

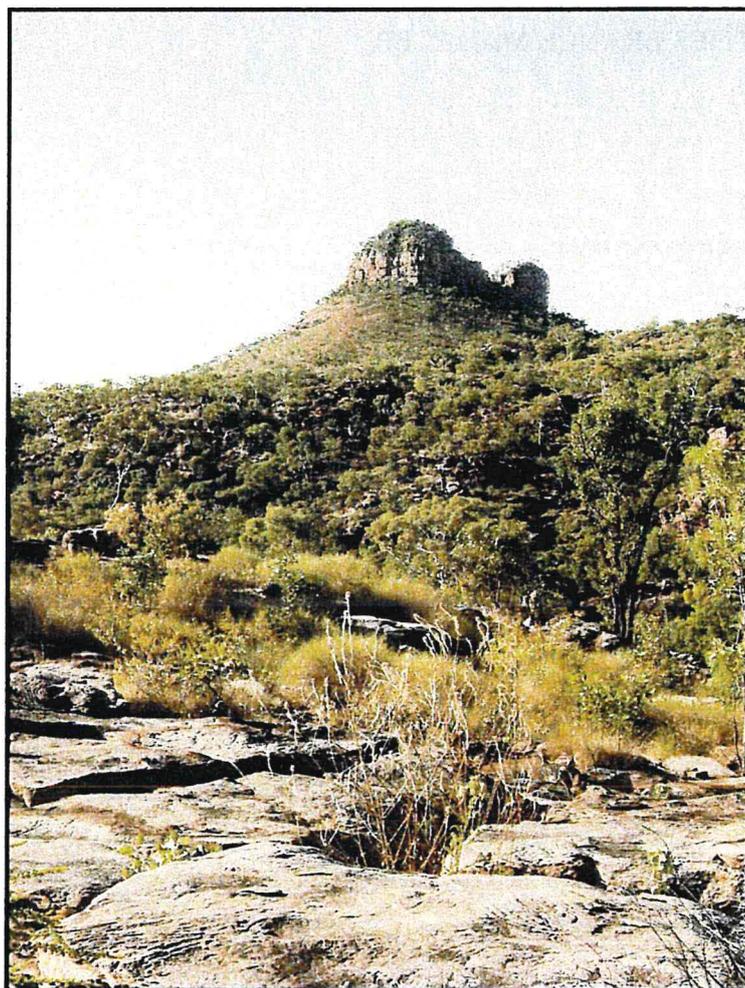
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DRAFT (FEBRUARY 2006)

NATURE CONSERVATION OUTPUT

**KIMBERLEY REGION PLAN
2006-2009**



Prince Regent Nature Reserve

ENDORSEMENTS

Signature by the following:

REGIONAL MANAGER

REGIONAL LEADER NATURE CONSERVATION

ENVIRONMENTAL MANAGEMENT BRANCH MANAGER

SPECIES AND COMMUNITIES BRANCH MANAGER

DIRECTOR OF SCIENCE

DIRECTOR NATURE CONSERVATION

ACKNOWLEDGMENTS

The Nature Conservation Output Kimberley Region Plan was compiled by a team of 14 CALM staff, in alphabetical order: Neil Burrows, Keith Claymore, Gordon Graham, Max Haste, Ed Hatherley, Gae Mackay, Norm McKenzie, Ian Radford, Brad Rushforth, Troy Sinclair, Tony Start, Allan Thomson, Kevin Vear and Kevin White.

Special thanks go to Kevin Vear for facilitation and assisting in drafting at the regional workshop, as well as Gordon Wyre and Alan Walker for providing support and encouragement for the development of all nine regional plans. Keith Claymore and Kevin Vear developed the framework for the plan with assistance from Roger Armstrong, Mark Cowan, Keith Hockey, Norm McKenzie, Kim Williams and Keith Morris and input from Neil Burrows and Ian Abbott. The following people provided comments on the draft plan:

PREFACE

In 2002 a workshop comprised of CALM staff was held in Broome to prepare a five-year operational plan for the Nature Conservation Output in the Kimberley Region. [See Appendix 2 for a list of the people who attended the Broome workshop and the priority activities and projects identified and with a current assessment of the level of implementation of those activities and projects.] A number of factors that influence achievement of nature conservation outcomes were identified in the preparation of the 2002 plan with many remaining relevant to the replacement plan:

- Changing land use patterns that reflect changing behaviours by industries, visitors and residents;
- Changing land management practices driven by socio-economic pressures and technological developments;
- Increasing awareness and understanding of environmentally degrading processes, many that are driven or exacerbated by changed fire regimes;
- Logistical issues associated with diminishing resources in a large and diverse region that has poorly developed infrastructure;
- A large (but incomplete) and geographically dispersed reserve system;
- Inability to acquire new formal conservation reserves, even where major gaps have been identified;
- Increasing recognition of the need to manage threats to off-reserve and marine biodiversity; and
- Increasing expectations within the community about the Department's nature conservation role.

Priorities were identified in 2002 based on:

- The need to deliver urgent management actions;
- The Region's capacity to deliver and also meet the Department's statutory and other socio-political obligations; and
- The achievement of the best possible conservation outcomes.

A total of 86 action items were identified and since 2002 there has been either complete or partial action on 33 items (38% over three years). The 2002 plan did result in a shift in priority setting for the delivery of nature conservation outcomes in the region and notable results out of that planning processes are:

- The appointment of a fire ecologist;
- Two staff specifically with fire planning and implementation duties;
- Initiation of liaison looking into the creation of a conservation reserve over Bigge Island; and,

- The allocation of funds to address, particularly, feral animal control, weed control and monitoring on CALM managed lands in the Kimberley.

As a result of the 2002 planning process it would appear that changes are occurring within the Kimberley Region with the delivery of the Nature Conservation Output. From that process a number of focus areas were identified that have received funding and at present those areas remain as a priority for the Region. The focus areas were:

- Fire as the main threatening process and the establishment of management programs to address this problem;
- The development and implementation of feral animal controls;
- The development and implementation of weed control programs;
- The establishment of a long term, site based monitoring program; and
- Improvements in the capture, storage and access to information.

This document constitutes a review of, and replaces, the 2002 plan.

The State-wide Nature Conservation Output as currently described consumes c. 46% (\$72m) of the Department of Conservation and Land Management's 2005/06 budget, and is principally aimed at achieving the goal of conserving Western Australia's biodiversity. The Kimberley Region Plan is one of nine Nature Conservation Output plans that will provide the basis for the delivery of the Output at a regional scale over the next three years for the Divisions of Nature Conservation, Science and Regional Services.

It is widely understood¹ that there is increasing landscape scale trend in decline and loss and that the current State wide linear management model is not effective in mitigating threats. A quantum leap in funding is required – invest now to reduce the increasing trends in resources demand.

If fully implemented, it would represent a major movement within the Department towards outcome-based management, and recognition of the place of active adaptive management (AAM). AAM is a process in which research is integrated with, and helps inform, operational aspects of conservation management, and monitoring and evaluation of biodiversity status and condition is utilised to determine the effectiveness of activities in achieving desirable outcomes. Consequently, there will need to be a significant recognition and increase in regional activity aimed at the design and establishment of suitable condition monitoring and evaluation programs, rather than continuing to implement management prescriptions in the absence of an experimental management framework and without knowing whether outcomes are being achieved, or if management intervention is successful.

In line with modern trends in conservation management a Department wide paradigm shift is needed and will require active leadership and improved technical capacity across all three Divisions and will need to build on the successes of the past. To be successful, the AAM approach entails enhanced co-operation among Divisions and the development of new monitoring systems for many of the proposed regional outcome targets within this plan.

¹ (Page 81 of the Biodiversity Audit Summary)

The basis of the process used has been to examine the pervasive processes that threaten biodiversity at a regional scale. While there has been an attempt at describing three year outcome-targets for landscape and protected area assets, and ecosystem (inc. wetlands) and species, to be effective these will need to be refined and made more specific once sufficient knowledge and information has been gained from appropriate monitoring systems and benchmark biological surveys. For the most part, condition trends are currently unknown and are unlikely to be detected over the next three years. Nevertheless, it is critical that suitable monitoring systems are developed and initiated during this plan so that the Department is better positioned to predict likely changes and threats to biodiversity, rather than to react to situations or problems some years, or even decades, after an observational trend has been detected. Future plan iterations should also be expanded to include performance measures and management targets to provide an indication on progress of candidate actions.

The nine regional plans collectively provide the basis for greater integration and coherence of Departmental activities and functions and a better focusing of effort to address major biophysical and social threats to biodiversity, as well as a basis for pursuing opportunities. They will help inform State-wide priorities in the delivery of conservation activities, particularly knowledge-building requirements, Threatened taxa and Threatened Ecological Communities listing priorities, and assist in identifying gaps in administration processes and planning framework to aid effective and consistent delivery of the Output at a high professional standard.

The draft of this Plan is an outcome of a cross Divisional expert-based workshop held in Kununurra on 3 - 5 October 2005, and informed by data and information from *A biodiversity audit of Western Australia's biogeographical subregions in 2002* (May and McKenzie 2002), *Kimberley Region Nature Conservation Output Proposed Five Year Operational Plan 2002* (CALM Unpublished) and *A Conservation Case Study of Western Australia's Mitchell Subregion (North Kimberley 1) in 2003* (Graham and McKenzie 2004) then circulated to relevant staff for comment and further input for the final plan. Whilst the focus of this plan is three years it is recognised that this is a step in a long- term process.

SYNOPSIS

This Nature Conservation Output Kimberley Region Plan provides a summary of key biodiversity values within the Kimberley Region and major threats to those values. It outlines 19 priority three year outcome targets for the Nature Conservation Output, and 49 associated candidate actions for the Divisions of Science, Nature Conservation and Regional Services at a range of scales for 2006-2009 and identifies the resources needed to implement those actions.

For the purposes of the Plan, five management zones were developed from 12 IBRA sub-regions that comprise (in part or full) the Kimberley Region which are Kimberley Plateau, Ord Victoria, Dampierland, Desert and Marine . Three year regional nature conservation target outcomes for the Kimberley Region were identified for those biodiversity assets and values that need to be actively managed if the Nature Conservation Output Aspirational Outcome is to be achieved. Candidate actions were developed on the basis of including only those actions that would make a direct and measurable improvement in meeting the three year nature conservation target outcomes.

The focus of this plan will be to address landscape scale threatening processes that are driving the increasing individual species and ecological community decline.

