facilitation Room & catering	\$6,000 \$4,000
		Travel	Stakeholders LEBRAOG/TRG/ Ops team	\$30,000 \$30,000
Base monitoring third year	<ul style="list-style-type: none"> <li>Third year data recorded for all indicators, synthesised and reported</li> </ul>	Preparation	<ul style="list-style-type: none"> <li>Nil this year</li> </ul>	n/a
		Surveys	Salaries and travel (see detailed methods)	\$485,000
		Analysis	Salaries (see detailed methods)	\$141,000
Coordination	<ul style="list-style-type: none"> <li>Annual milestones of the LEBRA are met</li> </ul>	Coordinator fees	Fees (part-time)	\$80,000
		Travel and disbursements	Travel & costs	\$20,000
Communication	<ul style="list-style-type: none"> <li>Communication plan objectives met</li> </ul>	Printing and other		\$10,000
<b>TOTAL</b>				<b>\$881,600</b>

Notes and assumptions: Costs for meetings assume these are self standing for the purposes of the LEBRA implementation. Overall LEB costs can be reduced by adjoining meetings to other LEB events.

# 2013-2014

Component	Milestone	Budget		
		Item	Unit	Costs
Planning and governance	<ul style="list-style-type: none"> <li>Oversight, Technical ref and Operations groups oversee fourth year, including the mid-term assessment</li> </ul>	LEBRAOG meetings (x2)	Travel (x12x2) Catering (x2)	\$24,000 \$2,000
		TRG meetings (x2)	Travel (x8x2) Catering (x2)	\$16,000 \$1,600
		Ops Group meetings (1)	Travel (x30) Catering	\$30,000 \$2,000
Assessment	<ul style="list-style-type: none"> <li>Mid-term assessment completed covering all indicators, synthesised and reported</li> </ul>	Analysis and reporting (possible additional TRG and Ops Group meetings)	Technical writers Salaries	\$325,000
Adaptive management	<ul style="list-style-type: none"> <li>Stakeholder workshop convened to consider third year monitoring results, identify responses and refine TPCs</li> </ul>	Workshop costs	Facilitation Room & catering	\$6,000 \$4,000
		Travel	Stakeholders LEBRAOG/TRG/ Ops team	\$30,000 \$30,000
Base monitoring fourth year	<ul style="list-style-type: none"> <li>Fourth year data recorded for all indicators, synthesised and reported</li> </ul>	Preparation	<ul style="list-style-type: none"> <li>Nil this year</li> </ul>	n/a
		Surveys	Salaries and travel (see detailed methods)	\$485,000
		Analysis	<ul style="list-style-type: none"> <li>Embedded into Assessment</li> </ul>	
Coordination	<ul style="list-style-type: none"> <li>Annual milestones of the LEBRA are met</li> </ul>	Coordinator fees	Fees (part-time)	\$80,000
		Travel and disbursements	Travel & costs	\$20,000
Communication	<ul style="list-style-type: none"> <li>Communication plan objectives met</li> </ul>	Printing and other		\$10,000
<b>TOTAL</b>				<b>\$1,065,600</b>

Notes and assumptions: Costs for meetings assume these are self standing for the purposes of the LEBRA implementation. Overall LEB costs can be reduced by adjoining meetings to other LEB events.

