THE
GASCOYNE
MUSTER 11

For Public Comment

Pastoralism for Sustainability

Report to the
Minister for Planning and Infrastructure
from the Pastoralism for Sustainability
Pastoral Industry Working Group

GOVERNMENT OF WESTERN AUSTRALIA

September 2003

Background

Following the Gascoyne Muster held in Carnarvon in May 2002, the Minister for Planning and Infrastructure established five working groups to examine:

Access to pastoral land;

Aboriginal access and living areas;

Pastoral industry economic monitoring requirements;

Alternative models of land tenure; and

Pastoralism for sustainability.

The working groups comprised representatives of key stakeholder groups, including the pastoral industry; Government agencies; conservation bodies; and recreational interests. Working group activities were supported and funded initially by the Department of Land Administration and subsequently by the Department for Planning and Infrastructure (following transfer of Crown land functions to this Department on 1 July 2003).

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LETTER OF COMMITTAL FROM CHAIRMAN

MINISTER FOR PLANNING AND INFRASTRUCTURE

SUSTAINABILITY IN THE PASTORAL RANGELANDS

Never before has there been so much opportunity for changes in the sustainable management of the pastoral rangelands. Many of the issues raised in the submissions to the Working Group and in the Group's deliberation have been contentious. The Working Group has worked diligently to shape recommendations that work towards achieving sustainable pastoral rangelands management. Many of the recommendations impact on Government departments outside of the Minister's control and this presents particular problems for the implementation of this report.

In developing this report the Working Group were cognisant of:

(i) The need for the recommendations to be implemented;

(ii) The need to bring together the five (5) Working Group reports for consistency and avoidance of overlap or conflicting advice;

(iii) The fact that there did not appear to be a vehicle for this to occur; and

(iv) A number of groups (EPA, Rangelands Working Group of the NRMC) are developing strategies/plans for the ***broader*** rangelands areas.

To facilitate a way forward the Working Group suggests:

(i) The five Working Group Chairs or nominees of the Minister form a Writing Working Group (WWG) supported by PLB/DPI to consolidate the individual working group reports and prepare material for:

  (a) The Minister; and
  (b) public consultation;

(ii) Once accepted by the Minister the consolidated report could be presented to the Cabinet Standing Committee (Environment) and ultimately to Cabinet for endorsement and publication.

(iii) That a process to progress the report recommendations is put in place to oversee implementation on behalf of the Minister, NRMC and Pastoral Lands Board.

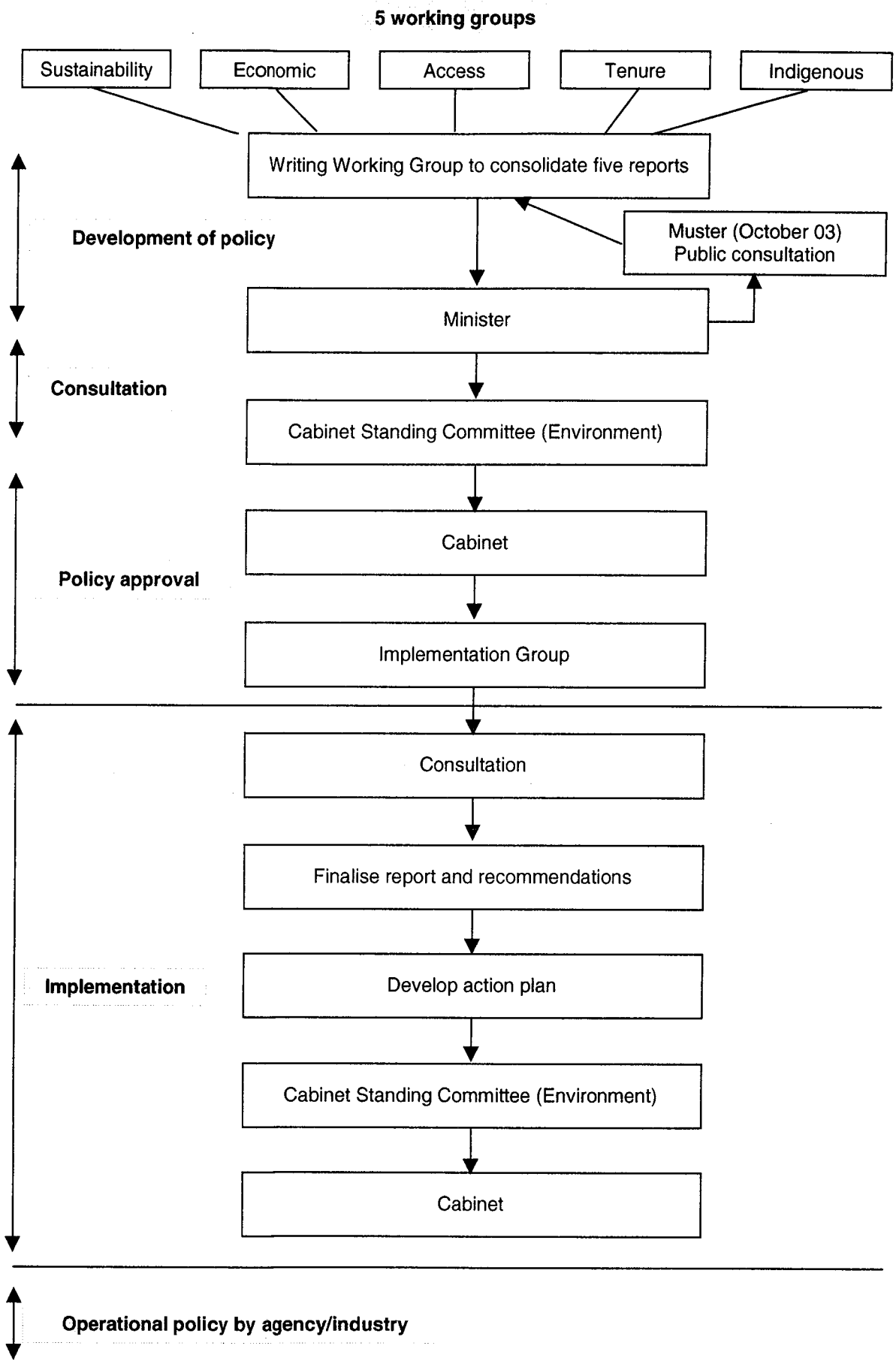
The diagram attached outlines a proposed process.

The Working Group has tackled many issues in its deliberations and I commend the report to you.

It is with pleasure that I forward the report of the Sustainability Working Group.

Professor Alan Robson
CHAIR

Att.


5 working groups
Sustainability
Economic
Access
Tenure
Indigenous
Writing Working Group to consolidate five reports
Development of policy
Muster (October 03)
Public consultation
Minister
Consultation
Cabinet Standing Committee (Environment)
Cabinet
Policy approval
Implementation Group
Consultation
Finalise report and recommendations
Develop action plan
Implementation
Cabinet Standing Committee (Environment)
Cabinet
Operational policy by agency/industry

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SUMMARY OF RECOMMENDATIONS

The Working Group recommends:

ECONOMIC SUSTAINABILITY

Recommendation 1

- Research into improved grazing systems is required to assess the impacts of new grazing techniques on productive capacity, impacts on pasture condition and biodiversity. This research should be conducted in partnership with the industry.

Recommendation 2

- Support for seasonal forecasting in the rangelands.
- Pastoralists have access to training, tools and information for rangeland management practices and dry season planning.

Recommendation 3

- That all land-holders across the rangelands, including the Crown, need to work actively in partnership to achieve the mutual objective of effective control of all pests and weeds across the rangelands.
- Pastoral enterprises wishing to run managed goats do so to Best Practice Guidelines.
- Harvesting of unmanaged goats to be phased out.
- Tagging of managed goats to be phased in over 3 years time span by the tagging of juveniles into a managed herd.
- All declared animals to be managed under the ARRPA (1976).
- The routine collection (3 –5 yearly) of abundance surveys of goat, kangaroo and donkey populations be undertaken.
- Research on the effects of kangaroo populations on rangeland productivity and control methods be undertaken.

Recommendation 4

- The current Pastoral Lease Rent System remain.
- The Pastoral Lands Board investigate the desirability of making permits transferable.
- That a paper on rent calculations be produced for pastoralists to ensure transparency and understanding of the process.
- The Pastoral Lands Board evaluate the use of moving pastoral lease services onto a cost *recovery basis.*

ENVIRONMENTAL SUSTAINABILITY

Recommendation 5

- In addition to Western Australian Rangelands Monitoring sites an enhanced series of ungrazed monitoring sites need to be established that cover those areas set aside on leases or managed within leases for conservation purposes and formal conservation reserves.

- A standard set of indicators be developed of relevance to specific regions to measure performance of biodiversity in terms of species abundance, distribution and diversity.

- A further standard set of indicators be developed to assess performance across the landscape in controlling the threatening processes associated with feral animals, changed fire regimes, grazing pressure, weeds, and changed hydrology.

- A set of management targets be established for all land managers in relation to the above indicators.

- Performance of management against the targets and indicators be assessed on a regular basis, taking into account seasonal conditions, in particular rainfall.

- Reports on the above assessments be made public.

- Exploration of voluntary off-reserve conservation (with lease conditions and rent credits) under management of the owner/lessee - with approval of the Minister. Flexibility and legislative change to be considered.

- Development of new legislatively backed means to provide for permanent private biodiversity protection efforts on pastoral leases building on existing voluntary and temporary systems including section 16A of the *Conservation and Land Management Act 1984*.

- Consider covenants attached to the lease between the Crown and, for example, a Conservation Group, National Trust, DCLM, etc; when the lease is renewed the 'covenant' becomes an enduring lease condition.

- Private or commercial conservation may require a dual title lease - pastoral leasehold tenure remaining but operated as a conservation area with conservation being a legitimate form of pastoral activity. Pastoral purposes in the LAA Section 103 - "The Minister may, in consultation with the Board, include in a pastoral lease in any terms, reservations, conditions, covenants, or penalties not inconsistent with this Act.".

- Arrangements to facilitate the employment of pastoral lessees and Indigenous people as resident managers of voluntary off-reserve conservation reserves should be investigated.

Recommendation 6

- Investigate the suitability of the WARMS program and other monitoring systems including suitable systems for biodiversity monitoring.
- Pastoralists be encouraged to establish voluntary monitoring sites on leases as part of a Property Management Plan.
- The Department of Agriculture and Department of Conservation and Land Management work together to develop improved remote sensing technology to monitor range condition and biodiversity.
- Pastoral Lands Board investigate means to encourage voluntary monitoring on pastoral leases;.
- Expansion of the Environmental Management Unit property management planning process.
- Expansion of property management training for lessees to enable them to meet the requirements of performance objectives on their lease.
- Encourage pastoralists to develop and adopt accredited Environmental Management Systems for their lease-holdings.

Recommendation 7

- The findings of fire research should be widely extended throughout the rangelands to land managers.
- The impact of fire on rangeland vegetation should be examined in other regions.

Recommendation 8

- The Pastoral Lands Board compile an annual report to the Natural Resource Management Council (NRMC) and EPA on the state of the rangelands.
- The PLB consider adopting the following (or other suitable) indicators:

ENVIRONMENTAL INDICATORS

- Trends in rangeland condition (5 yearly analysis) at a regional level.
- Trends in seasonal conditions and on NDVI data at a regional level.
- Trend in biodiversity on representative grazed and ungrazed sites.
- Number of pastoral leases with property management plans.

ECONOMIC INDICATORS

- Trends in net farm income at a regional level.
- Trends in stock numbers compared with the current carrying capacity at a Land Conservation District level.
- Trends in cattle, sheep and goat turnoff and wool cuts per head at a Land Conservation District level (three yearly).

SOCIAL INDICATORS

- Trends in population number and level of education at a regional level.

OTHER FACTORS INFLUENCING SUSTAINABILITY

Recommendation 9

- That the Minister through the Pastoral Lands Board investigates tenure arrangements that are based on the concept of a Rangelands Lease allowing for uses other than grazing. The ongoing tenure to be performance and incentive-based and supported by Property Management Plans.

Recommendation 10

- The current provisions of the LAA (1997) are sufficient to manage the risk of plant introductions into the rangelands.

INSTITUTIONAL AND LEGISLATIVE ARRANGEMENTS

Recommendation 11

- The role and function of the PLB be reviewed to meet the changing nature of the rangelands. The Board should have an enhanced focus on:
  (a) providing policy advice to Minister on the pastoral industry to enable ecological, economic and social sustainability;
  (b) developing policy and guidelines to ensure pastoral leases are managed on an ecologically, economically and socially sustainable basis; and
  (c) reporting on the state of the rangelands as part of the State Sustainability Strategy.

- To enable the Board to provide adequate advice on its recommended broadened role, the Minister should ensure the Board has an adequate skills base and adequate resources.

RECOMMENDATION 12

Support the establishment of a Rangelands Working Group. The group would report to the NRMC in implementing the recommendations of the Working Groups where the issues involved multiple departments. The role of such a group would be to:

- provide a forum across Government for action (coordination);
- have a consultative role with industry; and
- address the wider rangeland issues (marine, estuarine).

RECOMMENDATION 13

- The development of a Statement of Planning Policy for the Rangelands.

- The Department for Planning and Infrastructure manage approvals of lease sub-division in accord with land use planning.

- Utilise planning Schemes to manage land use changes in the rangelands through development approvals.

- Agencies responsible for infrastructure developments should ensure their activities are consistent with sustainable land use.

RECOMMENDATION 14

- Interim monitoring of exclusion areas prior to 2015 should be undertaken under the auspices of the PLB to ensure the preservation of the value of the land. This monitoring will need to involve other Agencies and will require the commitment of funding.

- Institutional arrangements should not be an impediment to industry restructuring.

INTERIM REPORT RECOMMENDATIONS FROM APPENDIX 1

RECOMMENDATION 15

- Wherever land is excluded from pastoral leases, funding should be set aside to ensure security of resources for enduring and permanent management of the area. Ongoing management of excluded areas must be based on the "good neighbour policy" to ensure that diverse land uses do not impact adversely on adjoining lands and enterprises.

- In addition to considerations on a lease by lease basis, the cumulative impact of exclusions on a subregional/regional basis and on the pastoral industry as a whole should be considered. Particular reference should be made to the contribution of the export beef cattle industry to the State economy. The program of exclusions should not result in any net loss of population or social infrastructure in the rangelands. To this end, the State Government should play a role in brokering and supporting the development of alliances between various community and stakeholder groups living and operating in the rangelands.

- We recommend that Government develops, as soon as possible, appropriate legal and tenure arrangements for the management of whole or part pastoral leases for biodiversity conservation purposes. This Group will further examine the legislative impediments to providing long-term security for such agreements (eg embedding them as a condition of the lease itself) –with particular reference to the LAA and the *Conservation and Land Management Act 1984* (Section 16A). Recognition of conservation as a pastoral purpose within the LAA is one of the legislative reforms to be explored.

- This Group does not support exclusion to be used for roads for management access to conservation areas. Management access arrangements should be negotiated between the Minister, the lessee, the Local Government Authority and DCLM.

INTRODUCTION

The rangelands of Western Australia account for some 90 per cent of the State's landmass including all but the south west of the State.

Many different land uses occur in the rangelands including pastoralism, mining, tourism, horticulture as well as traditional use by Aboriginal people. Almost half of these rangelands are vested as pastoral leases, and a considerable proportion of the remainder is unallocated Crown Land and Crown Land reserved for particular uses.

The *Land Administration Act 1997* (LAA) provides the legal framework for the administration of pastoral land in the rangelands. This Act establishes the Pastoral Lands Board (PLB) with responsibility for managing pastoral leases on behalf of the Western Australian Government. The Act specifically requires that the Board ensure that leases are managed on an ecologically sustainable basis.

This report specifically addresses Terms of Reference 1 and 2 of the Working Group on pastoralism for sustainability in terms of means to achieve sustainable pastoral rangelands management. The report does not consider broader issues of overall sustainable resource use (e.g. coastal, estuarine, marine and mining) in the rangelands.

This report addresses:

- the guiding policy principles used in developing the report and recommendations;
- a vision for pastoral lease operations in the rangelands and related management objectives;
- the changing land use on pastoral leases in the rangelands;
- the economic sustainability of pastoral leases in the rangelands as influenced by climate variability, business performance, skills of pastoralists, diversification, impacts of animal pests and weeds and return on State assets;
- the environmental sustainability of the pastoral rangelands including biodiversity protection and environmental management systems;
- tourism, duty of care of pastoralists, the stewardship concept of management, indigenous land management, private sector conservation purchases, and pastoral inspection and compliance;
- the social and cultural sustainability of pastoral leases in the rangelands as influenced by the social structure, community expectations and Government and community partnerships; and
- the institutional, legislative and policy settings as influenced by native title, national and State guidelines and policies.

The Working Group received and considered 33 submissions. A summary of submissions are listed at Appendix 9.

The Working Group also prepared an interim report that addressed Terms of Reference 3,4,5 and 6. This interim report is attached as Appendix 1.

TERMS OF REFERENCE

1. Define sustainable pastoral rangeland management and consider criteria for measuring its success.
2. Report on means to achieve sustainable pastoral rangeland management.
3. Outline the requirements for a comprehensive, adequate and representative reserve system within the context of the international, national and State criteria and Government policy.
4. Review the Department of Conservation and Land Management's proposed 2015 Batch 3 exclusions from pastoral areas for conservation purposes.
5. Investigate the role and options for off-reserve conservation in meeting conservation outcomes on leases managed for production.
6. Propose criteria for Ministerial decision making in regard to the target mix of formal reserves and off-reserve conservation areas.

Specific details relating to terms of reference 3, 4, 5 and 6 were previously included in the Working Group's interim report of October 2002. The interim report is copied in full at Appendix 1.

GROUP MEMBERS

Name	Position/Station
Alan Robson	Hackett Professor of Agriculture and Vice-Chancellor, The University of Western Australia
Susan Bradley	Doongan Station
Jack Burton	Yeeda Station
Karen Morrissey	Meeline Station
David Wilcox	Member, Pastoral Lands Board
Edgar Richardson	Pastoral Director, Pastoralists and Graziers Association
Rachel Siewert	Coordinator, Conservation Council of WA
Charlie Thorn	Executive Director, Animal Industries, Department of Agriculture
Gordon Wyre	A/Director of Nature Conservation, Department of Conservation & Land Management
Suzanne Woolhouse	Senior Project Officer, Strategic Land and Infrastructure Planning, Department for Planning and Infrastructure
Barbara Porter	A/Manager, Pastoral Land Management, Department for Planning and Infrastructure

GUIDING PRINCIPLES

In developing the guiding principles for addressing the sustainability of the pastoral rangelands the Working Group has drawn on previous work in the area. Summaries of these are described in Appendix 2.