Analysis of major threats against biophysical values and existing management responses revealed a general absence of active conservation management at a landscape level in the Desert management zone. Further, basic information on conservation reserves is generally lacking, as well as biological inventory and assessment of threats to biodiversity in these areas and at a bioregional and management zone scale.

Benchmark quantitative data on introduced animal populations that would provide the basis for monitoring the success of control programs is absent for all management zones however actions have recently been initiated to start addressing this. Overall there is a lack of detailed information and analysis to determine relatively intact landscapes that would form the basis for cost-effective investment and targeting of conservation effort. One case study has been prepared for the Mitchell subregion. Similarly, data on Priority taxa and ecological communities to resolve conservation status is deficient, and a risk assessment is required to focus effort.

A gap analysis to determine priority ecosystems for reservation requires up-dating, and refinement of the conservation reserve system design to enable regional scale ecological linkages is considered a priority. Land acquisition approaches need to be consolidated and better integrated with regional input for on-ground verifications.

There is a considerable gap in the scale and composition of current management responses aimed at biodiversity conservation, research requirements for management decision making and level of resources needed (both in terms of level of funding and technical capabilities) to be able to meet this Plan's proposed outcome-targets and address candidate actions.

A review of the candidate actions proposed in the Kimberley Region Plan highlights the need for the following priority strategic changes to be made, including some that will require an integrated management and inter-Departmental working group response:

LANDSCAPES, SEASCAPES AND PROTECTED AREA SYSTEM

The current condition of the Marine Management Zone, including the offshore islands, is considered to be very good with no existing threatening processes. The emphasis in this management zone will be to maintain its condition.

Altered fire regimes are major threats to biodiversity in the four terrestrial management zones, but of particular concern in the Kimberley Plateau Management Zone.

Determination of appropriate fire regimes is required together with an improved (or detailed) understanding of current fire-related practices and regimes. While this knowledge is being attained, urgent action is needed to restrict large-scale unmanaged fires focusing on the Kimberley Plateau Management Zone around and within existing and proposed conservation reserves. This will require the development of regional-scale notional fire regimes that aim to maintain or enhance biodiversity values, and the refinement of management systems, including the establishment of monitoring programs, to ensure appropriate fire regimes are achieved.

An understanding of the distribution and densities of large introduced herbivores (including cattle), and impacts on biodiversity values, is urgently required for all management zones to develop an effective control program. Similarly, an understanding of population data and dynamics, and impacts, is required in the Kimberley Plateau Management Zone.

An understanding of the interactions between fire, weeds (including native grasses) and grazing, and combined impacts on biodiversity, is required for the Kimberley Plateau, Ord Victoria and Dampierland Management Zones, along with a continued involvement in the land use planning and community interaction processes, and subsequent monitoring and auditing processes.

While environmental weeds are considered as currently having a low impact on biodiversity values in the Kimberley Region, specific information is required on the impact of weeds on the conservation reserves in the Kimberley Plateau and Ord Victoria Management Zones, particularly from adjacent pastoral properties.

Off-reserve conservation is required in relatively intact landscapes around existing and proposed conservation reserves in the Kimberley Plateau Management Zone, including the development of new programs to provide incentives for leaseholders and landowners.

Biodiversity inventories and monitoring on taxa status and ecosystem condition monitoring are required for the conservation reserves in the all five management zones.

WETLANDS

Biological inventory and condition benchmarking is required for four Ramsar wetlands and five wetlands listed in the *Directory of Important Wetlands of Australia*, along with appropriate management responses to address threats. It is to be noted that action is already occurring under other programs for other wetlands listed in the *Directory of Important Wetlands of Australia*.

THREATENED SPECIES AND ECOLOGICAL COMMUNITIES

An analysis of species and communities where action is required as a priority needs to be undertaken. This includes a program of systematic investigation and analysis to identify and determine regionally significant ecological communities, and those under threat.

Development and implementation of three Critically Endangered, four Endangered, and 16 Vulnerable species recovery plans, including basic benchmarking surveys and monitoring; and resolve the conservation status of 10 taxa and 10 ecological communities.

Recovery plan development is required for Threatened Ecological Communities including benchmarking, monitoring of condition. As a result of the systematic assessment and priority determination process this process will be completed for at least one listed Threatened Ecological Community.

RESOURCES

Full implementation of all the candidate actions in this plan will require \$9,635,000 in the first year with a substantial but lesser ongoing amount once the development phase has been completed along with the one off projects.

Current allocations (2005-2006) total \$1,730,805 (not including the cane toad budget) and are derived solely from the Nature Conservation Output.

18 (37%) of the candidate actions are currently partly funded (total \$1,016,011) from within the existing allocations. The remaining funds are expended on administration costs, fixed costs and standard operational requirements not presently covered in this plan, for example the management of the crocodile industry, the permit system and responding to public enquiries.

In implementing this plan consideration must be given to all pervading constraints that apply based largely on critical resourcing and staffing requirements. For example because of the small numbers of staff involved in park management the demands of servicing the parks to meet the expectations of visitors and associated safety standards means that ranger staff have limited opportunities to become involved in major nature conservation projects. This also impacts on staff whose primary responsibilities lie with nature conservation. Organisational structures need to be reviewed in order to address the crucial aspects of capacity that might include, but are not limited to:

- A substantial increase in staff numbers in areas of core business;
- The involvement of private enterprise in the 'businesses' currently undertaken by the Department;
- Greater use across a range of activities of conservation crews and volunteers;
- Isolating budgets and staff to the delivery of nature conservation outcomes; and
- Reviewing the impacts in regional functions of one off funds and capital investment.

CONTENTS

ENDORSEMENTS	I
ACKNOWLEDGMENTS	II
PREFACE.....	III
SYNOPSIS	VI
1. INTRODUCTION AND SCOPE.....	1
1.1 SCOPE AND PURPOSE OF PLAN	1
1.2 NATURE CONSERVATION OUTPUT DESCRIPTION.....	1
1.3 NATURE CONSERVATION OUTPUT ASPIRATIONAL OUTCOME.....	1
1.4 REGIONAL DESCRIPTION AND BIODIVERSITY ASSETS.....	2
1.5 MAJOR THREATS TO BIODIVERSITY AND BARRIERS TO CONSERVATION.....	6
2. REGIONAL NATURE CONSERVATION THREE YEAR OUTCOME TARGETS..	7
3 LIST OF REGIONAL THREE YEAR CANDIDATE ACTIONS	9
3.1 LANDSCAPE AND SEASCAPE.....	9
3.2 PROTECTED AREA SYSTEM	20
3.3 WETLANDS	24
3.4 THREATENED SPECIES AND ECOLOGICAL COMMUNITIES	ERROR!
BOOKMARK NOT DEFINED.	
4. RESOURCE ANALYSIS	30
5. MEASURING EFFECTIVENESS AND PROGRESS OF PLAN	31
FIGURE 1. MAP OF KIMBERLEY REGION SHOWING IBRA SUB-REGIONAL AND IMCRA BOUNDARIES, AND LANDS MANAGED BY THE DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT.....	4
FIGURE 2. MAP OF THE FOUR KIMBERLEY REGION MANAGEMENT ZONES.....	4
APPENDIX 1 MATRIX OF VALUES, THREATS AND RELATIVE IMPORTANCE FOR REGIONAL SCALE ACTIONS FOR CALM KIMBERLEY REGION	32
APPENDIX 2 RESOURCE ANALYSIS.....	33

1. INTRODUCTION AND SCOPE

1.1 SCOPE AND PURPOSE OF PLAN

This plan addresses the major aspects expected to be delivered as part of the Department's nature conservation program, namely, significant biodiversity conservation outcomes.

- To constitute a review and evaluation of the output plan prepared in 2002 and to replace that plan.
- To describe three year regional scale Nature Conservation Output outcome targets, priorities, and actions integrated across Departmental Divisions that will contribute towards the Nature Conservation Output Aspirational Outcome for the bioregions of the Kimberley (see Section 3 below);
- To provide a framework for Nature Conservation Output investment, with a view to
 - Maximising resource use and sharing;
 - Integrate delivery where practical; and
 - Embed delivery in the Service Provision Agreements.
- To clarify roles and responsibilities for Nature Conservation Output actions for Regional Services, Science Division and Nature Conservation Division.

There are a number of areas of nature conservation work not included in this plan which are a necessary part of the activities of regional staff. The plan does not include daily operational requirements such as permits, enforcement, compliance and responding to public calls and enquiries.

1.2 NATURE CONSERVATION OUTPUT DESCRIPTION

“The development and implementation of programs for flora and fauna conservation for threatened species and ecological communities and for commercially exploited species according to the principles of ecological sustainability; the acquisition, conservation and protection of representative ecosystems; and encouraging public awareness, understanding and support for nature conservation.”

1.3 NATURE CONSERVATION OUTPUT ASPIRATIONAL OUTCOME

Within 25 years (2005-2030) the rate of human-induced extinction of local populations of species will be reduced to near zero, and deterioration in the condition of ecosystems resulting from human activity will be reversed through management intervention by:

- A network of conservation reserves to protect and manage biodiversity in-situ surrounded by sympathetically managed lands and waters where conservation is incorporated into integrated land and resource use and ecological linkages to maximise conservation of biodiversity;
- Identification and management for biodiversity of intact, functional landscapes and habitat;

- Better decision-making for biodiversity conservation based on improved knowledge of biodiversity patterns and status, trends and threatening processes; and
- Increased awareness and understanding of biodiversity and conservation requirements in order to gain long-term support and change in behaviour.

1.4 REGIONAL DESCRIPTION AND BIODIVERSITY ASSETS

The Kimberley Region encompasses an area of 424,517 square kilometres. The coastline faces the Indian Ocean to the west and the Timor Sea to the north. It is bordered by the Pilbara Region to the south and the Northern Territory to the east (KDC, 2003).

The Kimberley has a strongly arid to semi-arid monsoonal climate (tropical to sub-tropical) that is characteristically hot and wet in the summer (wet season) and warm and dry in the winter (dry season). Annual average rainfall ranges from 1500 mm in the north-west coastal areas to less than 350 mm on the southern perimeter. There is a pronounced north-south rainfall gradient, so that southern parts of the zone are semi-arid, with a shorter growing season, less reliable rainfall and higher annual temperature range than the northern parts (Rangelands NRM Coordinating Group 2004).