# 2014-2015

Component	Milestone	Budget		
		Item	Unit	Core pool costs
Planning and governance	<ul style="list-style-type: none"> <li>Oversight, Technical ref and Operations groups oversee fifth year</li> </ul>	LEBRAOG meetings (x2)	Travel (x12x2) Catering (x2)	\$24,000 \$2,000
		TRG meetings (x2)	Travel (x8x2) Catering (x2)	\$16,000 \$1,600
		Ops Group meetings (1)	Travel (x30) Catering	\$30,000 \$2,000
Assessment	<ul style="list-style-type: none"> <li>Nil this year</li> </ul>	n/a	n/a	n/a
Adaptive management	<ul style="list-style-type: none"> <li>Stakeholder workshop convened to consider mid-term assessment results, identify responses and refine TPCs</li> </ul>	Workshop costs	Facilitation Room & catering	\$6,000 \$4,000
		Travel	Stakeholders LEBRAOG/TRG/ Ops team	\$30,000 \$30,000
Base monitoring fifth year	<ul style="list-style-type: none"> <li>Fifth year data recorded for all indicators, synthesised and reported</li> </ul>	Preparation	<ul style="list-style-type: none"> <li>Nil this year</li> </ul>	n/a
		Surveys	Salaries and travel (see detailed methods)	\$485,000
		Analysis	Salaries (see detailed methods)	\$141,000
Coordination	<ul style="list-style-type: none"> <li>Annual milestones of the LEBRA are met</li> </ul>	Coordinator fees	Fees (part-time)	\$80,000
		Travel and disbursements	Travel & costs	\$20,000
Communication	<ul style="list-style-type: none"> <li>Communication plan objectives met</li> <li>Additional communication releasing mid-term results</li> </ul>	Printing and other		\$25,000
<b>TOTAL</b>				<b>\$896,600</b>

Notes and assumptions: Costs for meetings assume these are self standing for the purposes of the LEBRA implementation. Overall LEB costs can be reduced by adjoining meetings to other LEB events.

# 2015-2016

Component	Milestone	Budget		
		Item	Unit	Costs
Planning and governance	<ul style="list-style-type: none"> <li>Oversight, Technical ref and Operations groups oversee third year</li> </ul>	LEBRAOG meetings (x2)	Travel (x12x2) Catering (x2)	\$24,000 \$2,000
		TRG meetings (x2)	Travel (x8x2) Catering (x2)	\$16,000 \$1,600
		Ops Group meetings (1)	Travel (x30) Catering	\$30,000 \$2,000
Assessment	<ul style="list-style-type: none"> <li>Nil this year</li> </ul>	n/a	n/a	n/a
Adaptive management	<ul style="list-style-type: none"> <li>Stakeholder workshop convened to consider fifth year monitoring results, identify responses and refine TPCs</li> </ul>	Workshop costs	Facilitation Room & catering	\$6,000 \$4,000
		Travel	Stakeholders LEBRAOG/TRG/ Ops team	\$30,000 \$30,000
Base monitoring third year	<ul style="list-style-type: none"> <li>Sixth year data recorded for all indicators, synthesised and reported</li> </ul>	Preparation	<ul style="list-style-type: none"> <li>Nil this year</li> </ul>	n/a
		Surveys	Salaries and travel (see detailed methods)	\$485,000
		Analysis	Salaries (see detailed methods)	\$141,000
Coordination	<ul style="list-style-type: none"> <li>Annual milestones of the LEBRA are met</li> </ul>	Coordinator fees	Fees (part-time)	\$80,000
		Travel and disbursements	Travel & costs	\$20,000
Communication	<ul style="list-style-type: none"> <li>Communication plan objectives met</li> </ul>	Printing and other		\$10,000
<b>TOTAL</b>				<b>\$881,600</b>

Notes and assumptions: Costs for meetings assume these are self standing for the purposes of the LEBRA implementation. Overall LEB costs can be reduced by adjoining meetings to other LEB events.