The Working Group (WG) considered the following key principles in achieving sustainable pastoral rangelands in Western Australia.

(i) The ***triple bottom line*** of economic, environmental and social/cultural sustainability.

(ii) ***Measurement and evaluation*** of economic, environmental and social outcomes.

(iii) ***Stakeholder participation*** in defining a sustainable future and shared responsibility for managing impacts on the rangeland.

(iv) ***Duty of care*** of lessees.

(v) ***Integrated and coordinated*** Government services in the rangelands.

(vi) ***Compliance*** with State, national and international obligations.

(vii) The ***precautionary principle***.

(viii) Preserving ***intergenerational*** equity.

(viiii) Using ***market mechanisms*** as well as regulation.

DEFINITIONS OF SUSTAINABILITY

In developing a definition of sustainability for the rangelands the WG was guided by the State Sustainability Strategy, which states:

> *"Sustainability is the simultaneous achievement of environmental, economic and social goals..."*

The Working Group adopted the State Sustainability Strategy definition but defined the environmental, economic and social goals in the rangelands as:

- maintaining productive capacity;
- protecting biodiversity and maintaining landscape function;
- maximising the social and economic use of the Rangelands;
- protecting, maintaining and enhancing natural and cultural values of the Rangelands;
- minimising the impacts of fire, climate variability, weeds and animal pests;
- recognising the needs and values of people inhabiting the Rangelands; and
- providing governance, policy and legislative and frameworks to support ecologically sustainable management of the pastoral rangelands.

THE VISION AND FRAMEWORK FOR SUSTAINABLE PASTORALISM

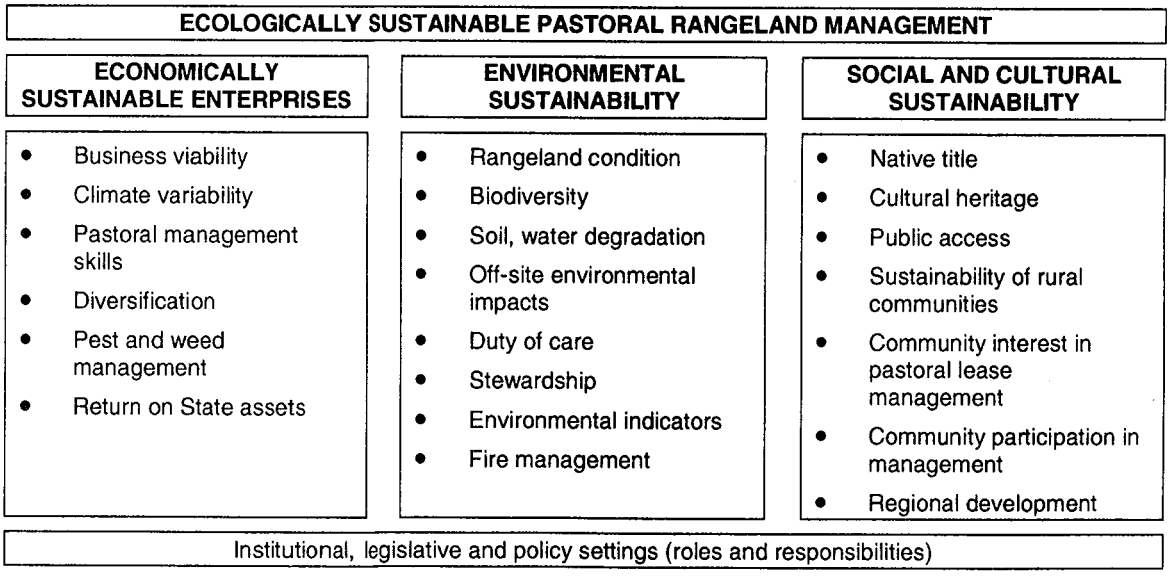
Our vision is that 20 years from now; human activity in the rangelands has become richer and more diverse. Pastoral enterprises are efficiently and effectively managed providing enhanced levels of sustainable production, while also protecting biodiversity and natural processes across the landscape. There has been an improvement in biodiversity health across the landscape with significant reductions in the threats posed by feral animals and weeds. There are many different kinds of businesses operating across the leasehold areas and they are all contributing in a significant way to a generally robust and sustainable community.

There will be a new generation of pastoral lease managers who adopt risk management approaches to business and grazing management, focused on the condition of the land and its vegetation. Monitoring and evaluation of natural resource conditions will be a condition of leases and will open up marketing opportunities for 'ecologically sustainable' products. The range of livestock grazed and the mix of livestock reflect climatic, economic and market demands. Pastoralists have adopted new technology and best practice management systems and many have diversified their enterprises. Government regulations and incentives have supported these changes, but the primary driver of change has been the pastoralists' own business decisions.

Other forms of land use are common - horticulture, aquaculture, native foods, timber, tourism, wilderness value and rural retreats. These occupy niches in the landscape, with water, accessibility and the attractiveness of an area being key factors in determining where these new ventures take root. Habitats that only occur in areas attractive to human activity are carefully protected. Traditional and local knowledge will be integrated into decision making at property and catchment levels.

Pastoral lessees and other land managers take responsibility and action for the control of animal pests, weeds and fire and work actively to rehabilitate degraded areas. Sustainability is accepted as a fundamental goal and all landholders, including the Crown, follow regional indicators and targets for environmental management. The network of parks and reserves has expanded, Aboriginal groups have title and influence over the management of larger areas, and mining continues, but none of these totally dominate the landscape.

The diagram below depicts the issues addressed in this paper to achieve the vision.



THE PASTORAL INDUSTRY IN WESTERN AUSTRALIA

In recent years there has been a shift from traditional pastoral activities on pastoral leases with an increasing amount of 'ancillary' use for tourism, destocking of mining areas, areas set aside from grazing for conservation purposes and horticulture and aquaculture expansion.

The pastoral industry in Western Australia is further described in Appendix 3 and is made up of:

- ***Large corporate owned traditional pastoral businesses***

  There are 154 leases owned by businesses that fall into this category, with most being in the Kimberley region and beef production driven. In Western Australia there are limits on the size of these enterprises and the level of foreign holdings of pastoral leases. Thirteen leases have a proportion of foreign ownership.

- ***Family owned and operated traditional businesses***

  Family owner-operated businesses still dominate the pastoral industry. There are 259 family owned pastoral leases. In the Gascoyne Murchison area of the Southern Rangelands there are still sub-economic sized properties.

- ***Family owned traditional business with 'ancillary' tourism/diversification activities***

  A number of traditional pastoral businesses have an approved 'permit' for diversified tourism and horticulture activities to supplement the pastoral businesses.

- ***Indigenous agency/corporation/group owned for traditional pastoral purposes***

  The recent Indigenous Land Acquisition Programs (ILAP) by a range of agencies in the rangelands have significantly increased the holdings of pastoral land by indigenous corporations and community groups to 62 leases.

  The acquisition of land for indigenous people has been to:

  - secure land for future generations;
  - generate revenue; and
  - maintain and renew Indigenous culture.

- ***Indigenous owned for cultural and living area purposes***

  This area is being addressed in other working groups and will not be considered further in this report.

- ***Mining company owned***

  Mining companies have expanded their pastoral lease holding significantly in the last ten years to 47 leases. Many are de-stocked or stocked at low levels. In some regions like the Goldfields mining companies dominate the use of the pastoral estate.

- ***Non profit companies (for conservation purposes) owned.***

  A number of 'not for profit' businesses have purchased five pastoral leases and would prefer a change of land-use to include conservation purposes.

ECONOMIC SUSTAINABILITY OF THE PASTORAL RANGELANDS

The key management factors affecting the economic sustainability of the pastoral rangelands are: managing to the climatic variability, grazing management, stock carrying capacity, condition of the rangeland resource and the control of feral animals, pests and weeds. The managerial capacity of pastoral lessees, diversification of enterprises, value adding of rangeland products and the utilisation of labour saving technologies to reduce costs of production are also important factors.

There have been several key drivers of change in the rangelands of Western Australia. The emergence of the live animal trade and the BTEC control program resulted in improved herd and grazing management practices and new investment in capital in the Kimberley Region.

The crisis in the wool industry created the environment for diversification of grazing enterprises and a push to lower production costs and the use of Total Grazing Management (TGM) practices in the Southern rangelands region.

Integration of pastoral businesses with farms held in the traditional agricultural areas has been a recent trend as pastoralists have modified their businesses to limit both climatic and market risks.

Grazing management

Grazing management and animal management practices in the rangelands of Western Australia has changed significantly over the last ten years with greater controls over grazing and water points, the introduction of genetically superior animals and improved weaner management and turn-off.

Pastoralists are now managing the trade-off between intensification, productivity increases, farm business performance and the impacts on the natural resource (Ash and Stafford-Smith, 2002). The practical implication of these changes are grazing management strategies based on an improved knowledge of pasture types, understanding of stock distribution and grazing patterns, managing stock carrying capacity to the available pasture (pasture budgeting), and knowledge of thresholds of pasture utilisation rate. New grazing systems (cell, rotational) are based on this improved knowledge and coupled with seasonal forecasting may result in increased productivity without jeopardising the pasture resource. There has been limited research on the performance and impacts of these techniques in Western Australia.

The working group recommends that:

- ***research into improved grazing systems is required to assess the impacts of new grazing techniques on productive capacity, impacts on pasture condition and biodiversity. This research should be conducted in partnership with the industry.***

Climatic variability

The rangelands of Western Australia are characterised by extreme variability in climatic conditions. This is particularly so in the Southern Rangelands Regions.

Figure 1 outlines the climatic variability at seven sites in the Southern Rangelands over the last 113 years (Watson and Thomas, 2003). The years between 1995 – 2000 were some of the best rainfall years experienced in the region and has been above average in summer compared to winter between 1994 and 2000.

The more recent 2000-2003 seasonally poor conditions in the Pilbara and Gascoyne Murchison and Goldfields Regions has resulted in extremely poor pasture growth, limited water supplies where surface water catchments are required, significant de-stocking of properties, and poor livestock production (wool cut/head, calving and lambing percentage). As a result applications for Exceptional Circumstances in the Regions has been made to the Commonwealth Government.

The impact of poor seasonal conditions on the pastoral business performance is manifested through low lambing percentages, and the cost of rebuilding herds and flocks.

Managing pastoral leases to account for this variability includes:

- destocking and restocking;
- surface ground cover management; and
- planning for dry seasons including post dry season vegetation management.

The value of dry season planning is becoming increasingly important in managing climatic risks. Being able to forecast seasonal variability is becoming an increasingly important management tool for managing these risks. This area has been under resourced in the Rangelands.

The response of land managers to climatic variability has a major impact on range condition (decline and recovery), enterprise profitability and soil erosion from wind and water.

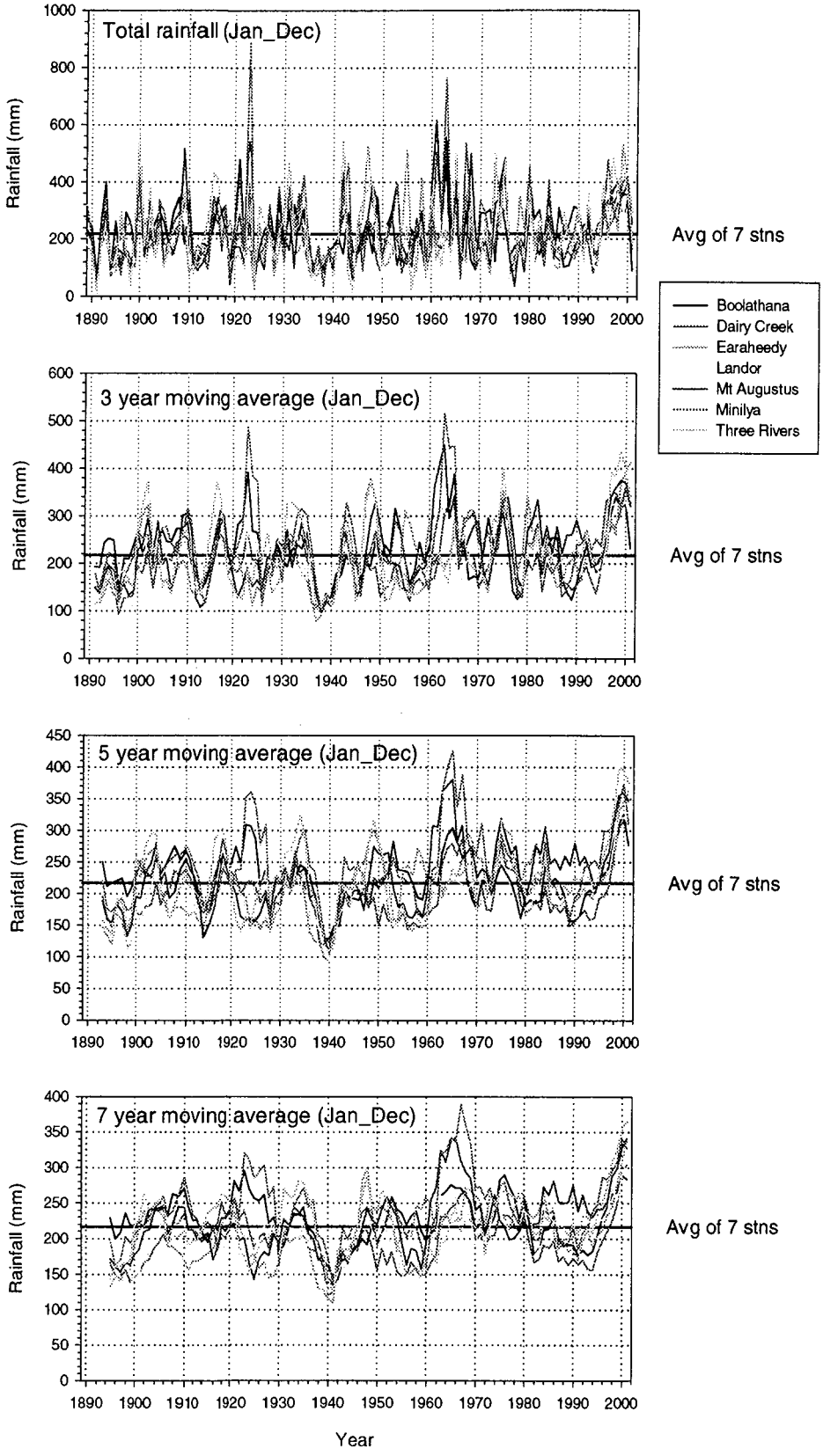
Recent rangeland condition surveys in the Gascoyne Murchison and Kimberley have indicated that the above average rainfall from 1994 to 2000 in many areas of the rangelands has resulted in improved rangeland condition.

Long-term climate change will directly impact on water availability, pasture growth and animal performance (Robertson, 2002). In the Northern Rangelands area there is predicted to be a slight increase in rainfall over the next 30-70 years (Ash and Stafford-Smith 2002). Warming is predicted to increase. Land use planning must take account of predicted climate change.

The Working Group recommends:

- ***support for seasonal forecasting in the rangelands; and***
- ***pastoralists have access to training, tools and information for rangeland management practices and dry season planning.***

Figure 1: Gascoyne Murchison Rainfall 1890-2001



(Watson and Thomas, 2003)

Economic performance of the pastoral industry and pastoral businesses

Pastoral Industry Performance

The Rangeland regions of Western Australia in 2001 contributed $316 million Gross Value of Production (GVP) from pastoral activities (Appendix 3). This value for pastoral activities represents approximately 8 per cent of the State gross value of agricultural production. The Southern Rangelands contributes $86 million or 27 per cent, while the Kimberley and Pilbara Rangelands contribute $230 million. A further $96 million is generated from horticulture activities ($20 million the Southern Rangelands Region and $76 million in the Kimberley Region). Beef production in the Kimberley and Pilbara Rangelands is particularly significant to the regional economies.

The growth in GVP in the Southern Rangelands over the last 10 years has been negligible while the Kimberley and Pilbara has grown at 10 per cent per annum.

In comparison with other pastoral regions of Australia, Western Australian pastoral leases are characterised as having a small percentage of leases with insufficient size to be viable. The Gascoyne Murchison area is where most small holdings occur. The economic viability of the pastoral industry has been subject to many enquires over many decades.

One of the emerging issues is the questioning of the economic value and importance of the pastoral industry (Fargher et al. 2002). The basic premise that is being questioned is the concept that grazing purposes alone are no longer appropriate as the only use of rangeland resources and the case for reform is now critical.

"Rangelands resources are significant to the Australian economy but at an aggregate scale rangeland pastoralism is not. In fact the Australian economy would be better off without rangeland pastoralism overall because in most regions it costs more than it contributes, in straight financial terms. If economic measures for indigenous, biodiversity and other existence values are included, the net cost of rangelands pastoralism in most regions of Australia is far greater and the case for reform even stronger." (Fargher et al. 2002).

The issues Fargher et al (2002) failed to consider were the intangible benefits of an industry occupying the vast rangelands of Australia. These benefits include regional population and development, flow on employment in small centres, biosecurity protection and the effect of occupation in enhancing Australian security.

Pastoral Business Performance

In recent years with improved beef, sheep meat and goat prices the industry was beginning to recover only to face a series of dry seasons. The very recent improvement in wool prices has seen an improving return for pastoralists whose business was dominated by wool production. Pastoralists have responded to price signals by producing a finer wool clip (Appendix 3).

The rapid diversification from Merino sheep into cattle has been a dominant trend in the Southern Rangelands as has the emergence of a greater contribution of sheep meat (Damara, Dorper) and goats to the profitability (Appendix 3) of some businesses.

Industry benchmarking data is available in the Gascoyne Murchison area, however there is limited information in the Kimberley region.

Kimberley and Pilbara Rangelands

This region incorporates the Kimberley and the Pilbara areas (Appendix 3). There are 64 pastoral leases (58 stations) in the Pilbara;nine are held by Indigenous interests and ten by mining companies. Thirteen stations are run in conjunction with farming operations in the agricultural area. There are 93 pastoral leases in the Kimberley.

The median lease area is about 254,000 hectares in the Kimberley and 198,000 hectares in the Pilbara.

An ABARE beef report in 2002 determined that returns from extensive cattle production in tropical Australia were high. Corporate properties were making up to 12 per cent Return on Assets and the top 10 per cent of family owned and operated businesses were making returns of 9 per cent.

Very limited data exist in the Northern Rangelands region to benchmark the performance of the industry.