The region comprises four complete Interim Biogeographic Regionalisation for Australia (IBRA) bioregions and parts of three others with 12 subregions, and eight Interim Marine and Coastal Regionalisation for Australia (IMCRA) regions or parts thereof (Figure 1). The terrestrial component of the region can be generally described as being tropical woodland savanna with important elements, such as patches of rainforest, embedded in what is, broadly, a non-fragmented landscape. There is often a strong correlation between the soils and the vegetation. A unique feature of the Kimberley is the existence of largely intact fauna assemblages of the north west mainland, something that is not found elsewhere. Many of the region's biological attributes are continuous across the top end of the Northern Territory and northern Queensland (or are analogous to similar communities in those jurisdictions). Two other extensive vegetation types extend beyond the region – Spinifex grasslands at the southern margin merge into sandy deserts and simplified mangrove communities that extend into the Pilbara region and beyond (Output plan 2002).

For the marine environment the tropical northern flora and fauna belong to the vast Indo-West Pacific Region which stretches from the east coast of Africa to French Polynesia in the central Pacific, and from the Ryukyu Islands of Japan to the northern coasts of Australia. A majority of species found in northern WA are widespread throughout that region, although there is significant local endemism along the south-western and south-eastern coasts of southern Australia. (Wilson 1994)

For management purposes five conservation management zones have been identified:

- Kimberley Plateau - Comprising the North Kimberley and Central Kimberley IBRA bioregions.
- Ord Victoria - Comprising parts of the Victoria Bonaparte and Ord Victoria Plains IBRA bioregions.
- Desert - Comprising parts of the Great Sandy Desert and Tanami IBRA bioregions.
- Dampierland - Comprising the Dampierland IBRA bioregion.

- Marine - Including the off-shore islands but not the inshore islands which are covered under the adjacent mainland management zones.

In establishing priorities there may, at times, be a finer scale adopted within these zones.

The Kimberley Region of CALM is currently responsible for the management of xxxxxxxx ha of conservation reserves in xxxx separate tenure blocks and reserves. There are xxxxx ha of proposed new conservation reserves that include those areas identified during the pastoral lease renewal process (2015).

Figure 2. Map of the five Kimberley Region Management Zones

[Map to be added]

1.5 MAJOR THREATS TO BIODIVERSITY AND BARRIERS TO CONSERVATION

The matrix at Appendix 1 relates major biophysical threats against broad biodiversity conservation values of landscape, the protected area system, wetlands, ecosystem and species, across the Kimberley Region's conservation management zones.

Major processes that threaten biodiversity and which could cause a failure in meeting CALM's 25 year Nature Conservation Aspirational Outcome are very obvious. What is not understood is the extent of the changes being brought about and the interactions that occur between various threats.

The identified key threatening processes affecting the Kimberley region are terrestrial and are consistent across the region and the top ranked are changed fire regimes, introduced animals and weeds. In all areas studied there have been changes in the structure and composition of the vegetation with this apparently linked firstly to the changed fire regimes and secondly to the impact of grazing animals. The region has been developing strategies for weed and introduced animal control for CALM managed estate across the region and will be developing a regional fire strategy later in 2006. A major project establishing permanent monitoring sites on CALM managed estate will begin to be implemented during 2006.

An issue that is receiving increasing attention is the westward spread of the cane toad (*Bufo marinus*) toward Western Australia. The main front of this spread is known to be located just to the east of the Victoria River Bridge and small numbers of toads are known to have crossed the river at the Victoria River Bridge and two locations further downstream. There are political and community expectations that significant resources will be expended to prevent the introduction of the cane toad into Western Australia, identify biodiversity assets at risk from the toad, implement protective measures and to undertake a public education and participation program. The current budget for this work is \$2.5 million.

Other aspects include:

- Significant knowledge gaps in the biodiversity of the region and a lack of benchmarking to determine the condition and trends in that biodiversity. This is important in determining whether a threatening process is having an impact or whether natural fluctuations are occurring.
- This lack of assessment impacts on the determination of areas that should be added to the conservation reserve system.
- There exist socio-political blockers to the establishment of a CAR reserve system.

Other demands and requirements in terms of impact on the capacity of the region to meet the requirements of nature conservation activities include; progressing land tenure matters (such as bringing forward the 2015 proposals), indigenous involvement in Nature Conservation activities, quadrat based documentation of the biodiversity values of the Kimberley including the marine environment, implementing a program of determining the status, distribution and trends of endangered species and communities, management of marine fauna, crocodile management and community expectations.

2. REGIONAL NATURE CONSERVATION THREE YEAR OUTCOME TARGETS

For the 25 Year Nature Conservation Output Aspirational Outcome to be achieved the Three Year Regional Outcomes Target for those biodiversity assets and values that need to be actively managed are:

LANDSCAPES AND SEASCAPES	T1	The rate of decline in the condition ² of the Kimberley Plateau management zone landscapes ³ (focussing on the Mitchell Plateau ⁴) will be reduced ⁵ .
	T2	The rate of decline ⁶ in the condition of the Dampierland management zone landscapes (focussing on the Devonian Reef, including the Oscar Ranges, and areas of Pindan vegetation yet to be identified) will be reduced.
	T3	The rate of decline in the condition of the Ord Victoria management zone landscapes ⁷ (focussing on the Ord River regeneration reserve) will be reduced and the condition of the Carr Boyd Range will be maintained.
	T4	The condition of the Desert management zone landscapes (focussing on selected areas of the main dune swale system) will be maintained or improved ⁸ .
	T5	The condition of the Marine management zone landscape and seascapes will be maintained.
PROTECTED AREA SYSTEM	T6	The condition of the Coulomb Point Nature Reserve, and Purnululu National Park and Conservation Reserve, Brooking Gorge Conservation Park, Windjana Gorge National Park, Parry Lagoons Nature Reserve, Dragon Tree Soak Nature Reserve, Geikie Gorge National Park and Conservation Park and King Leopold Conservation Park will be improved.
	T7	The condition of the Lacepede Islands, Wolfe Creek Meteorite Crater Reserve, Prince Regent Nature Reserve, Mitchell River National Park, Lawley River National Park, Laterite Conservation Park, Camp Creek Conservation Park, Drysdale River National Park, Mirima National Park, Point Spring Nature Reserve, Ord River Nature Reserve and Devonian Reef Conservation Park, will be maintained.
	T8	The condition of offshore (as opposed to nearshore) reserves (including the Rowley Shoals Marine Park, Scott Reef Nature Reserve, Adele Island Nature Reserve and Browse Island Nature Reserve) will be maintained.

² Condition relates to species richness, species composition and abundance, and vegetation/habitat structure.

³ Landscapes include relatively intact and biodiversity rich areas.

⁴ Prince Regent, Mitchell Plateau and Yampi Peninsula.

⁵ Need to establish the baseline and then the trend (knowledge gaps).

⁶ Some baseline data exists.

⁷ Purnululu, Parry Lagoons and Ord River

⁸ Need to establish the baseline and then the trend.

⁸ Need information on status, condition and trend of wetlands via a monitoring program

WETLANDS	T9	The condition of three listed Ramsar sites (Roebuck Bay, Lower Ord, Lakes Kununurra and Argyle) of the Kimberley will be maintained.
	T10	The condition of Eighty Mile Beach Ramsar site will be improved.
	T11	The condition of two wetlands listed in the <i>Directory of Important Wetlands of Australia</i> (Gladstone Lake and Big Springs) managed or proposed for management by CALM will be maintained.
THREATENED SPECIES AND ECOLOGICAL COMMUNITIES	T12	The condition of the North Kimberley Mound Springs Threatened Ecological Community will be maintained.
	T13	Populations of 26 species of threatened Camaenid land snails (Appendix XX) covered by existing recovery plans will be maintained.
	T14	Populations of three species of granivorous birds of the Kimberley (eg; Partridge Pigeon, Gouldian Finch, Pictorella Mannikin) will be maintained.
	T15	Contraction of populations (size and number) of two species of Critical Weight Range mammals (Golden Bandicoots and Bilbys) will be reduced.
	T16	The population of marine turtles will be maintained by protecting breeding sites and monitoring turtle mortality.
	T17	The Dugong population number and size will be maintained by maintaining the condition of key habitats.
	T18	Populations of four species of Declared Rare Flora (<i>Eucalyptus mooreana</i> , <i>Eucalyptus ceracea</i> , <i>Pandanus spiralis var flammeus</i> , <i>Keraudrenia exastia</i>) will be maintained.
	T19	Populations of all commercially exploited species will be managed in a sustainable manner.

3 LIST OF REGIONAL THREE YEAR CANDIDATE ACTIONS

The following section lists priority actions that need to be undertaken to meet the three year expected outcomes of Section 2.

The candidate actions have been arranged according to the scale of the assets (from landscapes and seascapes to the protected area system to wetlands to species and ecosystems at risk).

3.1 LANDSCAPE AND SEASCAPE

Target Three Year Outcome - T1: The rate of decline in the condition of the Kimberley Plateau management zone landscapes (focussing on the Mitchell Plateau) will be reduced.

Target Three Year Outcome – T2: The rate of decline in the condition of the Dampierland management zone landscapes (focussing on the Devonian Reef, including the Oscar Ranges, and areas of Pindan vegetation yet to be identified) will be reduced.

Target Three Year Outcome – T3: The rate of decline in the condition of the Ord Victoria management zone landscapes (focussing on the Ord River regeneration reserve) will be reduced and the condition of the Carr Boyd Range will be maintained.

Target Three Year Outcome – T4: The condition of the Desert (includes the Tanami) management zone landscapes (focussing on selected areas of the main dune swale system) will be maintained or improved.

Target Three Year Outcome – T5: The condition of the Marine management zone landscape and seascapes will be maintained.

Candidate Actions

1. Develop a set of attributes that represent condition to assist with the determination of condition trends and the evaluation of the effectiveness of management actions. Within each major, mapped ecosystem establish a set of permanent, and representative monitoring sites and collect data on a set of attributes (e.g., vegetation composition and structure, soils) that reflects ecosystem condition. At the outset, focus on lands managed by the Department.

Targets: T1, T2, T3, T4, T5.

Primary Responsibility: Region Leader Nature Conservation.

Support: Director Science Division to provide input into project design, methodology and data collection and analysis.

Status: New.

Indicative Cost: \$500,000 pa for three years, \$100,000 thereafter.

Completion Date: Stage 1 - December 2009, then ongoing.

2. Develop and continue a biodiversity audit system for the ready identification of values, threats, status, condition and trends of the region's biodiversity. Included in this will be the significantly improved GIS systems available to the region.

Targets: T1, T2, T3, T4, T5.

Primary Responsibility: Regional Leader Nature Conservation.