# 2016-2017

Component	Milestone	Budget		
		Item	Unit	Costs
Planning and governance	<ul style="list-style-type: none"> <li>Oversight, Technical ref and Operations groups oversee third year</li> </ul>	LEBRAOG meetings (x2)	Travel (x12x2) Catering (x2)	\$24,000 \$2,000
		TRG meetings (x2)	Travel (x8x2) Catering (x2)	\$16,000 \$1,600
		Ops Group meetings (1)	Travel (x30) Catering	\$30,000 \$2,000
Assessment	<ul style="list-style-type: none"> <li>Nil this year</li> </ul>	n/a	n/a	n/a
Adaptive management	<ul style="list-style-type: none"> <li>Stakeholder workshop convened to consider sixth year monitoring results, identify responses and refine TPCs</li> </ul>	Workshop costs	Facilitation Room & catering	\$6,000 \$4,000
		Travel	Stakeholders LEBRAOG/TRG/ Ops team	\$30,000 \$30,000
Base monitoring third year	<ul style="list-style-type: none"> <li>Seventh year data recorded for all indicators, synthesised and reported</li> </ul>	Preparation	<ul style="list-style-type: none"> <li>Nil this year</li> </ul>	n/a
		Surveys	Salaries and travel (see detailed methods)	\$485,000
		Analysis	Salaries (see detailed methods)	\$141,000
Coordination	<ul style="list-style-type: none"> <li>Annual milestones of the LEBRA are met</li> </ul>	Coordinator fees	Fees (part-time)	\$80,000
		Travel and disbursements	Travel & costs	\$20,000
Communication	<ul style="list-style-type: none"> <li>Communication plan objectives met</li> </ul>	Printing and other		\$10,000
<b>TOTAL</b>				<b>\$881,600</b>

Notes and assumptions: Costs for meetings assume these are self standing for the purposes of the LEBRA implementation. Overall LEB costs can be reduced by adjoining meetings to other LEB events.

# 2017-2018

Component	Milestone	Budget		
		Item	Unit	Core pool costs
Planning and governance	<ul style="list-style-type: none"> <li>Oversight, Technical ref and Operations groups oversee fourth year, including the Final assessment</li> </ul>	LEBRAOG meetings (x2)	Travel (x12x2) Catering (x2)	\$24,000 \$2,000
		TRG meetings (x2)	Travel (x8x2) Catering (x2)	\$16,000 \$1,600
		Ops Group meetings (1)	Travel (x30) Catering	\$30,000 \$2,000
Assessment	<ul style="list-style-type: none"> <li>Final assessment completed covering all indicators, synthesised and reported</li> </ul>	Analysis and reporting (possible additional TRG and Ops Group meetings)	Technical writer Salaries	\$325,000
Adaptive management	<ul style="list-style-type: none"> <li>Stakeholder workshop convened to consider final assessment results, identify responses and refine TPCs and plan ahead</li> </ul>	Workshop costs	Facilitation Room & catering	\$6,000 \$4,000
		Travel	Stakeholders LEBRAOG/TRG/ Ops team	\$30,000 \$30,000
Base monitoring fourth year	<ul style="list-style-type: none"> <li>Eighth year data recorded for all indicators, synthesised and reported</li> </ul>	Preparation	<ul style="list-style-type: none"> <li>Nil this year</li> </ul>	n/a
		Surveys	Salaries and travel (see detailed methods)	\$485,000
		Analysis	<ul style="list-style-type: none"> <li>Embedded into Assessment</li> </ul>	n/a
Coordination	<ul style="list-style-type: none"> <li>Annual milestones of the LEBRA are met</li> </ul>	Coordinator fees	Fees (full-time)	\$140,000
		Travel and disbursements	Travel & costs	\$60,000
Communication	<ul style="list-style-type: none"> <li>Communication plan objectives met</li> <li>Additional communication releasing results</li> </ul>	Printing and other		\$25,000
<b>TOTAL</b>				<b>\$1,180,600</b>

Notes and assumptions: Costs for meetings assume these are self standing for the purposes of the LEBRA implementation. Overall LEB costs can be reduced by adjoining meetings to other LEB events.