Southern Rangelands

This region incorporates the Carnarvon, Meekatharra and Kalgoorlie areas. In the Southern Rangelands there are 346 leases (321 stations); 34 are held by mining companies, 17 held by Indigenous interests and in recent years a number of leases have been purchased for the conservation estate by CALM. The average lease area in the Southern Rangelands is about 156,000 hectares. In recent years there has been a trend to greater cattle and exotic sheep meat breeds in the region (Appendix 3).

The benchmarking data (2000/2001) collected as part of the Gascoyne Murchison Strategy has indicated the following:

- The top 20 per cent of pastoralists significantly out-perform the average pastoralists with a 20 per cent return on assets in 2000/2001 compared to 10 per cent for the average. The bottom 20 per cent of pastoralists return only 2 per cent return on assets (Lewis 2001, Gascoyne Muster). This trend appears to hold across seasons.

- Business size is a key driver of profitability. The average return on assets managed was 7 per cent for business running less than 10,000 dry sheep equivalent (DSE) and 15 per cent for those running greater than 15,000 DSE (Lewis 2001, Gascoyne Muster).

- Enterprise choice also drives business performance with improved returns from cattle, goats and Damara sheep compared with Merinos at 2001/2 prices. The relative difference in gross margin will fluctuate depending on price movements.

- The recent dry seasons have resulted in a depletion of the breeding stock (up to 50 per cent) and there is limited capital to enable stock build up when seasons improve. This will result in negative returns on some pastoral properties for the next one to two years in the drought affected areas.

- The average pastoral business in 11 of 15 Land Conservation Districts (LCD) showed a level of profitability under current price (2002/2003) and sell off strategies. In four LCD areas this was not the case. These areas were characterised as having low numbers of cattle and being reliant on wool income. In the medium term (2006/2007) this may change as the cost and time to build up cattle herds depleted by the dry seasons reduces the income base of those properties currently performing well.

- Where business size is sub-optimal and pastoral businesses have a heavy reliance on wool income many businesses will come under severe financial pressure in the years after the drought and lease amalgamation will continue to occur as the industry restructures.

The impacts of the economic conditions outlined above are issues the Pastoral Lands Board must consider in advising the Minister. Lease transfers and amalgamations may be required to achieve a sustainable pastoral industry.

Impacts of animal pests, weeds and kangaroos on the economics of the pastoral rangelands

Animal pests are estimated to cost the rangelands $6.7 million annually (2 per cent of Gross Value of Production) in lost production (Pickles, pers com 2003). This figure excludes environmental and social costs.

The regulatory control of specific declared plant and animal pests rests with the Agriculture Protection Board (APB) under the *Agriculture and Related Resources Protection Act (1976).*

The prohibitive cost of declared pest control in pastoral rangelands resulted in Government commitment (via the rating provision of the *Agricultural and Related Resources Protection Act 1976*) to meet half the associated costs.

There are several fundamental features common across declared plant and animal management. These are:

- prevention of introduction is far cheaper than control after establishment;
- early and ongoing control is more cost effective than late intervention;
- targeted and systematic control campaigns are a for more effective than unplanned or piecemeal controls; and
- eradication of the animal or plant may only be possible at the early establishment stage.

Cost benefit analysis of wild dog and donkey control programs undertaken in the late 1990s showed cost benefit ratios of 2.1:1 (sheep 3.2:1, cattle 1.9:1) and 5.4:1 respectively. These are considered conservative as many of the benefits (environmental and social) lie outside the analysis (Pickles pers com, 2003).

The control of declared pests is the responsibility of both private and public landholders. On pastoral leases control is jointly funded by Government and industry through the Declared Plant and Animal Control Fund (DPACF).

Control of weeds and pests on Unallocated Crown Land and conservation areas is important in reducing the impact of these pests on the biodiversity and also in terms of prevention of reinvasion to areas where they have been controlled on adjacent pastoral leases.

Managing the control of animal pests and weeds on both Crown land and leasehold land will require

- a partnership approach with industry and between Government Departments;
- commitment to control;
- planned and funded control programs; and
- monitoring and evaluation of control programs.

The distribution of the distribution and abundance, destruction, regulations and issues pertaining to wild dog, donkey, goat, camel, kangaroo and declared plant management are described in Appendix 7.

The key considerations by the Working Group were the controls related to the management of goats in the rangelands were:

- goats are an important part of the total grazing pressure on the rangelands and left uncontrolled have the ability to severely impact on rangeland condition;
- goat sales are of considerable economic importance of goat sales to many enterprises during the wool crisis;
- goats placed in a managed situation can be a productive enterprise on pastoral leases; and
- in a long-term study managed goats run at conservative stocking rates were no more detrimental to the rangelands than sheep.

The Working Group recommends:

- ***that all land-holders across the rangelands, including the Crown, need to work actively in partnership to achieve the mutual objective of effective control of all pests and weeds across the rangelands;***
- ***goats be categorised a 'authorised' stock and pastoral enterprises wishing to run managed goats do so to Best Practice Guidelines;***
- ***harvesting of unmanaged goats to be phased out;***
- ***tagging of managed goats to be phased in over 3 years time span by the tagging of juveniles into a managed herd;***
- ***all declared animals to be managed under the ARRPA (1976);***
- ***the routine collection (3 -5 yearly) of abundance surveys of goat, kangaroo and donkey populations be undertaken; and***
- ***research on the effects of kangaroo populations on rangeland productivity and control methods be undertaken.***

Return on State assets (pastoral rates/shire rates/vermin rates)

Currently the annual rent payable for a pastoral lease is the amount, as determined by the Valuer-General, of ground rent that the land might reasonably be expected to realise in good condition, for a long term lease for pastoral purposes. Extra rent (determined by the Valuer-General) may have to be paid in relation to that part of the leased land that has a permit for alternative use.

Under a multiple use scenario additional uses may be approved under a permit system. Currently permits are not transferable. Factors such as the area of land suitable for horticulture, access to water supplies for irrigation, proximity to tourist destinations will potentially add to pastoral returns and be determinants of market value. Ideally rental returns should reflect this increased value.

Local industry and wider community expectations need to be met in relation to the use of rangelands. As scrutiny of the exploitation of public resources increases, greater accountability of resource use by industry is expected.

Pastoralists currently pay Shire rates, pastoral rents and Vermin rates.

Table 1 summarises the revenues from each of these areas.

Table 1. Revenue from Shire rates, pastoral rents and vermin rates

	$M 2002/2003
Shire rate	1.8
Pastoral rent (DPI)	1.0
Vermin rates (DPACF)	0.8
Total	3.6

The return on these rates for the use of the pastoral area is estimated at $3.6 million/annum.

This represents ~1 per cent of the Gross Value of (pastoral) Production. The Productivity Commission report of 2002 indicates that the return from pastoral rents often does not meet the costs of administration. This apparent subsidy is an issue for the Pastoral Lands Board (PLB) and Valuer General to address.

Policy instruments to address the issue include the application of full cost recovery for pastoral lease services and higher rentals.

The Working group recommends:

- ***the current Pastoral Lease Rent System remain;***
- ***the Pastoral Lands Board investigate the desirability of making permits transferable;***
- ***that a paper on rent calculations be produced for pastoralists to ensure transparency and understanding of the process; and***
- ***the Pastoral Lands Board evaluate the use of moving pastoral lease services onto a cost recovery basis***

ENVIRONMENTAL AND ECOLOGICAL SUSTAINABILITY

Environmental and ecological sustainability in the pastoral rangelands is not clearly defined in most literature associated with the rangelands. The *National Principles and Guidelines for Rangeland Management* report referred to 'ecological challenges' in the concept of sustainability, which also included 'economic challenges; and 'social challenges'. The ecological challenge was defined as 'to integrate the conservation, preventative and remedial action and ongoing management of rangelands to protect biological diversity and maintain ecological processes which provide the productive capacity of its natural resources."

The EPA's preliminary position statement 'Environmental Protection and Sustainability of the Rangelands in Western Australia' refers to eight principles for environmental sustainability on the rangelands.

The Working Group determined that environmental sustainability on lands managed primarily for pastoralism incorporated ecological sustainability and depended not only on management of the pastoral lands, but also on management of neighbouring lands, at a regional scale. Environmental sustainability involves both the living and non-living components of the environment. It was accepted that in areas managed primarily for pastoralism some biodiversity values will be compromised.

The terms 'ecological' and 'environmental' are often used interchangeably. From first principles ecological sustainability should include all aspects of the natural biological diversity and the processes and non-biological resources upon which they depend. The broader term of environmental sustainability includes all of these elements as well as natural landscape and geological features. In this report we will only deal with ecological sustainability, which is a key requirement for management of pastoral leases under the *Land Administration Act 1997.*

Ecological sustainability of pastoral leases therefore involves:

(i) Biodiversity conservation, comprising

- *those elements consumed directly in pastoral production and related activities (grazed vegetation); and*
- *other elements (fauna, communities and priority flora species) that are not directly affected by grazing, or are excluded from grazing and are also dependent on the natural resources existing in pastoral areas.*

(ii) Maintenance of ecological processes that provide the ecosystem services upon which production is based.

(iii) Maintenance of the air, soil, mineral and water resources that are also essential for pastoral production and ecological processes.

For the purposes of this paper, it is convenient to separate consideration of the 'grazed vegetation' and 'other' biodiversity elements of the pastoral lease landscape, due to the differences in measuring and monitoring pastoral lease performance in these areas. It is also convenient to lump together conservation of the other elements of biodiversity and the related ecological processes.

Biodiversity conservation

As detailed in the Working Group's interim report (Appendix 1) effective biodiversity conservation across the rangelands involves the establishment and maintenance of a Comprehensive, Adequate and Representative (CAR) reserve system, complementary off-reserve conservation activities on pastoral leases, as well as sustainable use of native species resources in productive areas.

The establishment of a CAR reserve system has been adequately discussed in the interim report (Appendix 1) and will not be further considered here.

Off-reserve conservation areas should become effective elements of biodiversity conservation, complementary to the formal conservation reserve system. In order to be truly effective, it will however, be necessary for such areas to be formally recognised so that they have long-term security and appropriate management. The good work of any lessee could be undone by a later lessee who does not share the same approach. Formal legal protection of such private conservation initiatives is becoming increasingly important in this regard.

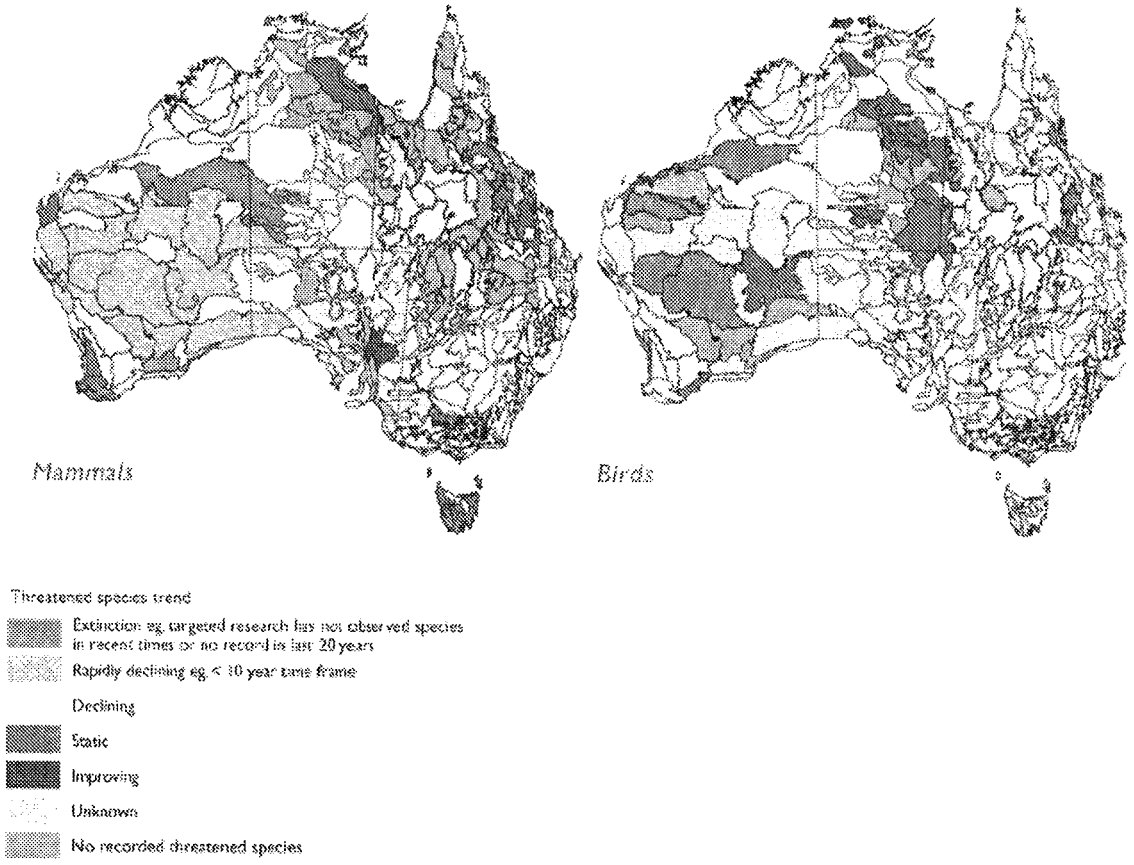
Once off-reserve conservation areas are better developed and protected they will provide an appropriate adjunct to the formal conservation reserve system. They do not, however, represent an alternative to the conservation reserve system.

The National Land and Water Resources Audit has produced the *Australian Terrestrial Biodiversity Assessment 2002*. This report outlines the very significant challenges facing us in terms of declining biodiversity across the rangelands in both pastoral and non-pastoral areas.

One key indicator of biodiversity performance is the trend in threatened species. The Figure 1 below demonstrates clearly that rangeland areas are a major concern in terms of the continuing decline of threatened species. This decline is attributed in the audit assessment to the impacts of:

- feral animals;
- changed fire regimes;
- grazing pressure;
- weeds; and
- changed hydrology.

Figure 2: Trends in threatened native mammals and bird species



Source: Australian Terrestrial Biodiversity Assessment 2002
National Land and Water Resources Audit
c/o Land & Water Australia
© Commonwealth of Australia, 2002

To adequately gauge ecological sustainability, there is a need for the development of a broad series of ecological monitoring sites across the pastoral rangelands. These sites need to cover those areas targeted for grazing, those areas set aside on leases or managed within leases for conservation reserves and other lands. Such a system would provide benchmarking and ready comparison between production areas and the areas not used for production, whereby real measures of conservation and sustainable production performance for biodiversity can be made.

It is notoriously difficult to establish broad scale biodiversity indicators that are readily measurable and comparable, but not biased to grazing indicators.

Efforts are underway through the Regional Natural Resource Management initiatives of the Natural Heritage Trust to establish a community developed rangelands NRM strategy. This process is being coordinated by the Rangelands NRM regional group. A key focus of the regional strategy will be maintenance of biodiversity and monitoring and evaluation of progress against practical biodiversity targets and indicators.

The Working Group recommends:

- ***in addition to Western Australian Rangelands Monitoring sites an enhanced series of ungrazed monitoring sites need to be established that cover those areas set aside on leases or managed within leases for conservation purposes and formal conservation reserves;***
- ***a standard set of indicators be developed of relevance to specific regions to measure performance of biodiversity in terms of species abundance, distribution and diversity;***
- ***a further standard set of indicators be developed to assess performance across the landscape in controlling the threatening processes associated with feral animals, changed fire regimes, grazing pressure, weeds, and changed hydrology;***
- ***a set of management targets be established for all land managers in relation to the above indicators;***
- ***performance of management against the targets and indicators be assessed on a regular basis, taking into account seasonal conditions, in particular rainfall;***
- ***reports on the above assessments be made public;***
- ***exploration of voluntary off-reserve conservation (with lease conditions and rent credits) under management of the owner/lessee - with approval of the Minister. Flexibility and legislative change to be considered;***
- ***development of new legislatively backed means to provide for permanent private biodiversity protection efforts on pastoral leases building on existing voluntary and temporary systems including section 16A of the Conservation and Land Management Act 1984;***
- ***consider covenants attached to the lease between the Crown and, for example, a Conservation Group, National Trust, DCLM, etc; when the lease is renewed the 'covenant' becomes an enduring lease condition;***
- ***private or commercial conservation may require a dual title lease - pastoral leasehold tenure remaining but operated as a conservation area with conservation being a legitimate form of pastoral activity. Pastoral purposes in the LAA Section 103 - "The Minister may, in consultation with the Board, include in a pastoral lease in any terms, reservations, conditions, covenants, or penalties not inconsistent with this Act."; and***
- ***arrangements to facilitate the employment of pastoral lessees and Indigenous people as resident managers of voluntary off-reserve conservation reserves should be investigated.***

Grazed Vegetation Monitoring

Western Australian Rangelands Monitoring System (WARMS)

Resource condition assessments have been undertaken by the Department of Agriculture to assess the condition of land resources within the Rangelands since 1969 in some regions. These surveys have reported on grazing impacts or ecological integrity. The Western Australian Rangeland Monitoring System (WARMS) has been developed to provide an indication of change in pastoral rangelands at broadscales, using a set of representative point based sites on which various attributes of perennial vegetation are recorded. WARMS sites have been installed in some areas from 1993. In the Kimberley, sites are assessed on a three-year cycle, south of the Kimberley on a six-year cycle (source DAWA WA Range Monitoring and Assessment Activities).

WARMS is a system of about 1600 ground based sites.

Since there are only several sites per station the principal aim of WARMS is not to provide a management tool at the station scale but to provide information at the regional, district or vegetation type scale.

At the regional level, site locations are based on vegetation type, biased towards a real extent, pastoral productivity and fragility. At the local scale, the sites are located to represent the range of vegetation states within an area (although the majority of sites were on the most common state), to proportionally represent the major land units and to represent the largest grazed areas of a particular type within each paddock. Isolated or small areas that might be preferentially grazed are avoided, as are holding paddocks, riverbanks and isolated examples of actively eroding country. These site location criteria impose some *caveats* to the interpretation of WARMS results.

The areas sampled by WARMS sites are representative of the key grazing areas in the region, although there were some well-defined biases to site selection. In the GMS Region 78 per cent of sites are between 1.5 and 3.5 km from permanent water. There are only 4 per cent of sites that are at least 5 km from water. There is also a bias against the ephemeral and annual plant species.

In terms of regional ecological monitoring discussed in the previous section, there is a need for further sites in other parts of the landscape, both in grazed and ungrazed areas.

Resource Condition Survey

Survey of range condition and description and mapping of the pastoral conditions at the leasehold scale have been an essential precursor of the WARMS program.