Support: A/Assistant Director Nature Conservation, Director Science Division to provide input into project design, methodology and data collection and analysis.

Status: Partly implemented to be expanded.

Indicative Cost: \$75,000.

Completion Date: Ongoing.

3. Compile a map (1:100 000 scale) of major ecosystems and vegetation types that encompasses all the existing and proposed conservation estate. Roll this out to eventually cover the whole region.

Targets: T1, T2, T3, T4, T5.

Primary Responsibility: Director Science Division to take responsibility for the design and delivery of project.

Support: Regional Nature Conservation Leader. Manager Land Information Branch, Kensington to provide ground support and GIS and mapping support.

Status: New.

Indicative Cost: \$300,000 for one year. \$60,000 pa thereafter.

Completion Date: December 2006.

4. Identify and prioritize areas for systematic biological survey by June 2007 (four page document), with the view to develop a 10 year plan for the Kimberley Region. This will determine components of biodiversity and patterns including conservation status in order to objectively target management.

Targets: T1, T2, T3, T4, T5.

Primary Responsibility: Regional Leader Nature Conservation.

Support: Director of Science Division to provide input into development of process and analysis. Manager Marine Conservation Branch.

Status: New.

Indicative Cost: \$50,000.

Completion Date: June 2006 for document development.

5. Undertake systematic biological survey by a regionally based team. This will also be used in determining benchmarks for a monitoring and evaluation system.

Targets: T1, T2, T3, T4, T5.

Primary Responsibility: Regional Leader Nature Conservation.

Support: Director of Science Division to provide input into project design, methodology and assist with on-ground and logistical support.

Status: New.

Indicative Cost: \$600,000 pa.

Completion Date: First stage to 2009 but ongoing.

6. Acquire or develop a taxon level data base which includes fields that identify fire sensitivity and regeneration response as the basis for identifying strategies for managing communities and taxa for incorporation into fire management plans consistent with the Department's information management systems.

Targets: T1, T2, T3, T4, T5.

Primary Responsibility: Region Nature Conservation Leader.

Support: Director Science Division, Manager Land Information Branch, Regional Fire Coordinator.

Status: New.

Indicative Cost: \$30,000 pa for three years.

Completion Date: December 2009.

7. Build on and curate the Kimberley Regional Herbarium to:
- (a) Underpin management of all operations involving flora, including fire planning, monitoring, threatened taxa and threatened communities assessment and management and to assist in environmental impact assessments; and,
 - (b) Build knowledge of CALM-managed lands.

Targets: T1, T2, T3, T4, T5.

Primary Responsibility: Director Nature Conservation to take responsibility for delivery of project.

Support: Regional Leader Nature Conservation, Director Science Division.

Status: New.

Indicative Cost: \$5,000 pa.

Completion Date: Ongoing.

8. Source a complete set of 1:50 000 scale topographic maps, in digital format, and a complete set of surface geology maps for all management zones in the Kimberley Region, to assist with land use planning and decision making.

Targets: T1, T2, T3, T4, T5.

Primary Responsibility: Director Nature Conservation to take responsibility for delivery of project.

Support: Manager Land Information Branch.

Status: New.

Indicative Cost: \$60,000 (one-off).

Completion Date: December 2006.

9. Compile a GIS-based vegetation map of the Kimberley Region (1:100 000 scale or better), to underpin land management decision.

Targets: T1, T2, T3, T4.

Primary Responsibility: Regional Leader Nature Conservation to oversee the project.

Support: Manager Land Information Branch. Regional Leader Nature Conservation to assist in the on-ground assessment of the suitability of proposed acquisitions.

Status: New.

Indicative Cost: \$200,000 pa for three years.

Completion Date: December 2009.

10. Maintain the conservation status of the Kimberley islands by:
- (a) Acquiring a detailed knowledge of the biodiversity of the so that reserve recommendations can be made to achieve island reservation that provides a protectable microcosm of mainland biota, which is in a state of decline.
 - (b) Identifying refugia for biotic elements that could be lost on the mainland through threatening process; and,
 - (c) Developing joint management plans with traditional owners.

Targets: T1, T2, T3, T4.

Primary Responsibility: Director Science Division to design and implement.

Support: Regional Leader Nature Conservation to assist.

Status: New.

Indicative Cost: \$2,500,000 for survey.
\$1,000,000 for development of joint management program with traditional owners.
\$500,000 for the development of management plans. (Does not include implementation of management plan).

Completion Date: June 2010.

11. Commence development of a bioregional marine planning process for the Kimberley IMCRA, with particular attention being given to aquaculture, fishing, tourism, mining, and conservation. Process to include benchmarking (biological survey) work to determine conservation values. Note: specific sector plans may need to be developed as a result of this process, such as tourism (e.g. charter boats).

Target T5.

Primary Responsibility: Regional Leader Nature Conservation.

Support: Marine Conservation Branch to provide input into planning framework and process, provide technical advice and information.

Status: New.

Indicative Cost: \$200,000 for process (2008/09) and \$400,000 pa for three years.

Completion Date: December 2009.

12. Complete analysis and write-up of the Kimberley mammal survey as a basis for developing management actions for the conservation of mammals in the Kimberley. Liaise and support in Kimberley Land Council (Tom Vigilante) Kimberley mammal Survey project.

Targets: T1, T2, T3, T4.

Primary Responsibility: Director Science Division.

Support: Regional Leader Nature Conservation.

Status: Ongoing.

Indicative Cost: \$25,000 one-off for write up.
\$20,000 pa for liaison.

Completion Date: December 2006.

13. Kimberley Region to seek custodianship of the Kimberley Fire Project database and information system. Ensure consolidation of the project so dataset does not become fragmented.

Targets: T1, T2, T3, T4.

Primary Responsibility: Director Nature Conservation to lead negotiations.

Support: Regional Leader Nature Conservation. Director Science Division.

Status: New.

Indicative Cost: \$25,000 pa.

Completion Date: December 2008 for establishment thereafter ongoing.

14. Across a range of major ecosystems and monitoring points, apply a variety of managed fire treatments, at the management scale, including wet season and early dry seasons burns, to reduce the decline in condition resulting from inappropriate late dry season fire regimes and to improve knowledge of the effects of these fire regimes on ecosystem condition. Involved in this is a significant improvement in pre-suppression and prescribed burning approaches. Included is the need to assess fire impacts for specific parcels of land and develop appropriate case specific plans. This will be implemented in an operational scale adaptive experimental management framework focussing, at the outset, on CALM managed estate.

Targets: T1, T2, T3, T4.

Primary Responsibility: Regional Leader Nature Conservation.

Support: Regional Fire Co-ordinator and Fire Management Services, Regional Manager.

Status: New, although some limited work being done.

Indicative Cost: a) \$800,000 pa.

Completion Date: Ongoing.

15. Increase fire suppression capability, including additional heavy duty water tankers, developing partnerships with FESA and local government, employing Traditional Owners to assist with fire suppression and pre-suppression operations and commissioning

water bombers to be based in the Kimberley at strategic times of the year (August to November), to limit the frequency and scale of late dry season wildfires in accordance with a regional Wildfire Threat Analysis.

Targets: T1, T2, T3, T4.

Primary Responsibility: Regional Leader Nature Conservation.

Support: Kimberley Regional Fire Co-ordinator, Fire Management Services.

Status: New.

Indicative Cost: a) \$140,000 pa for heavy duty water tankers.
b) \$250,000 pa for water bombers.
c) \$100,000 pa to employ Traditional Owners.

Completion Date: December 2006.

16. Review the current extent and contraction of a representative set of rainforest patches as a basis for instituting strategic perimeter burns, with fences, coupled with control of stock and wild cattle, to protect this compositionally distinct and biodiversity important community. In addition, there is a need to review, re-assess and expand the rainforest monitoring sites to develop trends in condition.

Targets: T1, T2, T3, T4, T5.

Primary Responsibility: Director Science Division to design and implement program and analyse and interpret data.

Support: Regional Fire Coordinator, Regional Leader Nature Conservation to provide support.

Status: New.

Indicative Cost: \$50,000 per annum (building fences, undertaking burns, establishing new sites).

Completion Date: December 2008.

17. Enter into collaborative arrangements with Traditional Owners, and other landholders, to undertake fire planning and wildfire mitigation activities, including prescribed burning early in the dry season to limit the frequency and scale of late dry season wildfires that threaten ecosystem condition (everywhere in all management zones).

Targets: T1, T2, T3, T4, T5.

Primary Responsibility: Regional Fire Coordinator.

Support: Regional Leader Nature Conservation, Fire Management Services and Regional Manager.

Status: New (partially done).

Indicative Cost: \$150,000 pa.

Completion Date: Ongoing.

18. Formal links need to be established between government agencies (DAWA, DEP, DOI, Fisheries) in relation to proposals to introduce non-native species to ensure threats to biodiversity are considered in deliberations. Maintain liaison with LCDC, DAWA, NAQS in Kimberley Plateau, Ord-Victoria etc management zones with regard to the identification, introduction and control of weeds.

Targets: T1, T2, T3, T4, T5.

Primary Responsibility: Director Nature Conservation to take responsibility for senior level liaison.

Support: Regional Manager and Regional Leader Nature Conservation to undertake regional liaison including interaction with non-WA agencies and stakeholders.

Status: New.

Indicative Cost: \$50,000 pa.

Completion Date: Ongoing.

19. Implement a process of continuous assessment, planning and review of the impacts of threatening process.

Targets: T1, T2, T3, T4, T5.

Primary Responsibility: Regional Leader Nature Conservation.

Support: Director Nature Conservation, Director Science Division. Manager Threatened Species and Communities Branch.

Status: New.

Indicative Cost: \$75,000.

Completion Date: Ongoing.

20. Address the issue of the threat of the introduction of the cane toad. Priority sites for protective management to be identified and the design of feasible methods of detection and control as the basis for focussing the response to the expected invasion and the predicted impacts on species decline and ecosystem condition:

- a) Set up pre-toad condition monitoring for potentially susceptible guilds and habitats;
- b) Develop predictions of toad rate and extent of spread and abundance, and model across the Kimberley Region;

- c) Continue with the trial of control methods including trapping, fencing and spot eradication in the Northern Territory;
- d) Continue surveys of potential incursions and maintain records and maps of incursions; and,
- e) Continue targeted communication programs at potential incursion sites.

Targets: T1, T2, T3.

Primary Responsibility: Director Nature Conservation.

Support: Regional Manager, Regional Leader Nature Conservation to ensure integration with existing monitoring programs, advise on Kimberley Region biodiversity values, and integration with other nature conservation actions.