# Monitoring and Assessment Component Costs

## Summary

Component	2010-11 (establishment) costs				Ongoing annual costs	
	Preparation	Surveys	Data analysis	Total (2010-11)	Dry year	Wet year
Assessment component						
Fish assemblage diversity	\$15,000	\$126,600	\$25,000	\$166,600	\$313,200	\$313,200
Colonial waterbirds (dry-year)		\$103,350		\$103,350	\$103,350	\$190,710
Riparian vegetation		\$45,000	\$30,000	\$75,000	\$75,000	\$75,000
Wetland vegetation	\$14,000	\$128,600	\$50,000	\$192,600	\$178,600	\$178,600
Physical habitat		\$23,500		\$23,500	\$23,500	\$23,500
Water quality		\$58,500		\$58,500	\$6,000	\$6,000
Hydrology	\$210,000		\$36,000	\$246,000	\$1,000	\$1,000
Pressure Indicators	\$20,000			\$20,000	\$50,000	\$50,000

## Costs for Fish Assemblage set

Item	Estimated cost	# of days	Total	Frequency	Annual Total
Field preparation					
Final site selection (workshop?)				once at beginning of monitoring programme	\$15,000
Field surveys					
Field staff	\$1,000 per day (\$500 p.p. per day x 2 field staff)	90 days per sampling date (1.5 days per site (including travel) x 82 sites + extra travel time)	\$90,000	twice per year	\$180,000
Accommodation	\$140 per night (\$70 p.p. per night x 2 staff)	90 nights per sampling date	\$12,600	twice per year	\$25,200
Consumables (food etc.)	\$100 per day (\$50 p.p. per day)	90 days	\$9,000	twice per year	\$18,000
Travel	\$15,000 (20,000 km @ \$0.75 km) N.B. mileage estimate for 2 cars travelling from Brisbane (6,000 km trip) & 2 cars travelling from Adelaide (4,000 km trip)	-	\$15,000	twice per year	\$30,000
Field equipment				once at beginning	\$10,000
Total Field Survey costs			\$126,600 per sampling date		\$263,200 per year (+\$10,000 initially)
Data analysis & reporting					
Data entry	\$500 per day (2 x junior staff)	10 days	\$5,000	twice per year	\$10,000
Data analysis	\$1,000 per day (2 x senior staff)	10 days	\$10,000	twice per year	\$20,000
Report preparation	\$1,000 per day (2 x senior staff)	10 days	\$10,000	twice per year	\$20,000
Total data analysis & reporting			\$25,000 per sampling date		\$50,000 per year
TOTAL			\$151,600 per sampling date		\$313,200 per year (+\$25,000 initially)

## Costs for Waterbirds set

Item		Estimated cost	Annual Total
Expansion of existing eastern aerial waterbird survey (October annually)			
Aircraft & pilot	\$450 hr x approx. x ~ 30 hrs (+30 % multiplier)		\$17,550
Project coordinator (0.5 FTP – surveys, data entry, analysis & reporting)	\$60,00 (+ 30 % multiplier)		\$78,000
Survey staff	\$1000 p.p. per day x 2 staff members x 3 days (+ 30 % multiplier) (salary and travel expenses)		\$7,800
Total for expansion of existing survey			\$103,350
Stand-alone survey in wet years (March/April)			
Aircraft & pilot	\$450 hr x approx. x ~ 96 hrs (+30 % multiplier)		\$56,160
Project coordinator (0.5 FTP – surveys, data entry, analysis & reporting)	already covered by expansion of existing survey (above)		\$0
Survey staff	\$1000 p.p. per day x 2 staff members x 12 days (+ 30 % multiplier) (salary and travel expenses)		\$31,200
Total for expansion of existing survey	\$103,350		\$87,360
TOTAL	in dry year in wet year		\$103,350 \$190,710

## Costs for Vegetation set (riparian)

Item		Estimated cost	Annual Total
Field surveys			
Staff (1 additional staff member on fish surveys)	\$500 per day x 90 days (1.5 days per site (including travel) x 82 sites + extra travel time) (salary and travel expenses)		\$45,000
Travel	\$0 if accompanying fish survey team		\$45,000
Data analysis and reporting			
Staff	~0.25 FTP + on-costs		\$30,000
TOTAL			\$75,000

## Costs for Vegetation set (wetland)

(Based on 28 DIWA wetland sites.)