Results of the resource condition assessments are outlined in Table 2. The table provides detail on the matrix used to determine resource condition scores based on combined vegetation condition and the extent of soil erosion scores.

In a recent survey in the Pilbara 88.5% of assessments indicated vegetation was in the very good, good or fair categories. The remaining 11.5 per cent indicated poor or very poor condition vegetation, with either considerable loss of palatable perennial plants or general loss of perennial plants, or in some cases, marked increases in cover by unpalatable species (woody weeds). (Source Extract from an inventory and condition survey of the Pilbara region WA, DAWA Technical Bulletin No. 92 in preparation).

While there has been relatively comprehensive monitoring of information such as grazing impacts on rangelands, there is not an equal understanding of the impacts on biodiversity

within the region. Loss of species has been measured in some areas indicating predation of small mammals by declared animals.

Table 2: Resource condition summaries for regional rangeland surveys

Region surveyed (and year commenced)	Total area (km^2)	No. of traverse assessments	Severely degraded and eroded area (as mapped)		Resource condition classes (% of traverse assessments)		
			Km^2	%	Good	Fair	Poor
Gascoyne (1969)	63,400	2,426	1,205	1.9	32	53	15
West Kimberley (1972)	89,600	4,532	2,000	2.2	20	50	30
Eastern Nullarbor (1974)	47,400	1,273	0	0	50	10	40
Ashburton (1976)	93,600	8,608	534	0.6	50	34	16
Carnarvon Basin (1980)	74,500	10,952	647	0.9	45	32	23
Murchison (1985)	88,360	13,441	1,560	1.8	21	37	42
Roebourne Plains (1987)	10,216	1,172	233	2.3	51	27	22
North-eastern Goldfields (1988)	100,570	10,470	452	0.4	39	32	29
Sandstone-Yalgoo-Paynes Find (1992)	94,710	9,435	145	0.2	45	32	23
Pilbara (1995)	184,736	12,518	322	0.2	77	11	12
All areas surveyed	843,576	74,827	7,098	0.8	46	30	34

Resource condition scores are derived from a combination of erosion and vegetation condition statements, a distinction made between resilient and fragile landscapes as shown in Table 4.

Table 3: Matrix used to determine resource condition score based on combined vegetation condition and extent of soil erosion scores

		Condition of vegetation		
		Very good or Good	Fair	Poor or Very poor
RESILIENT	Nil	Good (1)	Fair (2)	Poor (3)
FRAGILE	Nil	Good (1)	Fair (2)	Poor (3)
Extent of soil erosion	Slight for Minor	Good (1)	Fair (2)	Poor (3)
	Moderate	Fair (2)	Poor (3)	Poor (3)
	Severe or Extreme	Poor (3)	Poor (3)	Poor (3)

A more recent study (Watson and Thomas 2003) in the Gascoyne Murchison area (catchment) indicated:

- significant improvements in plant density for the majority of sites and species;
- increase in canopy size for all species;
- eighty six per cent (86%) of species increased their distribution; and
- recruitment was widespread and across a wide range of species.

The results show that the shrubland of the Gascoyne Murchison is not moribund and is capable of responding when circumstances allow, such as the run of very good seasons in the 1990s.

The results indicate marked improvement and suggest the change is not part of a trend but a 'once off' transitional event.

Despite these results and good seasons 9 per cent of sites showed a decline in the number of plant species recorded over the study period.

The management challenge is to maintain these improvements and avoid the transition back to less desirable statistics.

The installation of voluntary monitoring sites on pastoral leases has been limited. The reduced labour resources on pastoral leases has been one of the underlying reasons. There is a need for incentives to encourage greater use of voluntary monitoring sites on pastoral leases.

The Working Group recommends:

the continued support for the WARMS Program including investigating the use of this information for biodiversity monitoring;

pastoralists be encouraged to establish voluntary monitoring sites on leases as part of a Property Management Plan;

the Department of Agriculture and Department of Conservation and Land Management work together to develop improved remote sensing technology to monitor range condition and biodiversity; and

the Pastoral Lands Board investigate means to encourage voluntary monitoring on pastoral leases.

Environmental Management Systems

Environmental management systems at property and regional scale will become more important as consumers, their suppliers and their home countries all demand evidence of sustainable practice. Overseas markets will use the sustainability requirement as a way to reduce access to markets in which they are competing. Suppliers will use sustainability to gain a market advantage with consumers.

An Environmental Management System (EMS) is a tool that businesses can use to improve their environmental performance. The tool helps identify and improve management of significant environmental impacts setting performance targets, establishing means to achieving targets and maintaining sufficient records to show that targets have been reached (Taylor, 2001).

An Environmental Management System on a pastoral lease can be used to:

- improve resource management;
- build public confidence in the management of the pastoral lease;
- increase the efficiency of inputs;
- reduce wastage;
- reduce the cost of correcting environmental problems; and
- access markets demanding environmental assurances.

Adequate conservation of flora and fauna is already a requirement of international treaties to which Australia has signed. The conditions and their implementation will be to put more accountability on the resource users.

Under the EMS process pastoralists can develop an accredited system (EMS) for pastoralists to demonstrate their environmental performance in the market place and to peer and other parties (eg PLB). This links production to product safety and quality.

Pastoralists with Environmental Management Systems will set the benchmark for the future. A link with performance requirements in any new lease system developed past 2015 would be beneficial.

The Ecosystem Management Unit (EMU) approach

The EMU approach helps locate high biodiversity values on pastoral lands (off-reserve conservation areas) and integrate their management within the normal management of the pastoral lease. The process used draws on the pastoralist's local knowledge as the basis for ecological assessment (Pringle, et al. 2003).

The process involves mapping the infrastructure, range condition and grazing values overlain by hydrological, geomorphic and ecological patterns and processes. Special features are also mapped. The process fosters a team approach between pastoralist and scientist and has the potential to empower widespread change.

The EMU process provides valuable data for the development of an EMS on a pastoral lease.

The process can lead to pastoralists being the stewards of the conservation values in their areas.

Under EMU all issues are identified and addressed inclusively within the context of the station and catchment management, rather than individual issues in isolation and without coherent context.

The Ecosystem Management Unit (EMU) approach aims to provide pastoralists with insight into the tools of ecological management of leases and brings together production, productive capacity and biodiversity management.

EMU integrates production/grazing value, infrastructure, and range condition with ecological processes (hydrological, ecological and geomorphic processes) and biodiversity (rare plants, birds, rocks or special features).

The Working Group recommends:

- ***expansion of the Ecosystem Management Unit property management planning process;***
- ***expansion of property management training for lessees to enable them to meet the requirements of performance objectives on their lease; and***
- ***encouragement of pastoralists to develop and adopt accredited Environmental Management Systems for their leaseholdings.***

Fire

Fire is a key factor in the evolution of vegetation in rangelands.

Prescribed fire is a critical element of sustainability management in the Rangelands. It is used to remove moribund grass and increase regeneration, productivity and quality of the available pasture. Burning is also useful in managing the structure, composition and density of vegetation and native species habitat. The type, intensity and timing of fire as well as

post-fire grazing management are critical to achieving sustainable management (O'Reagain and Bushell, 2002). Incorrectly applied fire can result in significant degradation. The frequency of fire depends on fuel level, rainfall, grazing pressure and sensitivity of vegetation to burning. Ongoing research is defining the impact of fire on the savanna rangelands in the Kimberley Region of Western Australia.

The Working Group recommends:

- ***the findings of fire research should be widely extended throughout the rangelands to land managers; and***
- ***the impact of fire on rangeland vegetation should be examined in other regions.***

Rangeland environmental sustainability measures

Any good set of indicators must be informative, sensitive, quick and simple, consistent over time, able to provide a predictive understanding and be transferable between people (Tropical Savanna publication – Healthy Country). The key indicators identified in the Tropical Savanna were:

- landscape condition;
- water quality.
- trends in abundance of selected species (flora and fauna).
- measures of landscape fragmentation.
- percentage of IBRA region in a protected area.
- size and configuration of remnants.
- quality of the protected lands.
- degree to which protected land complements off- reserve landscape condition.
- number and distribution of weeds and feral animals; and
- trends in distribution of species of concern.

The National Land and Water Resource Audit described a range of indicators for the rangelands under the headings of biodiversity, rangeland sustainability and socio-economic status (Appendix 4). Many of these indicators are inappropriate, too difficult to measure, of little relevance and unable to advance the cause of sustainable rangeland management. More recently the National Monitoring and Evaluation Framework has been released to help in measuring natural resources performance improvements at the regional level.

The Working Group recommends that the following indicators be considered for adoption:

Environmental indicators

- ***Trends in rangeland condition at a regional level.***
- ***Trends in seasonal conditions and on NDVI data at a regional level.***
- ***Trend in biodiversity on representative grazed and ungrazed sites.***
- ***Number of pastoral leases with property management plans.***

Economic indicators

- ***Trends in net farm income at a regional level.***
- ***Trends in stock numbers compared with the current carrying capacity at land conservation district level.***
- ***Trends in cattle, sheep and goat turnoff and wool cuts per head at a Land Conservation District level (three yearly).***

Social indicators

- ***Trends in population number and level of education at a regional level.***

The Working Group also recommends:

- ***the Pastoral Lands Board compiles an annual report to the Natural Resource Management Council (NRMC) and EPA on the state of the rangelands.***

SOCIAL AND CULTURAL SUSTAINABILITY

Never before in the history of Western Australian pastoral rangelands has there been such rapid change affecting all people living and working there. These changes can be characterised by the:

- enhanced capacity for communication and transport;
- improved access to all levels of education;
- aggregation of pastoral leases leading to a declining pastoral industry workforce;
- emerging technologies and cost reduction strategies reducing labour;
- emergence of tourism in opening the once remote rangelands to tourists. This is creating local and regional opportunities for growth. This growth trades on local and indigenous knowledge and experiences;
- low profitability has resulted in the reluctance of the next generation of potential pastoralists to enter the industry;
- emergence of Native Title provisions reducing the certainty of occupation by pastoralists;
- declining Government services in these remote communities;
- perception by some pastoralists that they are not being valued for their role in the protection and occupation of the rangelands;
- increasing population of indigenous people inhabiting the regions, yet the employment has not increased at the same rate;
- realisation and acceptance that the expectations of the wider community have an impact on the pastoral industry; and
- view that people are getting 'burnt out' and the demands on pastoralists time by external agencies is increasing.

One thing that is clear from pastoralists is the desire to retain the values associated with pastoralism. These can be described as:

- pride in the land and their industry;
- sense of belonging/connection to the country;
- independence; and
- maintenance of the 'frontier' value.

Work conducted in the Western Division of New South Wales and the Gascoyne/Pilbara Region of Western Australia confirms a pattern of perception and psychological trauma that is an additional cost of the current economic paradigm in Australian Rangelands (Fargher et al. 2002). Many pastoralists feel they are 'just battling' or 'hanging in there'. This work indicated that only 10 per cent of the group could be described as enthused and optimistic about the future. This translated itself into the call for action at the Gascoyne Muster.

People-centred knowledge is derived from people being embedded in the landscape. In the rangelands these are predominantly Aboriginal people and pastoralists. They live in the landscape, are dependent on it, observe it closely, respond to it and commune closely with it.

One of the difficulties in the social and cultural sustainability area is the lack of adequate indicators. Many indicators have been mooted (Appendix 4) however few provide adequate measures to gauge the social and cultural health in the pastoral rangelands.

OTHER FACTORS INFLUENCING SUSTAINABLE PASTORAL RANGELAND MANAGEMENT

Many factors influence the sustainability of the pastoral rangelands that integrate across economic, environmental and social sustainability. The impacts of these factors are discussed below. The treatment given is not exhaustive, given that many of the issues are being addressed by other Pastoral Industry Working Groups. They are listed here in order that the sustainability issues take account of them.

Tenure in the pastoral rangelands

Holmes (2002) described the changing direction of land ownership and property rights in Australian rangelands. His views of the future of pastoral leases were:

- limitations on rights towards ensuring sustainable use or recognising third party interests;
- receding prospect for free holding;
- greater freedom to engage in non-pastoral activities;
- rents tied to land value with intent to limit further value - transfer to lessee;
- the duties of lessees to be conservation oriented, with limitations on stocking rates, monitoring of range condition, controls on vegetation clearing and plant introductions;
- exclusive possession denied in 1996 Wik judgement;
- recognition of potential co-existing native title;
- further selective recognition of third-party access rights; and
- declining extent of pastoralism, notably on marginal lands.

The allocation of public lands for pastoral purposes was driven by:

- a pre-occupation for national development and a concern to 'fill the empty spaces' (Land Settlement); and
- the perceived agricultural/economic potential (rural development).

Lease tenure was used as a policy instrument to achieve these goals. As higher value uses emerge for the land currently dominated by grazing enterprises then pressure will be applied by pastoralists for tenure reform.

The diversity and emergence of (conflicting) land uses and ownership of pastoral leases clearly identify the need for a flexible model of tenure arrangements in the rangelands of Western Australia. Mining, tourism, conservation, indigenous, and recreation pursuits all form part of the competing uses which have emerged since the "creation" of the Pastoral Lease tenure which is the dominating administrative tool by which these lands are administered.

At the time the Pastoral Lease tenure was established, pastoral pursuits were the only form of recognised land use at that time, and since then, administrators have developed legislation and policy to enshrine this situation. These administrative practices are applied regardless of whether the natural resource is suitable or otherwise for grazing uses, oblivious to the economic (or uneconomic) scale of the business venture involved, and effectively restrict any alternative use or development that does not enshrine pastoralism as the dominant land use.

Clearly, the requirement to revise land administration and tenure structure in the pastoral areas is paramount to ensure a number of key principles are identified in the development of any future tenure arrangements in this area of the State.

There are key messages of major relevance emanating from the Productivity Commission's report on "Pastoral Leases and Non - Pastoral Land Use which warrant consideration. These are:

- Pastoral leases exist on around 44 per cent of Australia's mainland area and are administered and controlled through a land tenure system designed to facilitate and support pastoralism.
- Pastoral lease arrangements are characterised by extensive and prescriptive legislation and regulation. The arrangements typically constrain the emergence of non-pastoral land uses, such as tourism, farming of non-conventional livestock and conservation of native wildlife.
- Uncertainty surrounding property rights held by State and Territory Governments and the application of lease conditions, such as stocking rates, may inhibit the emergence of non-pastoral land uses.
- Native title is a key element of the broader institutional framework — changes to existing land use will need to be consistent with native title.
- In some jurisdictions, pastoral lease rentals do not cover the costs of administering the pastoral lease arrangements or provide a commercial return to governments.
- There has been limited use of National Competition Policy to review State and Territory land management legislation.
- There is a case for a more comprehensive review of the net public benefits from retaining the pastoral lease arrangements.

A paradigm shift is required to facilitate the development of an administrative framework and an appropriate tenure system for land uses in the pastoral areas of Western Australia that allows for multiple use of these lands whilst enshrining a number of key principles:

- A move away from prescriptive guidelines to outcome-focussed principles.
- Multiple uses are a key consideration.
- Uses of land have due regard to the capability (highest and best) of the natural resource.
- Appropriate arrangements to allow for monitoring of rangeland condition and trend are established.
- Business principles and requirements (ie: bankable tenures) are structured into the new arrangements.
- The tenure model is incentives-based.
- The model ensures a fair return to the state.
- Permissible "non-pastoral" uses should not be at the expense of the pastoral industry at the strategic level.
- Existing lessees are respected in all processes.
- Equity in the new administrative arrangements is transparent.

Whilst Native Title and National Competition Policies underpin future arrangements, these issues should not be used as an excuse to do nothing. Indeed, consideration of the Commonwealth definition of permissible land uses under "Primary Production" under the

Native Title Act (Comm) would be a positive step forward. Perhaps a move away from the term "Pastoral Lease" to a more encompassing "Rangeland Lease" would engender the theme of a broad-based land use platform and system of tenure arrangements.

The fundamental administration issues of tenure security involving leasehold/freehold arrangements, terms of leases and permitted uses, etc. should evolve from the framework as suggested above. Experience has shown that, whilst recognising that security of tenure is fundamental to future business development in this area of the State, previous tenure reviews have focussed on the actual tenure (i.e.: leasehold, perpetual, freehold) rather than the principles on which the tenure system should be based.

A new framework on which future tenure systems should be based according to certain principles (as suggested above) should be developed. This process, will in turn, allow the later establishment of a tenure regime that respects the intent and tenure security requirements of all potential land users of the rangelands of Western Australia into the future.

The working group recommends:

that the Minister through the Pastoral Lands Board investigates tenure arrangements that are based on the concept of a Rangelands Lease allowing for uses other than grazing. The ongoing tenure should be performance- and incentive-based and supported by Property Management Plans.

Responsibilities in the Rangelands

Pastoral lease performance

Pastoral lease inspection reports provide reasonable assurance to the Pastoral Lands Board that the resource condition and infrastructure on the lease are being maintained or improved. Pastoral lease inspection reports also ensure that lessees complete remedial action. Pastoral lease inspections provide an opportunity for the Department of Agriculture to help the pastoral manager with technical advice in relation to pastoral management.

The Department of Agriculture (DAWA) conducts pastoral lease inspections as part of an ongoing compliance program on behalf of the PLB. Essentially, DAWA is responsible for:

- maintaining the pastoral lease information on a LCDC basis;
- Western Australian Rangeland Monitoring System (WARMS data);
- normalised Difference Vegetation Index (NDVI) information on seasonal conditions;
- historical and current meteorological data from all recording stations in pastoral lands;
- rangeland and lease survey information on land systems and areas;
- long term potential carrying capacity and present carrying capacity estimations for all pastoral leases for which resource surveying information is available;
- notes on communication with lessees on specific rangeland or lease degradation issues along with resulting actions and decisions;
- providing the PLB with an annual report by 31 December each calendar year on trends in environmental, economic and social indicators for pastoral areas within districts, regions and the State; and
- maintaining the integrated Pastoral Lease Information System. Both agencies are responsible for updating and inputting information relevant to each.

Duty of care

Common law duty of care: take all reasonable and practicable steps to avoid causing foreseeable harm to another person's property or the use or enjoyment of it.

Statutory duty of care: legislation gives the common law duty statutory force or extends it in new directions (e.g. environmental hard legislation, *Land Administration Act 1997).*

Land management conditions set out the responsibility of the lessee to use methods of best pastoral and environmental management practice, appropriate to the area where the land is situated, for the management of stock and for the management, conservation and regeneration of pasture for grazing; and to monitor the indigenous pasture and degradation on the land under the lease to the satisfaction of the PLB.