Director Science to design and implement (a) and (b).

Status: Partly (a, b, and c).

Indicative Cost: a) \$250,000 pa.
 b) \$25,000 one off.
 c) \$100,000 pa.
 d) \$300,000 pa.
 e) \$200,000 pa.
 Note: (b) to (e) Currently funded at a State Level on a one-off basis.

Completion Date: (a) to commence by November 2005.
 (b) by June 2006.
 (c) to (e) ongoing.

21. Update gap analysis of the conservation reserve system, by IBRA sub-region, for all of the management zones in the Kimberley Region as a basis for setting priorities for acquisition.

Targets: T1, T2, T3, T4.

Primary Responsibility: Director Nature Conservation to take responsibility for planning and analysis.

Support: Regional Leader Nature Conservation Kimberley Region to provide input. Manager Land Information Branch. Director Science Division to provide input.

Status: Ongoing.

Indicative Cost: \$100,000 pa (excluding land purchase).

Completion Date: June 2006.

22. Review the design of a conservation reserve system and make recommendations for acquisitions and other conservation measures to maximise biodiversity outcomes for the Kimberley Region.

Targets: T1, T2, T3, T4.

Primary Responsibility: Director Nature Conservation.

Support: Regional Leader Nature Conservation to provide input. Manager Land Information Branch. Director Science Division to provide input.

Status: New.

Indicative Cost: No additional cost - See 14.

Completion Date: June 2006.

23. Based on the results of 21 and 22 identify areas where a rapid biodiversity status assessment is required.

Targets: T1, T2, T3, T4.

Primary Responsibility: Director Science Division.

Support: Regional Leader Nature Conservation.

Status: New.

Indicative Cost: \$200,000 pa.

Completion Date: 2015.

24. Acquisition of land for inclusion in the conservation reserve system.

Targets: T1, T2, T3, T4, T5.

Primary Responsibility: Director Nature Conservation to lead negotiations, administration and proclamation.

Support: Regional Leader Nature Conservation to assist in the on-ground assessment of the suitability of proposed acquisitions. Director Science Division to provide input (See 23).

Status: New.

Indicative Cost: \$25,000 pa for assisting in on-ground assessments (excluding land purchase).

Completion Date: Ongoing.

25. Gazettal of the Ord River Regeneration Reserve into the conservation estate.

Target: T3.

Primary Responsibility: Director Nature Conservation.

Support: Regional Leader Nature Conservation.

Status: New.

Indicative Cost: \$20 000 pa.

Completion Date: December 2009.

26. Enhance the conservation reserve system through off-reserve measures including use of market-based instruments, Conservation Covenants, provision of advice, Section 16a Agreements, integration of biodiversity conservation requirements with property management planning and complementary management of private conservation lands.

Targets: T1, T2, T3, T4.

Primary Responsibility: Director Nature Conservation.

Support: Manager Species and Communities Branch to coordinate certain components of the program such as the development of suitable market-based instruments. Manager Nature Resources Branch. Assistant Director of Nature Conservation to provide advice on integration with Departmental objectives. Regional Leader Nature Conservation on ground consultation and assist in negotiations and advice.

Status: Underway but currently minor.

Indicative Cost: \$120,000 pa (cost of instruments unknown).

Completion Date: Ongoing.

27. Continue to provide input into land use planning processes, including statutory planning, environmental impact assessments, notifications of intent to clear, pastoral diversification permits and land tenure, throughout the region and monitor conditions following approval and audit compliance with statutory obligations and managements plans to ensure biodiversity values are protected and maintained.

Targets: T1, T2, T3, T4.

Primary Responsibility: Regional Leader Nature Conservation to coordinate program.

Support: Manager Environmental Management Branch to provide advice.

Status: Underway but substantial improvements required.

Indicative Funding: \$200,000.

Completion Date: Ongoing.

3.2 PROTECTED AREA SYSTEM

Target Three Year Outcome – T6: The condition of the Coulomb Point Nature Reserve, and Purnululu National Park and Conservation Reserve, Brooking Gorge Conservation Park, Windjana Gorge National Park, Parry Lagoons Nature Reserve, Dragon Tree Soak Nature Reserve, Geikie Gorge National Park and Conservation Park and King Leopold Conservation Park will be improved.

Target Three Year Outcome – T7: The condition of the Lacepede Islands Nature Reserve, Wolfe Creek Meteorite Crater Reserve, Prince Regent Nature Reserve, Mitchell River National Park, Lawley River National Park, Laterite Conservation Park, Camp Creek Conservation Park, Drysdale River National Park, Mirima National Park, Point Spring Nature Reserve, Ord River Nature Reserve and Devonian Reef Conservation Park, will be maintained.

Target Three Year Outcome – T8: The condition of offshore (as opposed to nearshore) reserves (including the Rowley Shoals Marine Park, Scott Reef Nature Reserve, Adele Island Nature Reserve and Browse Island Nature Reserve) will be maintained.

Candidate Actions

1. Undertake an assessment of feral rats on Adele Island to determine distribution, abundance and impacts on key seabird species nesting success (eg. red-footed booby, greater frigate bird), with the intention of implementing an eradication program if required.

Target: T8.

Primary Responsibility: Director, Science Division to develop assessment methodology and implement surveys.

Support: West Kimberley District Nature Conservation Coordinator to provide local logistical support.

Status: New.

Indicative Cost: \$100,000 assessment phase.

Completion Date: October 2007.

2. Subject to candidate action 1 above, determine the rat eradication options for Adele Island, and implement eradication programs as required. Monitor and adjust methodology as required.

Target: T8.

Primary Responsibility: Regional Leader Nature Conservation.

Support: Director Science Division. West Kimberley District Nature Conservation Coordinator to implement eradication plan.

Status: New.

Indicative Cost: \$200,000.
\$50,000 pa for three years post eradication for monitoring.

Completion Date: October 2009.

3. Determine the impact of increasing gull populations on the breeding success of seabirds at the Lacepede Islands (considered to be the Indian Oceans most significant Brown Booby nesting site). Develop and implement an appropriate gull control program in conjunction with local government, indigenous communities and others, as required.

Target: T7.

Primary Responsibility: Director Science Division, West Kimberley District Nature Conservation Coordinator West Kimberley.

Support: District Manager West Kimberley to assist with logistics of assessment and to implement any control programs.

Status: New.

Indicative Cost: \$150,000 (\$25,000 Year 1; \$100,000 Year 2; \$25,000 Year 3).

Completion Date: December 2009.

4. Progress the nomination of Roebuck Bay as a marine protected area (Marine Park) to ensure adequate mechanisms exist to manage existing and potential future pressures (such as jet boats and hovercraft access and use).

Target: T8.

Primary Responsibility: Director Nature Conservation to prioritise and schedule gazettal planning works.

Support: Manager Marine Conservation Branch, Regional Leader Nature Conservation, District Manager West Kimberley to progress on ground actions.

Status: New.
Indicative Cost: \$200,000.
Completion Date: June 2009.

5. Prepare Interim Management Guidelines for new acquisitions to the conservation reserve system and implement management actions.

Target: T6, T7, T8.

Primary Responsibility: Regional Manager.

Support: Director Nature Conservation to endorse, and where Commonwealth funds are used report back to the Commonwealth Department of Environment and Heritage, and provide consistent planning framework and standards.

Status: Ongoing.

Indicative Cost: \$20,000 pa planning (cost of implementation unknown).

Completion Date: Within six months of each acquisition.

6. Undertake the following priority actions for Rowley Shoals to achieve biodiversity outcomes:
- (a) Establish boundary markers for management zones, with roll out of accompanying education plan to promote conservation values;
 - (b) Design and establish a monitoring and evaluation system to determine trends of condition indicators for biodiversity and impacts of threats to biodiversity;
 - (c) Undertake research to determine impact of visitor use, including fishing; and,
 - (d) Establish moorings to prevent impact on conservation values.

Target: T8.

Primary Responsibility: Regional Leader Nature Conservation.

Support: Manager of Marine Conservation Branch to design and implement a monitoring regime, and design research.
District Manager West Kimberley.

Status: Commenced 2005.

Indicative Cost: Monitoring component \$75000 pa.
Mooring and anchoring strategy \$15 000 p.a., servicing and maintenance.

Completion Date: Mooring design September 2006.
Monitoring design June 2006.
Ongoing.

7. Undertake a regional assessment and regular review of total costs required in order to achieve base level management for nature conservation outcomes of all existing and proposed estate.

Targets: T6, T7, T8.

Primary Responsibility: Regional Manager.

Support: Regional Leader Nature Conservation. District Manager West Kimberley.

Status: New.

Indicative Cost: \$10,000.

Completion Date: October 2006.

8. Participate in community activities and assist the Broome Bird Observatory to maintain condition of the Roebuck Bay's Ramsar values.

Target: T8.

Primary Responsibility: District Nature Conservation Coordinator West Kimberley.

Support: District Manager West Kimberley to liaise, Manager Marine Conservation Branch, Director Science Division.

Status: New.

Indicative Cost: \$10,000.

Completion Date: June 2009.

9. Implement a program to control introduced herbivores (wild cattle, donkeys, pigs, camels) to improve ecosystem condition. Priority is for CALM managed estate focussing on Drysdale River National Park, Mitchell River National Park, Lawley River National Park, Laterite Conservation Park, Camp Creek Conservation Park, Prince Regent Nature Reserve, Parry Lagoons Nature Reserve, Dragon Tree Soak Nature Reserve and King Leopold Ranges Conservation Park.

Targets: T6, T7.

Primary Responsibility: Regional Leader Nature Conservation.

Support: Director Science Division to provide input. Senior Operations Officer – East Kimberley, District Manager West Kimberley.

Status: Being developed, but needs expansion.

Indicative Cost: \$400,000 pa for one year for development, \$200,000 pa thereafter.

Completion Date: Ongoing.

10. Implement a program to control introduced plant species to improve ecosystem condition. Priority is for CALM managed estate, focussing on Mitchell River National Park, Lawley River National Park, Laterite Conservation Park, Camp Creek Conservation Park, Parry Lagoons Nature Reserve, Mirima National Park, Geikie Gorge National Park, Devonian Reef Conservation Park and Windjana Gorge National Park.

Targets: T6, T7.

Primary Responsibility: Regional Leader Nature Conservation.

Support: Senior Operations Officer – East Kimberley, District Manager West Kimberley.

Status: Being developed, but needs expansion.

Indicative Cost: \$300,000 for one year, \$100,000 pa thereafter.