Item	Estimated cost	# of days	Annual Total
Field preparation			
Transect selection using aerial photos etc.	0.5 days per wetland x \$500 per day		\$14,000 (once at beginning)
Field surveys			
Field staff	\$1,000 per day (\$500 p.p. per day x 2 field staff)	90 days (3 days per wetland (including travel) x 28 sites + extra travel time)	\$90,000
Accommodation	\$140 per night (\$70 p.p. per night x 2 staff)	90 nights	\$12,600
Consumables (food etc.)	\$100 per day (\$50 p.p. per day)	90 days	\$9,000
Travel	\$12,000 (20,000 km @ \$0.75 km) N.B. mileage estimate for 2 cars travelling from Brisbane (6,000 km trip) & 1 car travelling from Adelaide (4,000 km trip)	-	\$12,000
Field equipment			\$5,000
Total Field Survey costs			\$128,600
Data analysis & reporting			
Data entry	\$500 per day (2 x junior staff)	10 days	\$10,000
Data analysis	\$1,000 per day (2 x senior staff)	10 days	\$20,000
Report preparation	\$1,000 per day (2 x senior staff)	10 days	\$20,000
Total data analysis & reporting			\$50,000
TOTAL			\$178,600 per year (+\$14,000 initially)

## Costs for Physical Habitat set

Item	Estimated cost	Total	Frequency	Annual Total
Equipment	\$10,000 per survey item	\$10,000	once at beginning of monitoring programme	\$5,000
Staff (3 people required)	\$500 p.p. per day (salary and travel expenses)	\$13,500	once at beginning of monitoring programme	\$13,500
Total Installation costs		\$23,500		\$18,500

## Costs for Water Quality set

Item	Estimated cost	Total	Frequency	Annual Total
Installation of probes (3)				
Equipment	\$15,000 per probe	\$45,000 (3 new probes)	once at beginning of monitoring programme	\$45,000
Staff (3 people required)	\$500 p.p. per day (salary and travel expenses)	\$13,500 (3 days per probe including travel)	once at beginning of monitoring programme	\$13,500
Total Installation costs		\$58,500		\$58,500
Maintenance and calibration				
Staff and travel	\$1,000 per day (\$500 p.p. per day x 2 field staff x 1 probe per day)	\$3,000	annually	\$3,000
Equipment	\$1,000 per probe	\$3,000	annually	\$63,000
Total Maintenance costs		\$6,000 per year		\$6,000 per year
TOTAL				\$6,000 per year (+\$58,500 initially)

## Costs for Hydrology set (Typical costs for monitoring system components)

Item	Cost
Field visit by a team of two people	\$2,000 per day x3sites x 4 sub-basins x 2people
Satellite phone modem	\$2,000 to \$3,000
Satellite phone network access and phone calls	\$1,000 per year
Data logger	\$1,000 to \$10,000 x 12
Sensor	\$1,000 to \$5,000 x12
Set up costs for high quality long-term gauging site that	\$20,000 to \$100,000 depending on stream size, remoteness, and chosen equipment. (est \$60k x 12 – some exist, but need upgrading)
High flow gauging of a remote site e.g. Diamantina River at Diamantina Lakes	\$30,000 This includes helicopter access
Set up costs for 'project' sites e.g. an Aridflo sites. These could be used to monitor a series of waterholes	\$40,000 for 10 sites within a radius of a few hundred kilometres.
Analysis	30 days \$36k

## Costs for Pressure Indicator set

Item	Estimated Cost	Total	Frequency	Total
Data collation and reporting				
Initial identification of data sets	\$1000 / day * 20 days	\$20 000	Year 2010-11	\$20 000
Collation of information	\$1000 / day * 15 days	\$10 000	Mid term and Final assessment	\$20 000
Report preparation	\$1000 / day * 15 days	\$15 000	Mid term and Final assessment	\$30 000