Lease conditions can be used to:

- set out the responsibility of the lessee to use methods of best pastoral and environmental management practice appropriate to the area where the land is situated;
- for the management of stock;
- for the management, conservation and regeneration of pasture for grazing;
- monitor the indigenous pasture and degradation on the land under the lease to the satisfaction of the PLB .

Duty of care definition continues to evolve (Hogan, 2003).

In relation to the compensation argument for managing beyond their 'duty of care' the notion is "we don't pay people to abide by the law" or "act as good citizens" (Hogan, 2003).

Stewardship

Caring for property held in trust for the benefit of future generations (Hogan. 2003).

As well as rights, titleholders also carry responsibilities - to their neighbours, the wider community and the environment. The features of 'pure property obligation' are:

- spiritual reverence;
- Indigenous heritage - acknowledge traditional inhabitants and respect their culture and connection with the country;
- consultation - consult about use of resource;
- environmental responsibility - live with the capacity of ecological systems conserving biodiversity, retaining wilderness, managing pests, preventing off-site effects, abiding by precautionary principle, not to diminish the rights of future holders;
- civic responsibility - to avoid nuisance, fair sharing of the resource, avoid privatising public goods, act ethically, respect values of others; and
- economic responsibility - use resources productively, avoid waste, utilise opportunities, minimise monopolies, to harvest only the product, not the natural capital.

The stewardship model draws the mutual obligations held between the resource holder and society ***within*** the boundary of the property right rather than deeming them to be external to the title (Hogan 2003).

Stock movement and fencing control

With the diversification of stock types in the rangelands, there is potential for the establishment of feral populations if left poorly managed or controlled on pastoral properties. Recent introduction of alternative exotic sheep meat breeds (for example Damara and Dorper) has raised the issue of dark fibre contamination of Merino Wool.

Straying rams or flocks have the potential to reduce the value of a neighbouring property's wool clip through contamination with dark fibres and cross breeding. The *Dividing Fences Act 1961* applies to leased Crown Land and thus pastoral leases of greater than five-year tenure. In many cases adequate boundary fencing and management practices alleviates these problems. However, in some cases problems do arise due to inadequate fencing and management control.

Environmental Factors

Pasture plant introductions in the rangelands

Inappropriate plant introductions have the potential to damage the rangeland environment.

Lonsdale (1994) found that of 463 exotic pasture species introduced to northern Australia only 21 became useful, with only four of those being useful without also being a weed. Forty-eight (48) species became weeds with no recorded use. He found that a good persistent pasture plant was more likely to become weeds than plants that performed poorly in field trials.

In the Northern Territory there is some now resistance to pasture improvement as some of the species introduced have become weeds that have affected biodiversity (Buffel Grass) in the arid rangelands or have been found to be unpalatable to cattle (Gamba Grass). A higher production of unpalatable grass may also add to the fuel load and lead to potential wildfire in the dry season.

Under the *Land Administration Act 1997* approval of the Minister for Lands to introduce non-native species is required under Section 110 (1) and (2) that states:

> (1) a pastoral lessee must not sow or cultivate non-indigenous pasture on land under the lease except in accordance with a permit issued under Division 5; and
>
> (2) a pastoral lessee must not sell fodder or other produce from non-indigenous pasture, other than the products of animals grazed on it, except in accordance with a permit issued under Sections 19, 120 and 122.

The granting of a permit for sowing and cultivation of non-indigenous pasture must meet the following:

Section 117

The Board must not issue a permit under this Division unless it is satisfied that any requirements in relation to the proposal have been complied with for the operations of:

(a) the *Agriculture and Related Resource Protection Act 1976*;

(b) the *Environmental Protection Act 1976*;

(c) the *Soil and Land Conservation Act 1945*;

(d) the *Wildlife Conservation Act 1950*; and

(e) any other written law relating to environmental conservation which is applicable to the land under the lease.

Section 119 permits to sow non-indigenous pasture

(1) The Board may, on an application in writing from a pastoral lessee, issue a permit for the lessee to sow and cultivate non-indigenous pasture on specified land under the lease.

(2) An application must specify the varieties of non-indigenous pasture proposed and the areas of land proposed to be sown or cultivated.

(3) A permit under the Section:

(a) may include a permit for the sale of any produce of the pasture permitted; and

(b) may be issued for any period and subject to any conditions the Board sees fit.

Plants must be on the permitted list of the *Agriculture and Related Resource Protection Act 1976* before being allowed into Western Australia. If the potential plant for introduction is not on the permitted list it must be assessed for weediness (or other detrimental qualities) before being added to either the permitted or prohibited list. If any organisation or individual wishes to import a new plant species into Western Australia for any purpose whether for pastoral, other agricultural uses, horticulture, ornamental or medicinal use, or other (e.g. zoo fodder); that species must undergo a rigorous weed risk assessment.

The *Environmental Protection Amendment Bill 2002* will introduce the concept of environmental harm to the *Environmental Protection Authority Act* (defined in Section 3A(2)). The main issue would be the potential of the introduction to damage the native vegetation or indigenous aquatic or terrestrial animals.

Wildlife Conservation Act 1950

The main area of concern would be if an introduced plant became a weed that impacted on native flora and fauna.

Environment Protection and Biodiversity Conservation Act 1999

A consultation process now under way will lead to the development of a Biodiversity Conservation Bill. The proposed Act will allow for State implementation of relevant parts of the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999.*

In introducing any non-native plant species a risk assessment is necessary to evaluate the potential of the species to become a weed in the rangelands. The impact on other flora and fauna needs to be assessed.

The Working Group recommends:

- ***the current provisions of the LAA (1997) are sufficient to manage the risk of plant introductions into the rangelands.***

Proposed "environmental harm" legislation

The *proposed changes to the Environmental Protection Act 1986*, which will see the introduction of environmental harm offences. In summary, these offences will see penalties of up to $1 million apply for causing environmental harm (for example, including vegetation removal, damage to ecosystems, land degradation).

It will be a defence to a charge of causing environmental harm if the person had approval to undertake the activity or that the activity was in accordance with an approved code of practice. These reforms may provide a useful mechanism for providing legally enforceable codes of practice or approved Property Management Plans in pastoral regions.

Off-site environmental impacts of pastoralism

The connection between the pastoral lands and key water and ocean bodies give rise to off-site environmental impacts from pastoralism on water quality and sedimentation levels in key river systems. The most typical example is the impact of the Ord Regeneration Reserve on the sedimentation of Lake Argyle. Significant overgrazing of riverbanks causes large sediment loads to enter the lake.

Similar issues exist in the Gascoyne River catchment areas. Attention to the impacts of grazing on land conditions and riverbank degradation is an issue in the rangelands.

Timber conservation/carbon sequestration

The timber rights (including sandalwood) on pastoral leases rests with the Crown and is managed by the Forests Products Commission.

It is possible for there to be an agreement between a landowner and another person about a natural resource product on the land. For farm forestry it would allow another person (without any rights over the land) to purchase the right to establish, maintain or harvest timber growing on the land and enter into an agreement. A Bill is currently before Parliament to achieve this. Under this arrangement the Crown's rights to the timber resource are not affected.

Conservation on pastoral leases

Private sector acquisition of pastoral leases for conservation

The LAA does not currently allow pastoralists to manage discrete areas of a lease exclusively for conservation purposes (complete destocking). Private investment in the pastoral industry for conservation purposes is an emerging issue.

Existing mechanisms to provide for conservation areas on a pastoral lease include:

(i) Covenants under the *LAA 1997* (S.15).

(ii) Management agreements under the *Conservation and Land Management Act 1984* (SS.16 and 16A).

(iii) Covenants under the *National Trust of Australia (WA) Act 1964* (S.21A).

These mechanisms do not provide an adequate framework to facilitate conservation by leaseholders on pastoral leases.

Issues considered by the Working Group were:

(i) tenure of the proposed 'conservation' leases;

(ii) mechanism to convert back to pastoral lease should issues arise with a 'conservation' lease;

(iii) the timber rights on such a lease;

(iv) performance basis for lease renewal.

Criteria need to be developed if pastoral leases are to be utilised for conservation purposes. The working group considered that leases should only be granted to persons meeting prescribed criteria (regulation review required) including:

- the provision of a management plan;
- be classed as 'fit and proper persons';
- provide an annual report;
- meet performance based criteria (to be developed);
- provide for visitor access;
- the impacts of transferring of such a lease;
- competition policy consideration; and
- native title consideration.

Recommendations that relate to this issue are made under the Biodiversity Conservation section.

Nature Based Tourism

The rangelands is a region rich in stunning scenery. Many parts are seasonally isolated and limited by road access. There is the potential to diversify farm business income streams by developing nature-based tourism ventures. The range of activities within the general term of nature-based tourism is diverse: ornithology, Aboriginal activities, recreational fishing, 4WD experiences, guided camping, guided fishing, eco-tourism, and sightseeing. In addition to pastoral businesses offering some form of nature-based tourism there are also tourism operators who are not landholders who operate ventures on pastoral leases.

Pastoral businesses can provide camping facilities, roadhouse facilities, accommodation, guiding, access to cultural sites and stunning scenery. They have competitive advantage for nature-based tourism as it is seen as 'frontier country' for both the domestic and the

international tourist and is an attractive tourist destination. The main limit on the amount of tourism revenue generated annually is access along the roads in the area and the season.

Approval for tourism activities requires a permit from the Pastoral Lands Board. Diversification permits allow leaseholders to invest in other activities but they must be 'secondary' in nature to grazing activities. Permits are not transferable and this limits the development of such diversification options. Once tourism facilities are developed, there are no guidelines on how these income-generating assets are incorporated as part of a station's infrastructure.

The Working Group recommends:

- ***an appropriate planning and approval framework is necessary to ensure orderly and planned development of tourism on pastoral leases.***

Government/industry and community interaction

The shared responsibility model for management of rangelands is an important principle. Significant changes in the interaction between the Government and industry are needed to develop this model in the rangelands. This issue is further addressed in the next section.

As well as meeting 'trends and treaties' there are local (State, wider community and industry) expectations to meet. As technology increases and allows greater involvement and transparency in public policy and delivery, industry resource users need to meet these wider expectations and adopt contemporary management models expected of a resource use industry. To ensure the industry is using and meeting future needs it must embrace a leadership approach. Governments must also work within these models.

To achieve involvement there will need to be consultative frameworks of the appropriate stakeholders in setting goals and objectives and agreement to acceptable targets/benchmarks. There must also be ways to influence investment and institutional processes to ensure structural change is continuously being implemented.

An agreed consultative mechanism can lead and influence structural change and investment in the rangelands.

Indigenous land management

In recent years there has been a rapid expansion in the area of pastoral leases held by indigenous people. The focus on recent acquisition has been based on achieving cultural, economic and environmental outcomes for Indigenous people (Padgett, 2002).

Issues facing managers on these lands in the rangelands are:

- many properties purchased were in poor condition and lacked infrastructure;
- many properties purchased were marginally suitable for pastoralism;
- lack of herd and flock size and natural productivity;
- enterprise management skills;
- access to training and information; and
- lack of capital.

Reviews of ILC properties (Padgett, 2003) have revealed the need for remediation programs in order to improve both infrastructure and property management skills.

Structured management training programs can achieve significant improvement in managing livestock and turn-off. Training programs for pastoral managers should include managers of indigenous lands.

The desert regions of the rangelands in Western Australia are key indigenous reserve areas. These need to be considered in future Natural Resource Management (NRM) planning approaches.

Changing practices and new technology

The economic return from pastoralism will also be highly influenced by changing practices and new technology. Some areas of developing technology are:

- new satellite monitoring systems - low cost, high resolution;
- new low cost water, fencing (infrastructure maintenance capability);
- improved communication and access to information;
- providing electronic returns to PLB on factors involving management of the lease (PLB database development);
- utilisation of land resource and client information to aid decision making in the management and administration of pastoral leases;
- development and utilisation of climate variability analysis and pastoral business decision aids;
- controlled grazing management practices;
- implementation of Quality Systems (ISO, SQF2000)
- greater use of trap yards; and
- control of waters.

INSTITUTIONAL, LEGISLATIVE AND POLICY SETTINGS

The institutional, legislative and policy settings in the rangelands are complex and involve multiple Government agencies. Policies abound, yet the implementation of these policies is poor and often not well communicated or known to stakeholders. This leads to confusion of roles, inaction --and leaves stakeholders frustrated.

There is a need for an urgent overhaul of the institutional, legislative and policy settings for the rangelands.

Pastoral Lands Board

The Pastoral Lands Board (PLB) is constituted under the LAA to administer pastoral leases in accordance with the Act and advise the Minister for Lands on policy relating to the pastoral industry. Under Section 95 of the LAA, the primary role of the PLB is to ensure that pastoral leases are managed in an ecologically sustainable manner and in accordance with lease conditions and relevant legislation. Members of the Board represent the pastoral industry, conservation and Aboriginal interests. Assistance is provided by the Department of Agriculture whose officers produce rangeland condition assessments of individual leases as part of a regular program of lease inspection. The PLB is also supported by the Department for Planning and Infrastructure (and was formerly supported by the Department of Land Administration) which provides staff and other required resources.

The Pastoral Lands Board is a statutory body established under Part 7 of the *Land Administration Act 1997*. The Board's functions are defined in Section 94 to be:

(a) to advise the Minister on policy relating to the pastoral industry and the administration of pastoral leases;

(b) to administer pastoral leases in accordance with this Part;

(c) to ensure that pastoral leases are managed on an ecologically sustainable basis;

(d) to develop policies to prevent the degradation of rangelands;

(e) to develop policies to rehabilitate degraded or eroded rangelands and to restore their pastoral potential;

(f) to consider applications for the subdivision of pastoral land and make recommendations to the Minister in relation to them

(g) to establish the numbers and the effect of stock and feral animals on pastoral land;

(h) to monitor the numbers and effect of stock and feral animals on pastoral land;

(i) to conduct or commission research into any matters that it considers are relevant to the pastoral industry;

(j) to provide such other assistance or advice as the Minister may require in relation to the administration of this Part; and

(k) to exercise or perform such other functions as it may be given under this or any other Act.

In addition, Section 96 states that "The Minister may guide directions in writing to the Board with respect to the exercise or performance of its functions, either generally or in relation to a particular matters, and the Board is to give effect in any such direction."

Specific functions of the Board include:

- advise the Minister on the grant, renewal, boundaries and amalgamation of pastoral leases (sections 101, 140, 141, and 142);
- advise the Minister on any conditions that should be included in a lease (Section 103);
- request development plans from leaseholders (section 1097);
- oversee the sustainable management of pastoral leases (section 108);
- regulate the removal of vegetation from a lease (section 109);
- set stocking rates for a pastoral lease (section 111);
- receive annual returns from leaseholders (section 113);
- issue permits under Division 5;
- advise the Minister on postponement or reduction in rent due to disaster (section 128);
- issue default notices to leaseholders (section 129);
- advise the Minister on the abandonment of leases (section 133); and
- investigate compliance with any provision of the lease or the Act (section 139).

The Department of Agriculture's support to the PLB is described at Appendix 5.

The Working Group recommended that:

- ***The role and function of the PLB be reviewed to meet the changing nature of the rangelands. The Board should have an enhanced focus on:***
  - ***(a) providing policy advice to Minister on the pastoral industry to enable ecological, economical and social sustainability;***
  - ***(b) developing policy and guidelines to ensure pastoral leases are managed on an ecologically, economically and socially sustainable basis; and***
  - ***(c) reporting on the state of the rangelands as part of the State Sustainability Strategy.***
- ***To enable the Board to provide adequate advice on its recommended broadened role, the Minister should ensure the Board has an adequate skills base.***

Institutional issues

There are many government agencies, statutory authorities and groups with decision-making powers on rangeland activities and pastoral lessees. The role of the Soil Conservation Commissioner (Appendix 6) and Agriculture Protection Board (Appendix 7) are described in the relevant appendix.

The dual role of regional economic development and management of natural resources, coupled with the land administration elements of the PLB mean that the cabinet sub-committees on the environment and regional development have a strong interest in the rangelands of Western Australia.

It is clear from the working group's viewpoint that there is little coordination across Departments in the planning, administration and management of the rangelands. The key is

to ensure integration across agencies that fulfils regional development and sustainable NRM objectives.

The emergence of the Rangelands regional Natural Resource Management Group to prepare regional NRM plans incorporating marine, coastal, indigenous and pastoral lands has provided a unique opportunity across government for a coordinated approach to the broader rangelands management issues.

Any management system/approach will need to provide accountability. Currently we manage the rangelands by way of a number of statutory vehicles. Many of the changes in the rangelands can be done under voluntary codes supported by a strong legislative base. Other changes will require new approaches, for example, 'stewardship', 'duty of care' and 'codes of practice' needs definition. Market-driven approaches need to be underpinned by the notion of the triple bottom line.

An approach would be to establish a Rangelands Working Group reporting to the NRMC and the Cabinet Sub-Committees (respectively) on Environment and Regional Development. The composition of such a Working Group would draw on expertise in the current Ministerial Working Groups, pastoralists, conservationists and other parties. The role would be to implement the recommendations of the Working Groups and facilitate coordinated action across Government.

The Working Group recommends:

- ***the establishment of a Rangelands Working Group. The group would report to the NRMC in implementing the recommendations of the pastoral industry Working Groups where the issues involve multiple departments. The role of such a group would be to:***
  - ***provide a forum across Government for action (coordination);***
  - ***have a consultative role with industry and other stakeholders; and***
  - ***address the wider rangeland issues (marine, estuarine).***

Planning in the rangelands

The State Planning Strategy Environmental Principle is "to protect and enhance the key natural and cultural assets of the State and deliver to all Western Australians a high quality of life which is based on sound environmental sustainable principles." A description of planning policies is described in Appendix 2.

Planning strategies help protect biodiversity, environmental water resources and Aboriginal reserves.

The State Planning Strategy identifies five key principles which define the primary aim and describe the considerations which influence good decision-making in land use planning and development. Planning should take account of and give effect to, these principles and related policies to ensure integrated decision-making throughout government.

Environment:	To protect and enhance the key natural and cultural assets of the State and deliver to all Western Australians a high quality of life which is based on environmentally sustainable principles.
Community:	To respond to social changes and facilitate the creation of vibrant, safe and self-reliant communities.

Economy:	To actively assist in the creation of regional wealth, support the development of new industries and encourage economic activity in accordance with sustainable development principles.
Infrastructure:	To facilitate strategic development by making provisions for efficient and equitable transport and public utilities.
Regional Development:	To assist the development of regional Western Australia by taking account of the special assets and accommodating the individual requirements of each region.