Completion Date: Ongoing.

3.3 WETLANDS

Target Three Year Outcome – T9: The condition of three listed Ramsar sites (Roebuck Bay, Lower Ord, Lakes Kununurra and Argyle) of the Kimberley will be maintained.

Target Three Year Outcome – T10: The condition of Eighty Mile Beach Ramsar site will be improved.

Target Three Year Outcome – T11: The condition of two wetlands listed in the *Directory of Important Wetlands of Australia* (Gladstone Lake and Big Springs) managed or proposed for management by CALM will be maintained.

Candidate Actions

1. Improve condition of the Mandora Marsh area by decreasing the current level of cattle grazing pressure at the site. Associated with this and as a priority continue to seek to have this area added to the conservation estate.

Target: T10.

Primary Responsibility: West Kimberley District Nature Conservation Coordinator.

Support: District Manager West Kimberley, District Wildlife Officer West Kimberley, Regional Leader Nature Conservation.

Status: New.

Indicative Cost: \$110,000 1st year, \$20,000 p.a. thereafter.

Completion Date: September 2006.

2. Develop and implement interpretive, educational and information delivery systems that are readily available to the broader community and provides timely and appropriate information of the highest order by developing a regional communication and interpretation plan.

Targets: All.

Primary Responsibility: Regional Leader Nature Conservation.

Support: Regional Manager. Media Branch.

Status: New.

Indicative Funding: \$150,000 (This includes the appointment of a regional FTE to undertake this function.

Completion Date: Plan to be developed by mid-2007 then ongoing.

3. Develop and implement a volunteer management program that includes a structured activities plan and continuous review.

Targets: All.

Primary Responsibility: Regional Interpretation Officer.

Support: Regional Manager. Regional Leader Nature Conservation.

Status: New.

Indicative Funding: \$50,000.

Completion Date: Program to be structured by mid-2006 then ongoing.

3.4 THREATENED SPECIES AND ECOLOGICAL COMMUNITIES

Target Three Year Outcome – T12: The condition of the North Kimberley Mound Springs Threatened Ecological Community will be maintained.

Target Three Year Outcome – T13: Populations of 26 species of threatened Camaenid land snails (Appendix XX) covered by existing recovery plans will be maintained.

Target Three Year Outcome – T14: Populations of three species of granivorous birds of the Kimberley (eg Partridge Pigeon, Gouldian Finch, Pictorella Mannikin) will be maintained.

Target Three Year Outcome – T15: Contraction of populations (size and number) of two species of Critical Weight Range mammals (Golden Bandicoots and Bilbys) will be reduced.

Target Three Year Outcome – T16: The population of marine turtles will be maintained by protecting breeding sites and monitoring turtle mortality.

Target Three Year Outcome – T17: The Dugong population number and size will be maintained by maintaining the condition of key habitats.

Target Three Year Outcome – T18: Populations of four species of Declared Rare Flora (*Eucalyptus mooreana*, *Eucalyptus ceracea*, *Pandanus spiralis var flammeus*, *Keraudrenia exastia*) will be maintained.

Target Three Year Outcome – T19: Populations of commercially exploited species will be sustained.

Candidate Actions

1. Acquire suitable, representative Pindan ecosystems for the conservation reserve system.

Targets: T12.

Primary Responsibility: Director Nature Conservation.

Support: Director Science Division to review current status of this type in terms of reservation. Regional Leader Nature Conservation to assist with ground-truthing.

Status: New.

Indicative Cost: \$100,000.

Completion date: 2007.

2. Undertake actions under the Salt-water Crocodile Management Plan, particularly the following over the next three years:
 - i. Undertake regional survey to determine distribution and abundance;
 - ii. Continue the monitoring and evaluation program in the Cambridge Gulf; and,
 - iii. Continue education and awareness program aimed at getting a public understanding and appreciation of crocodile habitat requirements and conservation.

Target: T12.

Primary Responsibility: Regional Leader Nature Conservation.

Support: Director Science Division.

Status: Ongoing.

Indicative Cost: \$200,000 for survey. \$50,000 pa for all other activities.

Completion Date: December 2007 for survey. Other activities ongoing.

3. Undertake a review of the status of Threatened Ecological Communities and threatened flora and fauna lists in the Kimberley inclusive of field survey, with a view to developing a systematic survey and assessment of ecological communities and taxa. Time period 5 years.

Targets: T12.

Primary Responsibility: Regional Leader Nature Conservation.

Support: Regional, Manager Threatened Species and Communities Branch, Director Science Division.

Status: New.

Indicative Cost: \$500,000 pa.

Completion Date: 2010.

4. Review and develop suitable listing processes for threatened taxa and ecological communities.

Targets: T12.

Primary Responsibility: Director of Nature Conservation.

Support: Manager Threatened Species and Communities Branch to provide suitable framework and processes, undertake appropriate changes to listing processes.

Status: New.

Indicative Cost: \$100,000.

Completion Date: 2007.

5. Develop recovery plans for threatened species and communities determined as valid by June 2010.

Targets: T12, T13, T14, T15, T16, T17, T18.

Primary Responsibility: Regional Leader Nature Conservation.

Support: Manager Species and Communities Branch to provide input into assessment.

Status: New.

Indicative Cost: \$75,000.

Completion Date: June 2007.

6. To integrate recovery of threatened taxa and communities, establish a Recovery Team for Kimberley Threatened taxa and communities. The team will nominate members of multi-regional and cross-jurisdictional recovery teams.

Targets: T12, T13, T14, T15, T16, T17, T16.

Primary Responsibility: Director of Nature Conservation.

Support: Regional Leader Nature Conservation, Branch Manager Species and Communities Branch and other CALM members of recovery team to provide input into plan writing process.

Status: Ongoing.

Indicative Cost: \$100,000 pa.

Completion Date: 2009 (except where Recovery Plans indicate earlier completion dates).

7. To maintain or improve the status of threatened taxa, the Regional Recovery Team will identify and implement integrated landscape-scale management actions that will maintain or recover threatened species and communities inhabiting vulnerable habitats because they share threatening processes. It will also monitor the outcomes through selected indicator species:

- a. Gouldian Finch - monitoring of specific populations in East and North Kimberley.
- b. Bilby - monitoring specific populations in Dampierland and Desert Management Zones, and Golden Bandicoots - specific populations in the North Kimberley Management Zone.
- c. Marine turtles - monitor threats to the Cape Dommet population to ensure it is secure. Determine the location, size and threats to populations on the 80 Mile beach and other known rookeries because a significant knowledge gap may be causing omission of necessary management actions.
- d. Dugong - monitor Dampier Peninsula and Roebuck Bay populations to ensure that populations are sustainable. Assess the habitat by mapping key areas (eg seagrass beds) and estimate population size and mortality rates because a significant knowledge gap may be causing omission of necessary management actions.

Targets: T14, T15, T16, T17.

Primary Responsibility: Regional Leader Nature Conservation.

Support: Director Science Division; Manager Marine Conservation Branch, Manager Threatened Species and Communities Branch.

Status: New.

Indicative Cost: \$550,000 pa.

Completion Date: On going.

8. The following actions will be undertaken for listed Declared Rare Flora. Currently they are:
- *Pandanus spiralis* var. *flammeus* (Edgar Ranges) – determine taxonomic status and reassess conservation status; re-survey population, identify causes of decline (if any) and ensure fencing is in good condition.
 - *Eucalyptus mooreana* (King Leopold Range) – re-survey population, assess threats and (if there has been a decline) identify and implement appropriate actions.
 - *Eucalyptus ceracea* (North Kimberley, Berkley sub-region) – re-survey population, assess threats and (if there has been a decline) identify and implement appropriate actions in conjunction with TOs.
 - *Keraudrinia exastia* (Broome townsite) – With the Broome Port Authority develop and implement a management plan.

Target: T18.

Primary Responsibility: Regional Leader Nature Conservation.

Support: Director Science Division.

Status: Ongoing and new.

Indicative Cost: \$200,000.

Completion Date: On going.

9. Due to the potential decline and habitat loss caused by the commercial collection of Gubinge fruit in Dampierland, develop a species management plan to ameliorate impacts including benchmarks and sustainable resource harvest quotas:
- Species distribution assessment and mapping;
 - Assessment of total annual fruit production;
 - Determination of market demand;
 - Identify culturally appropriate licencing methodologies including allocation mechanism and monitoring;
 - Implement licencing and monitoring system; and,
 - Promotion of horticultural development of the species to take pressure of the wild stocks.

Target: T19.

Primary Responsibility: Director Nature Conservation.

Support: Regional Manager, Director Science division, Regional Leader Nature Conservation, Manager Species and Communities Branch, Manager Nature Protection Branch.

Status: New.

Indicative Cost: \$150,000 first year, \$50000 p.a. thereafter.

Completion Date: July 2009.

4. RESOURCE ANALYSIS

This resource analysis does not include the cane toad program as budgets are still being finalised.

In order to make strategic change and implement the new and ongoing supporting actions a resource gap analysis has been completed as the basis of a feasibility study.

1. Key questions investigated were (Appendix 3: Details of Resource Analysis):

- What is the actual or estimated cost (includes salaries, wages, plant, materials, contract and overheads) per annum and over 3 years of each candidate action?
- What is the total annual cost (includes salaries, wages, plant, materials, contract and overheads) from each of those candidate actions or part of a candidate action that are currently being implemented?
- What are the actions and their estimated cost for those actions that are currently undertaken in the Region that do not contribute to the completion of a candidate action(s) or part thereof?
- What actions (if any) and what total savings (includes salaries, wages, plant, materials, contract and overheads) arise from any actions that could be dropped out of the current Nature Conservation SPA?
- What are the sources of funds (specify e.g. Western Shield, SAP, NRM, CALM Recurrent, Other Outputs etc) and the amounts used to implement the candidate actions?

2. Full implementation of all the candidate actions in this plan will require \$9,635,000 in the first year with a substantial but lesser ongoing amount once the development phase has been completed along with the one-off projects.

3. Current allocations (2005-2006) total \$1,730,805 (excepting the cane toad budget) from the nature conservation recurrent budget.

4. 18 (37%) of the candidate actions are currently partly funded (total \$1,016,011) from within the existing allocations. The actions currently partly funded are;

• Monitoring program	\$61,429.
• Audit and information systems	\$55,251.
• Herbarium	\$365.
• Improved fire management	\$111,169.
• Increased fire suppression capability	\$41,793.
• Collaborative fire management	\$68,533.
• Feral animal control	\$222,344.
• Weed control	\$172,135.
• Threatening process planning	\$48,259.
• IBRA gap analysis	\$32,794.
• Land acquisition	\$22,522.
• Interim Management Guidelines	\$3,410.
• Off-reserve measures	\$9,213

- Environmental impact assessment \$42,930.
- Community advice \$35,765.
- Volunteer program \$6,417.
- Review threatened species and communities \$70,221.
- Recovery plan preparation \$11,461.

5. Staffing resources contributing to the Nature Conservation Output in the Kimberley Region as of September 2005 are:

- Regional Manager – 50%
- Regional Leader Nature Conservation – 100%
- Regional Fire Coordinator – 80%
- Regional Fire Technical Officer – 80%
- District Manager West Kimberley – 50%
- District Nature Conservation Coordinator West Kimberley – 100%
- Wildlife Officer West Kimberley – 100%
- Nature Conservation Officer West Kimberley – 100%
- Senior Operations Officer East Kimberley – 20%
- Wildlife Officer East Kimberley – 100%
- Nature Conservation Officer East Kimberley – 100%
- Marine Technical Officer West Kimberley – 80%
- National Park Rangers x 5 – 30%
- Administration staff x 4 – 40%

Implementation of the candidate actions will require an increase in the number of staff dedicated to nature conservation outcomes.

5. MEASURING EFFECTIVENESS AND PROGRESS OF PLAN

Progress against each of the three year outcome targets listed in the table, Section 2, will be used to indicate whether or not the management actions implemented have been effective.

Efficiency will be evaluated through the Service Provider Agreement process and will examine the levels of resources used to achieve each target outcome and outline performance measures.

Progress with implementation of the candidate actions will be reported biannually in conjunction with the Service Provider Agreement.

The plan will be reviewed annual to validate new and ongoing candidate actions, provide for emerging issues and inform the development of each annual Service Provider Agreement.

Appendix 1 Matrix of values, threats and relative importance for regional Scale Actions for CALM Kimberley Region

'H' (high) equals major threats at the sub-regional scale that affect the decline in number & spatial extent of species & ecosystems & ecosystem condition
 Threats may be ranked, if desired, either within or between sub-regions *Significant wetlands* includes Ramsar sites, National Register and regionally important wetlands.

KIMBERLEY MANAGEMENT ZONES		THREATS												
		Broad scale vegetation clearing	Degradation, loss of remnants & recruitment	Firewood collection/loss of habitat	Grazing pressure - stock	Introduced animals	Exotic weeds	Altered fire regimes	Pathogens	Changed hydrology - Salinity	Changed hydrology other inc soil erosion	Pollution	Other - Mining	Other - People
BIODIVERSITY VALUES	Dampierland (semi arid) Inc In-shore Islands													
	Landscape/seascape		H		H	H	H	H			H			H
	Protected area system		H		H	H	H	H			H			H
	Wetlands				H	H	H	H			H			
	Ecosystems at risk		H		H	H	H	H			H			H
	Species at risk		H		H	H	H?	H	H?					H
	Kimberley Plateau Inc In-shore Islands													
	Landscape/seascape		H		H	H	H	H			H			H
	Protected area system		H		H	H		H			H			H
	Wetlands				H	H		H			H			
	Ecosystems at risk		H		H	H	H	H			H			
	Species at risk				H	H		H						
	Ord-Victoria River Basin													
	Landscape/seascape	H?	H		H	H	H	H			H			H
	Protected area system		H		H	H	H	H			H			H
	Wetlands				H	H	H	H			H			
	Ecosystems at risk		H		H	H	H	H			H			
	Species at risk		H		H	H	H?	H	H?					H
	Sandy Desert Inc Tanami													
	Landscape					H	H	H						
	Protected area system					H	H	H						
	Wetlands						H	H						
	Ecosystems at risk					H		H?						
	Species at risk					H		H						
	Marine Inc off-shore Islands													
	Seascape													H
	Protected area system					H								H?
	Ecosystems at risk													H
Species at risk					H?								H	

Appendix 2 Resource Analysis

Target	Actions	One off or Ongoing	Status	Priority	Action Status			Budget 2005-06	Total Required Year 1	Gap in Funds	Fund Source	Remarks
					NII Action	Part Actioned	Fully Actioned					
1,2,3,4,5,6,7,8	Action 1	Ongoing	Initiated			X		\$61,429	\$500,000	\$438,571	NC	Per annum for three years
1,2,3,4,5,6,7,8,12	Action 2	Ongoing	Initiated					\$55,251	\$75,000	\$19,749	NC	
1,2,3,4,5	Action 3	One off	New						\$300,000	\$300,000	NC	
1,2,3,4,5	Action 4	One off	New						\$50,000	\$50,000	NC	
1,2,3,4,5	Action 5	Ongoing	New						\$600,000	\$600,000	NC	
1,2,3,4,5	Action 6	One off	New						\$30,000	\$30,000	NC	Per annum for three years
1,2,3,4,5	Action 7	Ongoing	New				\$365	\$5,000	\$4,635	\$4,635	NC	
1,2,3,4,5	Action 8	One off	New						\$60,000	\$60,000	NC	
1,2,3,4	Action 9	One off	New						\$200,000	\$200,000	NC	Per annum for three years
1,2,3,4,11	Action 10	Ongoing	New						\$700,000	\$700,000	NC	Program to run over 5 years
5	Action 11	Ongoing	New						\$200,000	\$200,000	NC	
1,2,3,4,11	Action 12	One off	New						\$45,000	\$45,000	NC	
1,2,3,4,11	Action 13	Ongoing	New						\$25,000	\$25,000	NC	
1,2,3,4,6,7	Action 14	Ongoing	Initiated				\$111,169	\$800,000	\$688,831	\$688,831	NC	
1,2,3,4,5	Action 15	Ongoing	Initiated				\$41,793	\$490,000	\$448,207	\$448,207	NC	
1,2,3,4,5	Action 16	Ongoing	New						\$50,000	\$50,000	NC	
1,2,3,4,5	Action 17	Ongoing	Initiated				\$68,533	\$150,000	\$81,467	\$81,467	NC	
6,7	Action 18	Ongoing	Initiated				\$222,344	\$400,000	\$177,656	\$177,656	NC	
1,2,3,4,5,6,7,11	Action 19	Ongoing	Initiated				\$172,135	\$300,000	\$127,865	\$127,865	NC	
1,2,3,4,5,6,7,11	Action 20	Ongoing	New						\$50,000	\$50,000	NC	
8	Action 21	One off	New						\$100,000	\$100,000	NC	
8	Action 22	Ongoing	New						\$200,000	\$200,000	NC	
7	Action 23	One off	New						\$25,000	\$25,000	NC	
1,2,3,4,5,6,7,6,12	Action 24	Ongoing	Initiated				\$48,259	\$75,000	\$26,741	\$26,741	NC	
1,2,3,6,7,8,10,11,12,14	Action 25	Ongoing	New						\$875,000	\$875,000	NC	Need to compare with current i
1,2,3,4	Action 26	One off	Initiated				\$32,794	\$100,000	\$67,206	\$67,206	NC	
1,2,3,4	Action 27	One off	New						\$0	\$0	NC	
1,2,3,4	Action 28	Ongoing	New						\$200,000	\$200,000	NC	
1,2,3,4	Action 29	Ongoing	Initiated				\$22,522	\$25,000	\$2,478	\$2,478	NC	
3	Action 30	One off	New						\$20,000	\$20,000	NC	
8	Action 31	Ongoing	New						\$200,000	\$200,000	NC	
2	Action 32	One off	New						\$100,000	\$100,000	NC	

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APPENDIX 2

PROPOSED FIVE YEAR OPERATIONAL PLAN 2002.

Working Group Membership

Keith Claymore (A/Senior Policy Adviser, Nature Conservation)

Chris Done (Regional Manager, Kimberley)

John Gault (Business Manager, Kimberley)

Gordon Graham (A/State Bushcare Coordinator)

Allen Grosse (Work Centre Manager, Broome)

Kevin Kenneally (Scientific Coordinator Landscape Expedition)

Norm McKenzie (Principal Research Scientist)

Tony Start (Principal Research Scientist)

Allan Thomson (Conservation Officer, Kununurra)

Alan Walker (Director Regional Services) – Facilitator

Kevin White (Senior Operations Officer, Broome)

Tim Willing (Conservation Officer – Broome)

Priority Activities and Projects

Fire

- (1) Adopt high – level, multi-agency approach to managing inappropriate fire regimes throughout the entire Kimberley. **Level of implementation: Part.**
- Implement direct individual liaison with landholders and other institutions on fire effect. **Level of implementation: Part.**
- (1) A fire strategic plan is needed for each bioregion, with complete suite of activities in regions rate “1” for fire. **Level of implementation: No action – work will commence in October 2005 on the preparation of a regional fire strategy focussing on CALM managed estate.**
- (1) Region to provide stronger support for existing processes. **Level of implementation: Part – this is associated with an increasing level of Departmental resourcing of fire management.**
- (1) More strategic patch burning by CALM/FESA specifically aimed at protecting locations and particular ecosystems (eg, rainforest patches, herbfields, mound springs, riparian zones) including multiple flights and on-ground closure of burns. **Level of implementation: No action.**

- (1) Develop and implement specific fire projects for Mitchell Plateau, Oscar Range, extending from Yampi fire program. **Level of implementation: No action.**
- (1) Rainforest patch perimeter burns with fences to implement rainforest monitoring project. **Level of implementation: No action.**
- (1) Prescribed burning and fencing activities have to be coupled with feral animal control. **Level of implementation: No action.**
- (1) All sites/strategy components need a task force to develop them and a monitoring program in parallel. **Level of implementation: No action – a ‘threatening process’ monitoring program for CALM managed estate will begin to be implemented in 2006.**

Introduced Herbivores

- (1) A combination of mustering and/or shooting of introduced herbivores is a priority on all CALM estate and important ecosystems. **Level of implementation: Part.**
- (1) Undertake action on pigs whilst they are at low numbers. **Level of implementation: No action.**
- (1) Camel fencing. **Level of implementation: No action.**
- Fencing of focus ecosystems, and control of feral animals attracted to the green-pick associated with fire break sites. **Level of implementation: No action.**
- Continued assistance to APB for donkey control. **Level of implementation: Part.**