The pastoral rangelands of Western Australia have largely developed outside any formal planning framework. Subdivisions and approvals for developments like tourism require planning processes, guidelines and approval processes. These approval processes have been mainly through the issuing of permits.

The Working Group recommends:

- ***the development of a Statement of Planning Policy for the Rangelands;***
- ***the Department for Planning and Infrastructure manage approvals of lease sub-division in accord with land use planning;***
- ***utilise planning Schemes to manage land use changes in the rangelands through development approvals; and***
- ***agencies responsible for infrastructure developments should ensure their activities are consistent with sustainable land use.***

Transitional arrangements to lease renewal in 2015

Transitional arrangements to lease renewal in 2015 need to be considered in meeting the changing community expectation.

In meeting the changing community expectation there will be a need to change the way we currently manage the natural resources of the rangelands. The transition of any new way of doing business will require the adaptation, modification or development of new processes, administrative requirements along with a range of other activity. The implementation must be staged over the period 2003-2015. Land managers, scientists, regulators and administrators must change the way they do things. This will mean a change process will need to be designed, initiated and managed. Institutional process may require statutory changes. New ways of managing and monitoring pastoral leases will need to be introduced.

There is a particularly significant challenge to preserve the values of the land in the period between the resolution of the nature of those exclusions and 2015. Some aspects of this challenge are covered in the recommendations in the interim report.

The Working group recommends:

- ***Interim monitoring of exclusion areas prior to 2015 should be undertaken under the auspices of the PLB to ensure the preservation of the value of the land. This monitoring will need to involve other Agencies and will require the commitment of funding.***
- ***Institutional arrangements should not be an impediment to industry restructuring.***

REFERENCES

Ash, A. and M. Stafford-Smith. (2002). Pastoralism in Tropical Rangelands: Seizing the opportunity to change. Proceedings of the 12th Biennial Australian Rangeland Society Conference, pp. 19-22. Australian Rangeland Society, Kalgoorlie, Western Australia. pp 31-37.

Environmental Protection and Sustainability of the Rangelands in Western Australia, Environmental Protection Agency. 2001.

Fargher, J., Howard, B., Burnside, D. and M. Andrew (2002). The Economy of Australian Rangelands - Myth or Mystery? Proceedings of the 12th Biennial Conference Australian Rangeland Society, pp 40-45.

Hogan, T. 2003. 'There's nothing new under the sun' - Speech - an essay on property rights from historical and current perspective. Department of Natural Resources and Mines - Queensland

Holme, A., Friedel, M., Burnside, D., Duffey, J., Fitzgerald, D. and Brennen, G. 2002. Rangeways: Community based planning for ecologically sustainable land use in the Western Australian Goldfields. Misc. Public. 9, Department of Agriculture Western Australia.

Holmes, J.H. 2002 Providing sites for shifting camps in land tenure reform to support the rangeland transaction proceedings. Proceedings of the 12th Biennial Australian Rangeland Society Conference, pp. 19-22. Australian Rangeland Society, Kalgoorlie, Western Australia.

Holmes, J.H. 2002. Diversity and change in Australia's rangelands: a post-productionist Transition with a difference. Trans. Inst. Br. Geogr. 27, 362-384.

Indication of Regional Development in Western Australia. Department of Local Government and Regional Development. (2003)

Lonsdale, W.M. 1994. Inviting Trouble: Introduced pasture species in northern Australia. Australian Journal of Ecology 19. 345-354.

More than can be said: A study of pastoralists learning. Tropical Savanna CRC. 2001.

National Principles and Guidelines for Rangelands Management - Australian New Zealand Environmental and Conservation Council (ANZECC) and Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ). 1999.

Nicolson, S. and Wilcox, D.G. Eds. Shifting Camp: Proceedings of the 12th Biennial Australian Rangeland Society Conference, pp. 19-22. Australian Rangeland Society, Kalgoorlie, Western Australia.

O'Reagain, P. and Bushell, J. (2002). The effect of high intensity fire on savanna woodland - North Queensland. Proceedings of the 12th Biennial Australian Rangeland Society Conference, pp. 19-22. Kalgoorlie, Western Australia.

Padgett, A. 2002 New directions for the Indigenous Land Corporation in Land Acquisition and Management. Proceedings of the 12th Biennial Australian Rangeland Society Conference, pp. 19-22. Kalgoorlie, Western Australia. pp 43-44

Pastoral leases and non-Pastoral Land Use - Commission Research paper, AusInfo, Productivity Commission, 2002.

Principles of Environmental Protection - Preliminary Position Statement No. 7 Canberra, Environmental Protection Authority. 2001.

Pringle, H.J.R., Tinley, K.L., Brandis, T., Hoplass, A.J.M. and Taylor, L. 2003. The Gascoyne Murchison Strategy: A people centred approach to conservation in arid Western Australia (In Press).

Rangelands - Tracking changes - Australian Collaborative Rangeland Information System. National Land and Water Resources Audit. Land and Water Australia. 2001.

Robertson, G.A. 2002. Global Influences on Rangelands of Australia. Proceedings of the 12th Biennial Australian Rangeland Society Conference. Australian Rangeland Society, Kalgoorlie, Western Australia, pp 53-62.

State Rural Leasehold Land Strategy. Department of Natural Resources and Mines, Queensland. 2003.

State Sustainability Strategy.

Developing an Environmental Management System - a Practical Guide for Pastoralists. Department of Agriculture Western Australia publication.

Taylor, L. 2002. The Gascoyne Muster - Pastoral Industry Forum. Carnarvon Pastoral Lands Board Report. 2002.

Watson, I. and Thomas, P. 2003. Monitoring showing Improvement in Gascoyne-Murchison Rangelands; Rangeland Management Newsletter. The Australian Rangelands Society.

Woinarski, J.C.Z. and Fisher, A. 2002. Conservation and maintenance of biodiversity in the Rangelands. Proceedings of the 12th Biennial Australian Rangeland Society Conference, pp. 19-22. Australian Rangeland Society, Kalgoorlie, Western Australia.

Young, M., Shallcross, F., White, K., Buchanan, N., Myer, R., Roberts, E., Oldham, C. and Warburton ,R. Project Report - Review of the sale of exotic sheep breeds in the Australian sheep industry. Final report to Meat and Livestock Australia.

ACRONYMS

ANZECC	Australian and New Zealand Environment and Conservation Council of Ministers
APB	Agriculture Protection Board
ARMCANZ	Resource Management Council of Australia and New Zealand
CAMBA	China- Australia Migratory Birds Agreement
CAR	Comprehensive, adequate and representative
DAWA	Department of Agriculture Western Australia
DOLA	Department of Land Administration
DPI	Department for Planning and Infrastructure
DPACF	Declared Plant and Animal Control Fund
EMS	Environmental Management Systems
EMU	Ecosystem Management Unit
ENR	Environment and Natural Resources
EPA	Environmental Protection Authority
ESD	Ecologically Sustainable Development
GVP	Gross Value of Production
IBRA	Interim Bio-geographical Regionalisation (Australia)
ILAP	Indigenous Land Acquisition Programs
IUCN	International Union for the Conservation of Nature and Natural Resources
JAMBA	Japan-Australia Migratory Birds Agreement (JAMBA)
LAA	*Land Administration Act 1977*
LCD	Land Conservation District
LCDC	Land Conservation District Committee
LTSC	Long term stock capability rating
MAFIA	Meekatharra Area Financial Information Analysis
NDVI	Normalised Difference Vegetation Index
NRMC	Natural Resource Management Council
NRS	National Reserve System
PCC	Potential carrying capacity
PLB	Pastoral Lands Board
PLR	Pastoral Lease Report
PMP	Property Management Planning
PWITF	Pastoral Wool Industry Taskforce
ROA	Return on Assets
RWG	Rangelands Working Group
TGM	Total Grazing Management
WARMS	Western Australian Rangelands Monitoring System
WG	Working Group
WMI	Western Market Indicator
WWG	Writing Working Group

APPENDIX 1:
Pastoralism for Sustainability: Interim Report (October 2002)

PASTORALISM FOR SUSTAINABILITY

PASTORAL INDUSTRY WORKING GROUP

Interim Report

October 2002

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1. SUMMARY

- This Interim Report provides recommendations to the Hon Minister for Planning and Infrastructure with respect to the 2015 exclusion process

- Department of Conservation and Land Management (DCLM) Batch 3 exclusion proposals have been reviewed and the following key recommendations are made in relation to them:

  - It should be a condition of approval of exclusion proposals that the proponent must set aside funding for the long-term management of the excluded area(s);

  - Consideration of exclusion proposals should take into account the cumulative impact of exclusions on the pastoral industry and on the social infrastructure of the rangeland communities;

  - There are opportunities to broaden the range of mechanisms which can support management for conservation outside the reserve system in the rangelands; some legislative reform is required;

  - Road access to excluded areas for management purposes should by arranged by negotiation rather than by the extension of exclusions.

- A growing focus on rangeland research, together with an increased appreciation of the principles of sustainability, provide new opportunities for modern pastoralism.

2. INTRODUCTION

The Pastoralism for Sustainability Working Group has been established by the Hon Minister for Planning and Infrastructure, Alannah MacTiernan, to investigate and report on:

> "***means to achieve sustainable land management on pastoral rangelands and ways to attain nature conservation outcomes on pastoral managed lands***"

The full Terms of Reference (TOR) for the Group are provided at Appendix 1.

This Interim Report provides recommendations with respect to TOR 3, 4 and 6 (below), and includes some preliminary comment on issues under the remaining terms. The Group will provide a full report against this reference framework in May 2003.

TOR 3: Outline the Requirements for a Comprehensive, Adequate and Representative reserve system within the context of the international, national and State criteria and Government policy;

TOR 4: Review the Department of Conservation and Land Management's proposed 2015 Batch 3 exclusions from pastoral areas for conservation purposes;

TOR 6: Propose criteria for Ministerial decision making in regard to the target mix of formal reserves and off-reserve conservation areas.

The Group has reviewed the Batch 3 exclusions proposed by the Department of Conservation and Land Management (DCLM) for the purposes of developing and testing its decision-making criteria and general recommendations. However, this report does not include comment on individual cases, recognising that final determinations will rest on a more comprehensive overview (including assessments by referring agencies) than is currently available to this Group.

3. BACKGROUND

The term "rangelands" is used internationally to describe "land where livestock are grazed extensively on native vegetation, and where the rainfall is too low or erratic for agricultural cropping or for improved pastures" (ANZECC and ARMCANZ, 1999). Rangelands extend over nearly three quarters of Australia, and variously comprise native grasslands, shrublands, woodlands or tropical savanna woodlands.

Rangelands make up about 87% (approximately 2.5 million square kilometres) of Western Australia (WA). About 82% of these rangelands are administered by the Department of Land Administration (DOLA) under the *Land Administration Act 1997* (LAA) as pastoral leasehold or unallocated Crown land (UCL). Livestock grazing on pastoral leases is the dominant commercial land use across 45% of the WA rangelands ("pastoral rangelands"). Unallocated Crown lands comprise the remaining 37%. Figure 1 maps the primary forms of land tenure in Western Australia. Conservation reserve systems make up about 5% of the rangelands.

Over the past three decades the Western Australian Department of Agriculture and the Department of Land Administration (DOLA) have conducted regional resource inventory and range condition assessments over nearly 90% of pastoral rangelands: 46% were assessed as good condition, 30% as fair, 24% as poor, and 0.8% as severely degraded and eroded. (A full reassessment is scheduled for completion in 2004). (Watson *et al*, 2001).

Figure 1

In conjunction with other agencies, the Pastoral Lands Board (PLB) and Department of Agriculture manage and monitor pastoral rangelands. The functions of the PLB include administration of pastoral leases, provision of Ministerial advice on pastoral industry policy, development of policies to prevent the degradation of rangelands, and ensuring "that pastoral leases are managed on an ecologically sustainable basis" (LAA). Under agreement with the Department of Agriculture, officers of that Department provide the PLB with range condition assessments of individual leases as part of a regular program of lease inspection. As the techniques used are similar to those used in the range survey program these assessments can be used to develop a regional view of trends.

The Department of Agriculture is responsible for maintaining a network of rangeland condition monitoring sites (WARMS) and is able to report on the range condition of specific types of land on a regional basis. This network is not extensive or intensive enough to provide information on range condition on individual leases.

Pastoral development over more than a century has been associated with major changes to the rangeland environment. In some areas lack of understanding of the capacity of rangeland systems has led to heavy grazing by domestic, native and feral herbivores and resulted in the extensive removal or reduction of perennial pasture species and an increase of less palatable species or woody weeds, often in association with various forms of soil erosion. Increased focus on research into the assessment, monitoring and management of rangelands now provides many opportunities for both conservation and sustainable development of this extensive resource as we embark on the era of modern or precision pastoralism (Ash and Stafford Smith 2002).

The drivers for ecologically sustainable development are manifold (refer list under Section 7, last dot point). A primary driver has been the adoption in 1992 by Australian governments of the National Strategy for Ecologically Sustainable Development. Its core objectives are to:

- enhance individual and community wellbeing and welfare by following a path of economic development that safeguards the welfare of future generations;
- provide for equity within and between generations; and
- protect biological diversity (biodiversity) and maintain essential ecological processes and life support systems.

The Strategy's theme is intergenerational equity (that is the concept that the actions of the present generation should not compromise the ability of future generations to enjoy no less a quality of life than the present generation).

The related National Strategy for the Conservation of Australia's Biological Diversity is concerned to protect the diversity of entire ecosystems; the diversity of species within these ecosystems; and the genetic diversity within each of those species.

Australia has a rich heritage of biodiversity because of its long isolation from other land masses, and because there are still large areas of the landscape which have not been cleared for intensive agriculture. The policies and actions of State and Territory governments are instrumental in facilitating the required conservation and remediation of biodiversity. Much of the activity must occur on agricultural and pastoral land due to the extensive nature of such land. Central to the conservation of Australia's biological diversity is the establishment of a comprehensive, adequate and representative system of ecologically viable protected areas, integrated with sympathetic management of all other areas, including agricultural and resource production systems, through the conservative use of land resources.

4. DISCUSSION OF ISSUES

4.1 Ecologically sustainable development and biodiversity conservation

The Group agreed that Ecologically Sustainable Development (ESD) embraces the interlinked themes which lead to inter-generational equity:

- protection of biological diversity
- economic utilisation of the natural resource
- social equity; cultural and recreational values

It is therefore important that consideration of pastoral sustainability includes all stakeholders — governments, owners and managers of pastoral leases, Aboriginal interests and other stakeholders — to ensure that the rights and needs of all groups are acknowledged and included.

As much of Australia's biodiversity is found outside currently protected areas the conservation of biodiversity will not be achieved solely through reliance on protected areas. One of the most serious questions raised concerns the environmental integrity of the existing grossly inadequate and piecemeal system of reserves in the pastoral rangelands. It is generally recognised that fragmentation of habitat into isolated reserves results in increased pressures from the relatively large boundaries between the reserves and adjacent lands. These areas of interface provide opportunities for adverse spillovers of agents such as weeds, fire and feral species in either direction. The opportunities to link reserve systems can provide wildlife corridors.

Further, both Pressey (1992) and Morton & Stafford Smith (1994) point out the difficulties of achieving a network of parks or other reservations that will guarantee the persistence of the range of plant and animal biodiversity in the rangelands. The highly capricious climate which swings unpredictably from heavy rainfall periods to highly stressful droughts and fire itself place all forms of the natural biota at risk almost irrespective of reservation size since no one place can be considered permanently occupiable by some plant or animal species.

In these circumstances, sustainable biodiversity conservation will not be achieved through the creation of protected islands alone. Complementary off-reserve management will be crucial. Inevitably, areas of pastoral land will need to be managed for conservation purposes. Sometimes, where multiple uses are compatible, this may involve the coexistence of pastoral activity and conservation practice. At other times it may require management of the land solely for conservation purposes (for example by excluding grazing via fences).

Some members expressed concerns about the possible external effects of inadequate management of State owned reserves on private agricultural and pastoral land. Doubts were expressed about whether management agencies were adequately resourced to address these issues. Other members suggested that similar concerns arose in terms of possible impacts of pastoral land on reserves.

To help improve this situation, opportunities should be sought to make greater use of input from local landholders in reserve management where this is more cost-effective. There was also some support for the view that adequate management of on-station habitat for conservation purposes will require the community to contribute to the costs.

4.2 A COMPREHENSIVE, ADEQUATE AND REPRESENTATIVE RESERVE SYSTEM

Terms of Reference 3. Outline the requirements for a Comprehensive, Adequate and Representative (CAR) reserve system within the context of the international, national and state criteria and Government policy.

4.2.1 History and international requirements

It is important to recognise that the use of the rangelands for grazing purposes under pastoral leases has been established far longer than the concept of use of such lands for biodiversity (or nature) conservation purposes. Pastoral leases have operated in Australia since around the 1840's, whereas the concept of reservation of areas for a nature conservation purpose, as opposed to that of protecting an attractive landscape, is a 20th century concept that only really gathered momentum in the 1970's. Historic decisions to issue pastoral leases were therefore not made taking into account an alternative nature conservation use of the land.

Over the past century the concept of protecting areas for their natural beauty has been developed to include the establishment of government system of reserves of protected natural areas, set aside for the conservation of the natural environment and for human enjoyment of these areas.

From the 1930's to the 1970's the world wide focus on preservation of natural areas greatly increased. This led to fledgling State systems of national parks and nature reserves that expanded significantly from the 1970's, following the EPA decade-long 'Conservation through Reserves' project.

The conservation of biological resources has become an international concern crossing State boundaries. The International Union for the Conservation of Nature and Natural Resources (IUCN) was founded in 1948. It is comprised of Government and non government members across 140 countries world wide. Currently known as the World Conservation Union, the IUCN has a mission *"to influence, encourage and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable".*

Through IUCN, considerable progress has been made worldwide in nature conservation, including development of a world network of protected areas and special efforts to protected threatened species. The IUCN Commission on Protected Areas has helped establish worldwide categories of protected areas and targets or benchmarks for reservations. In 1992 at its World Parks Congress in Caracas the IUCN established a goal of at least 10% of each major biome being protected in a protected area by 2000. Australia and in particular, Western Australia, have been key players in the IUCN.

In addition, Australia is a signatory to the World Convention on Biological Diversity, a convention covering a suite of initiatives to protect biological diversity including requirements for protected areas. In particular, the Convention requires each country to *"establish a system of protected areas or areas where special measures need to be taken to conserve biological diversity".*

There are also other international treaties and conventions that Australia has signed that require Australia (and Western Australia) to take special measures to protect native species habitats, with particular emphasis on threatened species and those that are migratory and spend only part of their lives in Australia. Prime examples include the Convention on Wetlands, more

commonly referred to as the Ramsar Convention, and also the Japan-Australia Migratory Birds Agreement (JAMBA), and several others. Under the Ramsar Convention Australia is required to identify, protect and specially manage wetlands of international importance. There are currently 12 Ramsar listed wetlands in Western Australia, including 80 mile beach, Roebuck Bay, Lakes Argyle and Kununurra and the Ord River floodplain. Western Australia has an obligation to protect the values of these sites where necessary through the reservation of the areas, key parts of them and/or key buffer areas into the conservation reserve system.

Under the JAMBA and the similar CAMBA (agreement with China), Western Australia is required to give special protection to migratory birds and their habitats.

4.2.2 Requirements for the establishment of a CAR reserve system in Australia

The National Strategy for the Conservation of Australia's Biological Diversity was endorsed by all States and the Commonwealth and signed by each Premier and the Prime Minister in 1997. Under this strategy an agreed national goal is:

- *"Establish and manage a comprehensive, adequate and representative system of protected areas covering Australia's biological diversity."*

The terms of this definition are defined in the Strategy. The key terms for this paper are as follows:

- "comprehensiveness" – *the degree to which the full range of ecological communities and their biological diversity are incorporated within reserves*;
- "adequacy" – *the ability of the reserve to maintain the ecological viability and integrity of populations, species and communities {Note that the interactions between reserves and surrounding areas should be taken into account in determining the reserves ability to meet ecological viability and integrity criteria. Complementarity of adjacent areas can play a significant role. In some instances however, the ecological viability of the protected area itself will be paramount};*
- "representativeness" – *the extent to which areas selected for inclusion in the National Reserves System are capable of reflecting the known biological diversity and ecological patterns and processes of the ecological community or ecosystem concerned.*

The Strategy also adopted an objective of managing and conserving biological diversity on a natural biological region basis and identified special requirements for the conservation of threatened species and ecological communities.

Specific guidelines for the management of rangeland resources in Australia have been developed. The 'National Principles and Guidelines for Rangeland Management' were agreed by the Australian and New Zealand Environment and Conservation Council of Ministers (ANZECC) and the Agriculture and

Resource Management Council of Australia and New Zealand (ARMCANZ), and published, in 1999. This document recognised three overarching goals in order to achieve ecologically sustainable rangeland management. These are:

Goal 1: *Conservation and management of the natural environment.*

Goal 2: *Sustainable economic activity.*

Goal 3: *Recognition and support for social, aesthetic, cultural and heritage values, diversity and development.*

This document also recognised the following principal guideline:

"A comprehensive, adequate and representative conservation reserve system should be established on a national bio-regional basis integrated with conservation management strategies on other land." The bio-regional basis was developed by Thackway and Crosswell (1995) who partitioned the Australian land mass into an Interim Bio-geographical Regionalisation (IBRA) from which IBRA sub-regions have been further developed on similar criteria.

4.2.3 CAR reserve system targets

Australia has been refining and developing target requirements for the conservation reserve system for decades. In 1997 'Nationally Agreed Criteria for the Establishment of a Comprehensive, Adequate and Representative Reserve System for Forests in Australia' were established. This document confirmed the developing concept of a regional network of conservation reserves based around IBRA. The report took the 1992 Caracas criterion of *"a minimum of 10% of each biome"* being protected in reserves and established an objective of *"15% pre-European distribution"* as being protected in reserves, while acknowledging "some flexibility is both acceptable and desirable" in this target.

In 1998 ANZECC established the 'Interim Scientific Guidelines for Establishing the National Reserve System'. These guidelines incorporated the above 1997 criteria for forest reserves in the overall targets for the conservation reserve system. Significantly, the primary goal of the National Reserve System (NRS) *"to establish a comprehensive adequate and representative system of protected areas to conserve Australia's native biodiversity"* was explained to include *"samples of all ecosystems across the IBRA regions.* This report identified a secondary goal of the NRS to include:

- *"the special needs of rare or threatened species and threatened ecological communities;*
- *special groups of organisms, e.g. species with complex habitat requirements, or mobile or migratory species, or species vulnerable to disturbance which may depend on reservation for their conservation;*
- *areas of high species diversity, natural refugia for flora and fauna and centres of endemism; and,*

- *a combination of statutory reserves and complementary management in the surrounding landscape, involving voluntary binding partnerships and conservation agreements with private and leasehold managers, including indigenous people.*"

Building upon the above, Australia, through the networks under the Natural Resource Management Ministerial Council is developing a Strategic Action Plan for the National Reserve System. The current draft of this plan sets the overall long term targets for the NRS as including "15% of pre-European extent of non threatened ecosystems, 60% of remaining vulnerable ecosystems and 100% of remaining endangered ecosystems". In Western Australia, we use the terminology of threatened (vulnerable, endangered or critically endangered) ecological communities, rather than ecosystems.

In addition to regional (subregional) targets, a key question for those planning reserves is that of a reserve size. This is identified in the "adequacy" part of the CAR criteria. In very general terms the larger the reserve area the more likely it will be for a manager to minimise external impacts on the key nature conservation values of the area and therefore to meet the "adequacy" criterion. The so-called "edge effect" is minimised where reserves are large and have regular boundaries. This is a simple mathematical relationship of the ratio of area to boundary length and distance from the centre of the reserve to the edge. Several large reserves also have a much better chance of meeting the adequacy criterion than numerous small reserves. The above draft plan seeks to maximize the area of vulnerable and endangered ecosystems in the reserve system because of the degree of threat and also because they are mostly of small remaining size.

4.2.4 Private biodiversity conservation management

Over the past 30 years or so, the concept of off-reserve conservation and associated conservation management agreements has developed and grown. It is now increasingly accepted across Australia, that the formal conservation reserve system should be viewed not as islands in the landscape, but as a network and a network that is enhanced by off-reserve conservation management.

Formal recognition of off-reserve biodiversity conservation is in its infancy in the pastoral rangelands, but there have always been pastoralists who have managed key areas for their natural beauty or for the natural environment elements that they appreciated. In addition, in recent years pastoral leases have been purchased for private conservation interests.

Under the 'National Objectives and Targets for Biodiversity Conservation', endorsed by Commonwealth, State and Territory Environment Ministers in June 2001 a key target is stated as *"by 2001 ANZECC* (Australian and New Zealand Environment and Conservation Council) *has developed an action plan for the National Reserve System which includes targets for the protection and restoration of terrestrial ecosystems on indigenous owned estates and private land".*

A key issue for the future will be to encourage and enhance private biodiversity conservation initiatives in the rangelands and for these to be incorporated into the productive pastoral lease system.

In addition to supporting a CAR reserve system, the 'National Principles and Guidelines for Rangeland Management' established the following guidelines.

"10.2 That off-reserve conservation strategies should be identified and developed to effectively protect key areas and ecological processes within the rangelands and complement the establishment of the reserve system."

"10.4 Off-reserve conservation of biodiversity should be developed within Regional planning processes and its management should be taken account of in farm business management and other planning processes as part of achieving ecologically sustainable rangeland management."

Off-reserve conservation areas can clearly become effective elements of biodiversity conservation, complementary to the formal conservation reserve system. In order to be truly effective, it will however, be necessary for such areas to be formally recognised to have adequate long term surety, and be managed adequately. Otherwise, the good work of one lessee could be undone by a later lessee that does not share the same views. Formal legal protection of such private conservation initiatives is becoming increasingly important in this regard.

Once off-reserve conservation areas are better developed and protected they will provide an appropriate adjunct to the formal conservation reserve system. They do not, however, provide an alternative to the conservation reserve system.

In future formal targets also need to be developed for the off-reserve conservation components of the National Reserve System.

4.2.5 State Government Policy

The Government's Environment Policy is to embrace the notion of ecologically sustainable development (ESD) in its guiding principles of:

- *conservation of biological diversity and ecological integrity*;
- *the precautionary principle*;
- *inter and intra-generational equity*; and
- *improved resource valuation, pricing and incentive mechanisms to protect and repair the environment.*

In relation to conservation of biodiversity, Government policy states:

"The conservation of Western Australia's biodiversity requires the identification of biological diversity components, the management of biological diversity on a regional basis using natural boundaries (bio regional planning) and a comprehensive, adequate and representative reserve system".

A key policy action is:

"incorporate a comprehensive, adequate and representative reserve (CAR) system in the forested and high priority bioregions with the aim that all bioregions of the State be included".

4.2.6 Requirements for consideration of 'batch 3' biodiversity conservation exclusion proposals.

This Working Group was asked in part to "review the Department of Conservation and Land management's proposed 2015 Batch 3 exclusions from pastoral areas for conservation purposes".

The 'Batch 3' areas are those that have not been previously considered in the public arena, either through formal reports on establishment of a CAR reserve system, or in published papers relating to regional planning or conservation reserve planning, or through other forums.

In terms of Ministerial decision making in relation to proposed nature conservation exclusions, the Pastoralism for Sustainability Working Group has considered the requirements for the establishment of conservation reserves and for additions to existing conservation reserves. These requirements have been developed after consideration of the background requirements for a CAR reserve system, as outlined above.

The Working Group has developed a series of criteria against which decision making may be undertaken. These criteria involve consideration of the conservation gains identified for an area if it should be incorporated into the CAR reserve system. Particular reference is given here to the ability of an area to assist the State in meeting national and international targets for a CAR reserve system. Consideration was also given to the alternative of off-reserve conservation, particularly for small, remote areas that would be entirely surrounded by a pastoral lease and which could, conceivably be more cost effectively managed under suitable agreement with an interested lessee. In addition, considerations are also proposed in relation to the economic and social impacts of removing the proposed area from pastoral use. Thus considerations are classified in sequential order as:

a. Conservation benefit;
b. Pastoral enterprise economic impact; and,
c. Social impact.

5. THE DECISION-MAKING FRAMEWORK

5.1 Conservation benefit

At the State level, the Department of Conservation and Land Management (DCLM) has the lead responsibility to identify and prioritise biodiversity conservation management. The Department has a core responsibility to undertake regional biological resource surveys and to put in context the conservation reserve system with off-reserve conservation initiatives. Much of this work is done in partnership with other agencies, with industry, with private individuals and with conservation groups.

In Western Australia, DCLM has adopted the targets of 10% to 15% of IBRA subregions to be incorporated into the formal conservation reserve system with additional complementary off-reserve conservation areas.

In terms of planning for a CAR reserve system, the Department builds on many investigations and reports that have been prepared over the past 30 years. These include Environmental Protection Authority conservation reserves proposal reports in 1975, 1980 and 1993, WA Planning Commission reports, DCLM Regional Operations Management Plans 1987 to 2001 and other inquiry reports and submissions.

A key part of the 2015 pastoral lease expiry issue is the opportunity for areas of conservation reserve interest to be excluded from the pastoral leasehold system and also for complementary areas to be identified for cooperative conservation management through effective management agreements. Previous Ministers for Lands have written to pastoral lessees in 1990 and 1994 identifying whole and part pastoral leases that may not be renewed in 2015. The State Government also provided some details of the pastoral lease areas being considered for exclusion for conservation purposes during Parliamentary consideration of amendments to the Land Administration Act in 2000 (*Supplementary information as a result of tabling of the Land Administration Amendment Bill 2000 in the Legislative Assembly*).

DCLM Batch 1 and Batch 2 proposals are not the subject of this report and have been identified as areas that have previously been proposed in documents in the public domain. Batch 3 proposals are those that have been newly identified in the 2015 lease expiry review process.

In essence, the Working Group has agreed that it is appropriate to consider "batch 3" proposals for transfer of whole or part pastoral leases into formal conservation reserves from a 'Conservation benefit perspective' where the following objectives are being met.

- Establishment of new reserves to meet Interim Biogeographic Regionalisation of Australia (IBRA) targets for comprehensiveness, adequacy and representation.

- Improving the capacity of existing reserves to meet IBRA targets for comprehensiveness, adequacy and representation.

- Enhancing the management efficiency of existing conservation reserves through providing better conservation management boundaries.

- Establishment of new reserves to meet international obligations under agreements such as protection of Ramsar wetlands etc., as components of the CAR reserve system.

- Establishment of new reserves to protect threatened ecological communities, threatened species habitat and unique and valuable environments, such as the entrances to Nullarbor caves.

Areas incorporated into formal conservation reserves are subject to full legal protection from disturbances as afforded by the *Conservation and Land Management Act 1984*, the *Land Administration Act 1997* and various other statutes. The special legislative protection of such areas restricts detrimental activities and provides for full management planning and public consultation in relation to future conservation management activities. Of particular significance in much of the rangelands is the protection such areas have, depending on reserve classification, from mining or other productive developments. Voluntarily managed areas on pastoral leases do not have the same levels of legal protection.

In terms of decision making in relation to whether areas should be incorporated into a formal CAR reserve or be managed by others under a management agreement, the Working Group came to the view that the basis for such a decision should be based on the practicality of the options. In essence, it was agreed that:

- for 'large' areas that had good access and good or readily established management boundaries, and where the overall targets of CAR were the focus, incorporation of leasehold lands into a formal conservation reserve is the best option;

- for areas that have very high focal point conservation values, such as Ramsar wetlands, or areas that provide buffers to existing reserves, the same formal reservation is also preferred;

- for small areas that have high focal point conservation values and high threats of public disturbance or visitation, again formal reservation would be required;

- for small areas that are remote or isolated or would have difficult management boundaries, and where the current lessees have a strong interest in and commitment to conservation management, a negotiated management agreement may be preferred.

The Working group agreed that there was also considerable value in strengthening the capacity for binding conservation management agreements to be made with pastoral lessees, particularly for the smaller threatened ecological communities and cave ecosystem proposals. In many cases, practical and effective on-site management of such areas may be more cost effectively

achieved through management agreements by the lessee. If, however, such agreements cannot be negotiated, exclusion from the pastoral lease and reservation would be an appropriate means to provide for the protection of these unique and valuable areas.

The Working Group also considered the need to ensure that areas that may be excluded for nature conservation are actually effectively managed in future for nature conservation. In this regard, the Group endorsed the following guideline from the 'National Principles and Guidelines for Rangeland Management'.

"The Commonwealth and State/Territory Governments, in consultation with rangeland managers, users and communities should ensure that land acquired for a conservation reserve system is adequately managed and resourced to maintain biodiversity values."

The working group stressed that adequate resources should be provided not only for the future conservation management of areas excluded, but also for those partnership arrangements for off-reserve conservation and for the monitoring of those areas identified for exclusion during the intervening period until 2015. The latter will be necessary to ensure that conservation values of such areas are not diminished through the final years of pastoral use.

5.2 Pastoral enterprise economic impact

The WA Department of Agriculture has developed a streamlined process for rapid assessment of the impact of proposed exclusions on the viability of pastoral leases. This assessment protocol has been applied individually to all leases against which exclusions are proposed, and the outcomes of the assessment will be provided to the Minister by the PLB as part of its full documentation of exclusion proposals.

Viability for this purpose is defined as the level of net return that allows a business to be economically sustainable. It is recognised that there are fluctuations in both the meat and wool markets in the short term and that annual profitability is affected. Viability is a longer-term concept that irrespective of the cycles, there is sufficient net income to allow for a reasonable level of return on assets invested.

Business viability is influenced by turnover, overhead costs and gross margin. Each of the decision criteria in this analysis affect one or more of these. It was noted that managerial ability has a major influence on business viability. The working group was unable to take account of this variable.

Gross margin

Gross margin is the difference between income and variable costs. Gross margin is heavily influenced by management practices on the lease and it is more difficult to generalise about the impact of exclusion of an area on gross margin. But for example, if the exclusion area contains a better country type with a good nutritional value that is usually used for lambing/calving or finishing

of stock then exclusion of that area could be expected to impact heavily on gross margin.

Overhead costs

Ease of access relates directly to overhead costs. Overhead costs are heavily influenced by the physical characteristics of a station with regard to ease of access to stocked areas. Areas further away from the operational centre of the enterprise are more costly to service, while areas close to the operational centre are less costly to service. If the area to be excluded is in a far flung area of the station this will have less impact than if the exclusion area is central to the business operations.

Turnover

Carrying capacity has the strongest influence on turnover. Reductions in carrying capacity decrease turnover and result in reduced viability.

The benchmark viable carrying capacities used in this analysis are the stock equivalents needed for a business to break even. They are based on the average productivity and cost structures of a district.

The criteria, justification and means of verification for assessing the effects of an exclusion on the viability of the pastoral lease are listed below.

Application of Criteria

Criterion	*Justification*	*Means of verification*
Gross margin		
Exclusion area is country of high nutritional value	• Areas of high nutritional value are usually used for specific purposes in a pastoral business, e.g. lambing/calving or finished stock.	Pastoral lease inspector's knowledge.
Overhead costs		
Area usually stocked	If area is not usually stocked or used for pastoral purposes then the removal will have less impact.	Pastoral lease inspector's knowledge.

Criterion	*Justification*	*Means of verification*
Area is central to pastoral operations.	If area is central to pastoral operations then usual movements of staff and stock will be impacted, this will likely increase operating costs.	Pastoral lease inspector's knowledge.
Exclusion area is greater than 20 per cent of lease area.		Lease and exclusion areas are identified on the spreadsheet.
Exclusion area contains critical pastoral infrastructure.	If the area contains critical infrastructure that is not readily replaceable such as a high yielding bore, this could affect pastoral operations outside the exclusion area.	Pastoral lease inspector's knowledge.
Turnover		
Potential carrying capacity of lease is below benchmark viable carrying capacity for district.	If potential carrying capacity of the lease (prior to the exclusion) is 80 to 100 per cent of district benchmark for viability then viability is likely to be marginal. If it is already below 80 per cent of the benchmark then lease is more than likely already unviable.	Pastoral lease inspector to compare potential carrying capacity of lease with district benchmark.
Removal of exclusion area will reduce potential carrying capacity by more than 20 per cent.	A reduction of greater than 20 per cent in carrying capacity could be expected to have implications on profitability.	Pastoral lease inspector to calculate potential carrying capacity of exclusion area and compare to potential carrying capacity of the whole lease.
Removal of exclusion area will reduce potential carrying capacity to below benchmark viable carrying capacity for district.	If the potential carrying capacity following exclusion is reduced to below district benchmark then viability will be adversely affected particularly if the reduction results in a potential carrying capacity to below 80 per cent of the benchmark.	Pastoral lease inspector to calculate reduced potential carrying capacity and compare to district benchmark.