Introduced Predators

- (1) Review of impacts elsewhere in tropical savannah. **Level of implementation: No action.**
- (2) Cane toads. Support to NT-consultants research on impacts and to public awareness, especially KLC Land and Water unit. **Level of implementation: Underway.**
- (3) Cat work at Purnululu National Park, need knowledge on impact. **Level of implementation: No action.**
- Lack of knowledge about cats. **Level of implementation: No action.**
- Lyssavirus. **Level of implementation: No action.**
- Fox and bilbys/turtles. **Level of implementation: No action.**

Weeds

- (1) Need to respond with urgency to new invasions. **Level of implementation: Underway.**

- (2) Database required. **Level of implementation: No action.**
- (2) Increased involvement in regional weed strategy. **Level of implementation: No action.**
- (2) Increased interaction with other agencies on weeds. **Level of implementation: Part.**
- (2) Introduction of exotic species, pasture grass for example, needs high level policy with DAWA etc to be revised. **Level of implementation: No action.**
- (2) Sites where people aggregate need to be weed free to minimise seed transportation. Day-to-day range role to include NC activities including weeds in and near these places. Begin this at Purnululu where there is concern over Parkinsonia/Burr etc. **Level of implementation: Part.**
- Park staff to undertake weed control on estate. **Level of implementation: Part.**
- NAQS. **Level of implementation: Part.**
- Identification of status/control of weeds on our estate. **Level of implementation: Underway.**
- Inter-agency weed group in East Kimberley, formal support for activities to eradicate bad ones quickly, especially on first appearance. Liaise with DAWA on this. **Level of implementation: Underway.**
- List some specific weed controls on or off CALM lands that need funding. ?Broome Catstal Park weeds; Alibizia, African Mahogany, Mango, Date Palms. Initiate some eradication/monitoring of bellyache bush/lantana/salvinia/rubber vine especially at specific sites on CALM estate and in important localised ecosystems etc. **Level of implementation: No action.**
- Biological control of Calotropis, but problem attenuates as lands recover. **Level of implementation: No action.**

Hydro/wetlands

- (1) Build application to State Sustainability Strategy for “savanna fire vs runoff coefficient, surface hydrology & nutrient loss” research in conjunction with agencies such as DAWA, UWA Geogrpahy etc. This is not a regional activity. **Level of implementation: No action.**
- (1) Support for benthic monitoring work (80 Mile Beach and Roebuck Bay), however taxonomic work is Science Division SPA. **Level of implementation: No action.**
- (1) Toughen stance on “grazing’ of Parry Lagoons and inappropriate recreational use of sites such as Pt. Coulomb. **Level of implementation: Part.**
- (1) Support for proposed Ramsar committee for Roebuck Bay (any higher level involvement requires separate funding). **Level of implementation: No action.**

- (1) Support for Ord Waterway Management Committee. **Level of implementation: Implemented.**
- (2) Resume wetland inventory. **Level of implementation: No action.**
- (2) Parry Lagoons NR – cattle control, fire management, hunting control, keep pressure on weeds eg. Parkinsonia. **Level of implementation: Part.**
- (2) Contributing to wetlands/riparian zone condition and WAPs. **Level of implementation: No action.**
- (3) Support to 80 Mile Beach bird monitoring project. **Level of implementation: No action.**
- Roebuck Bay – access control. **Level of implementation: No action.**
- Roebuck Bay – people use. **Level of implementation: No action.**
- Monitoring sites in riparian in various parts of region. **Level of implementation: No action.**

Socio-economic

- (1) Initiate tourism planning process for Kimberley coast, and world heritage listing for NW Kimberley coast. This should include inshore and offshore islands. This needs a high level, all of government approach. **Level of implementation: No action.**
- (1) Create a CALM Kimberley region conservation web site with maps of existing and proposed conservation reserves and cross reference to planning documents, regional plans etc. NatureBase with connections to DPI, DEP, DOLA and DAWA sites for other/broader reports etc. Include Information Branch in this process. **Level of implementation: No action.**
- Inappropriate, uncontrolled access and track development on and off reserve. High level referrals required. Region to supply information. Linked to fire, introduced animals and weeds. **Level of implementation: No action.**
- (1) Liaison at all levels with indigenous people, including investigating Caring for Country model. Inappropriate take of fauna – interactive liaison with groups and communities on this issue. NT’s “Caring for Country” model for the North Kimberley. Liaise with NT to import this idea. **Level of implementation: Part.**
- (1) Staff cross cultural training. **Level of implementation: Implemented.**
- (1) Assess and comment on development proposals, mining leases, tenements, aquaculture – sea/land use. Sort out DEP type roles. (Corporate issue of DEP officer being in West Kimberley). Region to adhere to referral protocols. **Level of implementation: Underway.**
- (1) Interaction with other groups undertaking training/liaison activities (Kimberley Regional Fire Project, NHT funded projects). **Level of implementation: Part.**
- (2) DOLA lands for recreation near large towns/settlements. Perhaps need DOLA to declare “recreational reserves” to take pressure of conservation

estate, eg. At Parry Lagoons and Pt. Coulomb. Whole of State issue with notable Kimberley regional implications. **Level of implementation: No action.**

Marine/Coastal Islands

- (1) The protection of inshore islands of the NW Kimberley coast is a high priority. The protection of the islands of the NW Kimberley is a State level priority. **Level of implementation: Part.**
- (1) Rowley Shoals anchorages. **Level of implementation: Underway.**
- (1) Indonesian language signage on offshore islands (eg. Browse Island) **Level of implementation: Implemented.**
- (1) Exotic rat eradication on islands (eg. Adele, Sunday) **Level of implementation: Part.**
- (2) Indigenous turtle take project and monitoring of nest sites and losses during nesting phase – regional involvement required as to project aims, objectives and priority. This project presents an opportunity for improved communication with indigenous communities about CALM's role as a conservation agency. **Level of implementation: No action.**
- Need to raise the profile of aquaculture issues with Fisheries. **Level of implementation: No action.**
- Involvement of Marine Branch? **Level of implementation: Part.**
- Coastal plan described above to involve better marine-fishing planning/control. **Level of implementation: No action.**
- Marine biodiversity surveys of coast, planning and public consultation. **Level of implementation: No action.**
- Projects and programs need to be owned and operated from and through region – annual report on trends, activities and accomplishments in NC by region to Director NC. **Level of implementation: No action.**
- Informal fishery industry in mangrove creeks, mudflats etc. **Level of implementation: No action.**

Biota

Mammals

- (1) North Kimberley mammal declines. Mammal re-survey in the North Kimberley through CRC, with regional/indigenous support and priority for regional work. Need KLC referral. **Level of implementation: Implemented.**
- (1) Support (including help with Aboriginal liaison) in Central Kimberley (2002/2003) then Victoria Bonaparte then Ord Victoria Plains (depending on funds) sub-fossil project (Science Division). **Level of implementation: No action.**

- (1) Contributing to Departmental and maintaining regional databases. **Level of implementation: Part.**
- (2) Black-soil biodiversity assessment in Victoria Bonaparte. Important but less urgent. **Level of implementation: No action.**

Birds

- (1) Contributing to Departmental and maintaining regional databases. **Level of implementation: No action.**
- (1) Use granivorous birds (finch and pigeon) as a “regional” monitoring tool and cooperate with external studies, eg CRC, Newcastle University. Gouldian Finch Recovery Teams. **Level of implementation: No action.**
- (1) Liaise/assist local interests with clear parameters (eg. BBO, SEEKS). **Level of implementation: Part.**

Camaenid Landsnails

- (2) Visit western-most limestone site (NB. Snail data complete but other sets not so). **Level of implementation: No action.**
- (2) Database existing (NMCK) records so accessible to land-use and site protection decisions during control burning, especially in relation to rainforest patches, islands and limestone ranges where we have data. **Level of implementation: No action.**

Flora

- (1) To identify areas at risk, need to work through substrate surrogates/comprehensiveness. Need to target fire protection on peculiar and localised outcrops/patch-types on and off reserves (the latter need on-going and enhanced liaison) as well as examples of widespread ecosystems. For this, need regional review to identify these priority sites across bioregions (GIS based). Part of front-end to enhanced/higher resolution fire program **Level of implementation: No action.**
- (1) Regional review of bioregions for areas of importance (GIS based). Link to WATSCU Threatened Ecological Communities. **Level of implementation: No action.**
- (1) Continue development of regional herbarium in Kununurra and links to other plant collections in the Kimberley. **Level of implementation: Underway.**
- (1) Targeted flora surveys of flora with important management implications. Wetlands, black soils, mound springs, “common” species, King Leopolds, obligate seeders, Berkeley subregion, sandstone and fenced rainforest patches. **Level of implementation: No action.**
- (3) Need a review of Departmental DRF lists. **Level of implementation: No action.**

- (2) Quadrat based analysis as a priority for Science Division. Important but not urgent. **Level of implementation: No action.**

Reserves

Inadequate reservation of vegetation associations

- (1) Reservations of Kimberley inshore islands particularly Bigge Island provide a critical strategy in the protection of important species. This is a National issue. **Level of implementation: Underway.**
- (1) “2015” process needs to be looked at for opportunities. **Level of implementation: Underway.**
- (1) Develop innovative joint management strategies and land protection mechanisms linked to the reservation of North West islands dot-point. Absorb results of NRS task force report relevant Departmental policy, identify priority areas, needs and initiate negotiations. **Level of implementation: No action.**

NRM (Off-reserve conservation and cross-agency liaison and consultation)

- (1) Input technical advice and support to relevant regional NRM groups, healthy country and similar groups/organizations. Links to National affairs. **Level of implementation: Underway.**

Monitoring

Establish monitoring systems (links to many other issues, particularly fire)

- (1) Need to develop monitoring systems to (a) measure and adjust efficacy of management actions and (b) track changes to biodiversity at bioregional level. **Level of implementation: Part.**
 - Establish a design group as a priority start with Yampi, NT, Qld models.
 - Establish plan, implement, monitor, review, principles.
 - Develop bioregional monitoring systems, what needed, where and why in each bioregion? (Need design group ASAP; NT has one that could be suitable, need review)
 - Monitor outcomes of what region does in respect to its workplan projects annually.
- (1) Further refine and develop bioregional audit including capture of bibliography and metadata. **Level of implementation: No action.**

Grasses (Annual/perennial/hummock grasses etc.) linked to fire work and weeds. Broad level dynamic used for monitoring. This monitoring is designed as part of enhanced, more close order fire/fire control program listed above).

- (1) Training required which is available for small cost – item to include into fire program is to monitor grass composition as indicator group for appropriate fire regime at “protection sites”, **Level of implementation: No action.**
- Use skills in monitoring, especially fire. **Level of implementation: No action.**