Criterion	*Justification*	*Means of verification*
Consideration of the business value of "permitted activities other than grazing" on the viability of the pastoral lease.	A large number of pastoral properties have permits for activities other than grazing. The income from this source can significantly improve the economic viability of the lease.	PLB to assess the impacts of the permitted use.

5.3 Social and cultural factors

Rangelands feature strongly in Australian culture, history, social integrity and social imagery. The Group urges that consideration be given to the importance of having a consistent and reliable presence in the rangelands. The occupation of this land provides a social infrastructure which contributes to the economic development, defence and biosecurity of the State; to the intellectual capital built up through close association with the land and its seasonal variations; and to the protection of European and Aboriginal cultural heritage. A human "critical mass" must underpin employment and social opportunities if the younger generations of rangeland families and communities are to have a viable future there.

The increasing demands associated with tourism in all its forms –including ecotourism, pastoral tourism and recreational fishing –can be safely met only if the existing social infrastructure is able to provide basic services (food, fuel, emergency services etc).

The framework for considering exclusions should therefore make reference to the opportunities for and impacts on:

- human population and social infrastructure;
- indigenous and European cultural heritage;
- social and cultural aspirations of rural youth;
- social equity;
- regional employment in pastoralism, conservation, tourism and services;
- the social and cultural demands for, and impacts of, tourism; and
- the requirement for precinct and subregional planning to address problems relating to increased demand for access to these areas.

5.4 Management agreement versus exclusion

The conservation of high value habitat within the formal reserve system precludes the presence of introduced species such as livestock. However, where conservation and pastoral activity are compatible, the establishment of enduring management agreements for off-reserve conservation is preferred to

exclusion. It should be noted that where a parcel of land is excluded, it reverts to unallocated Crown land and then becomes subject to clearance by several Government agencies (with respect to mining, roads, services infrastructure, native title etc) before it can be reallocated. Where management agreements can be negotiated and adequately resourced and protected, the process is administratively much simpler. The Group also notes that it is now being recognised nationally that it is approximately ten times more costly to recover damaged ecosystems than to protect them.

The key parameters for considering whether exclusion or management agreement is most appropriate are:

- the uniqueness of the conservation value of the land in question;
- the degree of shortfall from DCLM's 15% reservation target for the subject habitat;
- the size and isolation of the habitat area;
- the fragility of the ecosystem;
- the condition of the habitat;
- the presence of water;
- the intrinsic fertility of the area;
- the potential to attract visitors;
- the costs of management and associated infrastructure (principally fencing); and
- the effectiveness and willingness of management.

In general, management off-reserve is most applicable to isolated small areas.

6. GENERAL RECOMMENDATIONS

- Wherever land is excluded from pastoral leases, funding should be set aside to ensure security of resources for enduring and permanent management of the area. Ongoing management of excluded areas must be based on the "good neighbour policy" to ensure that diverse land uses do not impact adversely on adjoining lands and enterprises.

- In addition to considerations on a lease by lease basis, the cumulative impact of exclusions on a subregional/regional basis and on the pastoral industry as a whole should be considered. Particular reference should be made to the contribution of the export beef cattle industry to the State economy. The program of exclusions should not result in any net loss of population or social infrastructure in the rangelands. To this end, the State

Government should play a role in brokering and supporting the development of alliances between various community and stakeholder groups living and operating in the rangelands.

- We recommend that Government develops, as soon as possible, appropriate legal and tenure arrangements for the management of whole or part pastoral leases for biodiversity conservation purposes. This Group will further examine the legislative impediments to providing long-term security for such agreements (eg embedding them as a condition of the lease itself) –with particular reference to the LAA and the *Conservation and Land Management Act 1984* (Section 16A). Recognition of conservation as a pastoral purpose within the LAA is one of the legislative reforms to be explored.

- This Group does not support exclusion to be used for roads for management access to conservation areas. Management access arrangements should be negotiated between the Minister, the lessee, the Local Government authority and DCLM.

7. ISSUES IDENTIFIED FOR FURTHER CONSIDERATION IN THE FINAL REPORT

- Exploration of voluntary reservation (possibly with extra lease conditions) under management of the owner/lessee – with approval of the Minister. Flexibility and legislative change to be considered.

- Amendments to part 7 of the LAA rather than inappropriate use of section 16A of the *Conservation and Land Management Act 1984* (where agreement is voluntary and easily revoked) –to pick up broad ecological management and multiple land use.

- Consider covenants attached to the lease between the Crown and, for example, a Conservation Group, National Trust, DCLM etc. When the lease is renewed the "covenant" becomes an enduring lease condition.

- The LAA should take into account that the lands may be used for other than pastoralism – change the "special lease" to be an "as of right" rather than a competitive process – will provide bankability for diversification.

- Private or commercial conservation may require a dual title lease – pastoral leasehold tenure remaining but operated as a conservation area with conservation being a legitimate form of pastoral activity. Pastoral purposes in the LAA Section 103 - "the Minister may, in consultation with the Board, include in a pastoral lease in any terms, reservations, conditions, covenants or penalties not inconsistent with this Act."

- Public use of declared Public Access Routes (PAR) remains entirely at the risk of the user; there is no legal responsibility to construct and/or maintain a PAR. However, any action undertaken by DOLA, the Local Government body or any other person to construct or maintain a PAR may incur liability outside the requirements of the LAA -need to further examine the implications.

- The identification of a suitable regime for monitoring rangelands for the sustainability of land management practices using satellite or aerial photographic methods.

- Road types – station tracks, Public Access Route (PAR), gazetted road; better understanding needed.

- Scope for commercial exploitation of carbon sequestration in rangelands –a use compatible with conservation.

- Review of the drivers of rangeland management and monitoring:
  - LAA
  - Govt policy: "developing and maintaining commercial activities on the State's rangelands in accordance with the principles of Ecologically Sustainable Development
  - Sustainable Rural Development Program (AgWA)
  - National Principles and Guidelines for Rangeland Management
  - State of Environment reports (Commonwealth and State)
  - National Strategy for Conservation of Australia's Biological Diversity
  - Managing Natural Resources in Rural Australia for a Sustainable Future (AFFA)Legislative Assembly of WA, Select Committee into Land Conservation
  - National Strategy for Ecologically Sustainable Development
  - State Strategy (draft) for Sustainable Development
  - The Decade of Landcare Plan, WA
  - National Land and Water Resources Audit
  - The Environment Protection and Biodiversity Conservation Act
  - Other national agreements, strategies and programs
  - Other international trade and resource agreements and conventions
  - PEA Report on Sustainable Pastoralism

8. REFERENCES

ANZECC (Australian and New Zealand Environment and Conservation Council) & ARMCANZ (Agriculture and Resource Management Council of Australia and New Zealand) (1999) National Principles and Guidelines for Rangeland Management; Commonwealth of Aust.

Ash, A and Stafford Smith, M (2002) Pastoralism in tropical grasslands: Seizing the opportunity to change; Proc 12th Biennial Conf Aust Rangeland Soc, Kalgoorlie WA.

Morton, S and Stafford Smith D (1994) Integration of production and conservation in Australia's rangelands In R&D for sustainable use and management of Australia's rangelands, Occas Paper 06/93, LWRRDC Canberra; Morton S R and Price P C eds.

Pressey, R (1992) Nature conservation in rangelands: lessons from research on reserve selection; New South Wales Rangeland. J. 14(2) 1992, 214-26

Thackway, R and Cresswell, D (Eds) An interim biogeographical regionalisation for Australia: a framework for setting priorities in the National Reserves System, Version 4, Australian Nature Conservation Agency

Watson, I; Blood, D; Novelly, P; Thomas, P and vanVreeswyk, S (2001) Rangeland monitoring, resource inventory, condition assessment and lease inspection activities in Western Australia conducted by the Department of Agriculture; Report prepared for the Rangeland Theme of the National Land and Water Resources Audit.

APPENDIX 1 (To Interim Report) - Extract from Terms of Reference

PASTORALISM FOR SUSTAINABILITY

PASTORAL INDUSTRY WORKING GROUP

ROLE

The Working Group is to investigate and report on means to achieve sustainable land management on pastoral rangelands and ways to attain nature conservation outcomes on pastoral managed lands.

TERMS OF REFERENCE

The Terms of Reference of the Working Group are to:

- Define sustainable pastoral rangeland management and consider criteria for measuring its success;
- Report on means to achieve sustainable pastoral rangeland management and ;
- Outline the Requirements for a Comprehensive, Adequate and Representative reserve system within the context of the international, national and State criteria and Government policy;
- Review the Department of Conservation and Land Management's proposed 2015 Batch 3 exclusions from pastoral areas for conservation purposes;
- Investigate the role and options for off-reserve conservation in meeting conservation outcomes on leases managed for production; and
- Propose criteria for Ministerial decision making in regard to the target mix of formal reserves and off-reserve conservation areas.

REPORTING

The Working Group is to provide a report to the Minister for Planning and Infrastructure with a position and recommendations on the above Terms of Reference in a form suitable for broad consultation with the community of Western Australia.

APPENDIX 2 (To Interim Report) - Sections 16 and 16A

Extract from the Conservation and Land Management Act 1984 (as amended to 2002)

The extract below gives details on the provisions for private or leasehold land to be managed under agreement for the purposes of nature conservation. A significant weakness of such an arrangement, in terms of national conservation reserve targets, is that the agreement is voluntary and does not provide permanent protection of conservation values (protection ceases once the voluntary commitment ceases).

"16. Agreements for management of private land

(1) The Executive Director may enter into agreements with the owner, lessee or licensee of any land for the management of the land by the Department as a State forest, timber reserve, national park, conservation park or nature reserve or as part of a marine reserve, or for some other public purpose, under this Act.

(2) The Executive Director shall not enter into any agreement under this section with the lessee or licensee of any land unless the owner, and any person occupying the land with the consent of the owner, has given approval in writing to the agreement.

(3) The Executive Director shall not enter into any agreement under this section until notice of the proposed agreement is given to the local government of each district within which the land is situated, and each local government so notified is given a reasonable time to prepare written submissions on the proposal.

(4) Written submissions prepared by a local government on the proposal shall be delivered or posted to an address designated by the Executive Director.

[Section 16 amended by No. 20 of 1991 s.13; No. 14 of 1996 s.4; No. 5 of 1997 s.13.]

16A. Agreements for management of pastoral leases

(1) Section 16(1) extends, notwithstanding the *Land Administration Act 1997*, to an agreement with the lessee of a pastoral lease under that Act but any such agreement is of no effect unless the Minister to whom the administration of that Act is committed has given approval in writing to the agreement.

(2) Land that is the subject of an agreement referred to in subsection (1) remains available for use by the lessee for grazing purposes in terms of his lease, except to the extent that the agreement otherwise provides.

[Section 16A inserted by No. 20 of 1991 s.14; amended by No. 31 of 1997 s.141.]

16B. Further provisions as to agreements referred to in sections 16 and 16A

(1) An agreement referred to in section 16 or 16A shall not be made so as to bind the Executive Director to do anything in relation to any land that is inconsistent with or contrary to a management plan for that land or with the provision of section 56 relevant to land of the category to which that land belongs.

(2) Section 7(1), (2), (2a) and (5) do not apply to land to which an agreement referred to in section 16 or 16A relates.

(3) Land that is agreed to be managed as, or as part of, one of the categories of land referred to in section 16(1) is deemed to be within the definition of that category of land in section 6, except for the purposes of sections 9, 17 and paragraph (b) of the definition of "Crown land" in section 87(1).

[Section 16B inserted by No. 20 of 1991 s.14; amended by No. 35 of 2000 s.8.]"

APPENDIX 2:
Summary of Guiding Policies/Strategies

1. State sustainability strategy (draft)

- Establish a Rangelands Working Group of the Natural Resource Management Council to develop a comprehensive vision of the rangelands and advise Government of the priority sustainability issues requiring consideration.
- Complete the review of pastoral lease boundaries in relation to biodiversity values through the Pastoralism for Sustainability Working Group.
- Review the arrangements for managing unallocated Crown Land within the rangelands to ensure that future arrangements adequately recognise the biodiversity conservation values of those lands.
- Develop a Regional Council of Local Governments in the Gascoyne-Murchison area and create a Statement of Planning Policy on Sustainable Rangeland Management as a demonstration for other regions.
- Further develop the Environmental Management Systems currently being trialed within the Gascoyne-Murchison Strategy Regional Environmental Management Program to provide a framework for accreditation of sustainable pastoralism in the rangelands.
- Encourage universities to do more research and teaching on sustainable rangeland management in recognition of its significance in Western Australia, especially on capacity building for the EMU Plus program.

2. Environment Protection Position Statement No. 7 (EPA)

The preliminary policy position sets the principles for environmental protection, natural resource management and sustainability. The principles are:

- environmental, social, economic considerations;
- precautionary principle;
- inter-generational equity;
- conservation of biological diversity and ecological integrity;
- improved valuation, pricing and incentive mechanisms;
- share responsibility;
- product stewardship;
- eco-efficiency;
- waste hierarchy;
- integrated environmental management;
- best practice;
- continuous improvement;
- accountability and transparency; and
- enforcement.

3. Environmental Protection and Sustainability of the Rangelands in WA - Preliminary Position Paper No. 5 (EPA) 2002

The EPA Environmental objectives for the Rangelands

1. Protection of biodiversity.
2. Ecologically sustainable use and management of productive capacities.
3. Effective monitoring and audit.

The management responses outlined in the policy are:

Government

(a) Set clear standards and performance targets to meet environmental objectives.

(b) Government acquiring leases for community benefit and paying the rangeland community for appropriate active land management in accordance with agreed plans.

Pastoral lease holding

(a) Use of careful grazing management.

(b) Protection of water bodies.

(c) Implementing sound fire management.

(d) Feral pest and weed control.

(e) Cooperation in regional conservation initiative.

(f) Monitoring and reporting trends in range condition.

(g) Manage areas on behalf of Government on a contractual basis (off-reserve and formal reserve areas.

Mining

Incorporation of wider conservation objectives for lands under mining control.

Tourism

Development of management plan that protects areas of high attraction.

Indigenous people

(a) Greater role in decision making about sustainable use of pastoral lands.

(b) Natural Resource Management (NRM) plans to incorporate opportunities to use indigenous land holdings to achieve a wide array of public and private benefit (environmental protection, preservation of cultural practice and places, protection and re-establishment of plants and animals for bush food harvesting and medicinal purposes, nature based and cultural tourism and indigenous community development).

4. National principles and guidelines for rangeland management

- Ecologically sustainable management of natural resources should be the underlying principle and the principle against which commercial use of rangeland resources must be tested.
- The guidelines need to be consistent with the range of present national and inter-governmental agreements and strategies and with international obligations.
- Development of regional strategies should rest primarily with local communities and landholders, but in consultation with Government and the broader community.
- While legislative and compliance responsibility for ensuring ecologically sustainable management resides with Government at all levels, primary responsibility for natural resource management rests with land users, in accordance with regional objectives, planning processes and relevant legislation.
- Present generations are responsible for the health, protection and care of the rangeland ecosystem.
- There should be equitable opportunities for sustainable multiple use and enjoyment, for this and future generations.
- The rights and responsibilities of rangeland titleholders, and others who use or have an interest in the rangelands, should be respected.
- Security of tenure and security of access to resources is required to enable appropriate resource management, sound business planning and the conservation of biological diversity.
- The right to security of tenure should be balanced by a responsibility for ecologically sustainable management of the resource and by safeguards for its ultimate protection.
- While there is a place for both incentives and sanctions in achieving changes in management in the public interest, change is more constructively achieved through encouragement than by coercion.
- Implementation of the objectives of ecologically sustainable development should be applied across the rangelands, irrespective of how the land is held and used.
- The aspirations and inherent rights of indigenous peoples, their relationship with the rangelands, and the need for culturally appropriate negotiation processes, must be recognised.
- A wide range of values (social, cultural, economic, aesthetic and ecological) need to be considered in making balanced decisions about the rangelands; financial analysis alone is an inadequate tool for this purpose.
- Decisions concerning the rangelands need to take account of inter-dependencies and inter-relationships between components of the ecosystem, both within and between regions, and between the rangelands and the rest of Australia.
- Consideration should be given to the effects of episodic events, the spatial variability of processes and the generally long-term biophysical time frame of the rangelands.
- Prevention of any resource degradation is more effective than rehabilitation.
- The precautionary principle should be adopted so that decisions are based on the best data available, lean to the conservative and do not result in irreversible loss of opportunity.

All rangeland managers, users, special interest groups and administrators should be committed to and involved in the ongoing development, implementation and review of this set of guidelines and suggested actions.

5. Statement of Planning Policy No. 8: State Planning Framework Policy

The Commission has prepared and adopted the State Planning Strategy (1997) pursuant to Section 18(1)(b) of the *Western Australian Planning Commission Act 1985.* It sets out the key principles relating to environment, community, economy, infrastructure and regional development which should guide the way in which future planning decisions are made. It also provides a range of strategies and actions which support these principles generally and for each of the ten regions of the State.

The State Planning Strategy provides the overall vision and will be further articulated and applied by policies and plans dealing with particular planning issues or regions of the State.

In the meantime, there is a need to bring together existing State and regional policies and plans which apply to land use and development in Western Australia. This is the purpose of this Statement of Planning Policy.

The State Planning Framework unites existing State and regional policies, strategies and guidelines within a central framework that provides a context for decision-making on land use and development in Western Australia. It informs the Commission, local government and others involved in the planning process on those aspects of State level planning policy which are to be taken into account, and given effect to, in order to ensure integrated decision-making across all spheres of planning.

Part A: General Principles for Land Use Planning and Development

In addition to the five principles the following statements elaborate on these principles and describe the factors, which represent good and responsible decision-making in land use planning:

A1 Environment

The protection of environmental assets and the wise use and management of resources is essential to encourage more ecologically sustainable land use and development. Planning should contribute to a more sustainable future, in particular, by:

- promoting the conservation of ecological systems and the biodiversity they support including ecosystems, habitats, species and genetic diversity;
- assisting in the conservation and management of natural resources including

  air quality, energy, waterways and water quality, land, agriculture and minerals to support both environmental quality and sustainable development over the long term;
- protecting areas and sites with significant historic, architectural, aesthetic, scientific and cultural values from inappropriate land use and development;
- adopting a risk-management approach which aims to avoid or minimize environmental degradation and hazards; and
- preventing environmental problems which might arise as a result of siting;
- incompatible land uses close together.

A2 Community

Planning anticipates and responds to the needs of existing and future communities through the provision of zoned and serviced land for housing,

employment, recreation and open space, commercial and community facilities. Planning should recognise the need for and, as far as practicable, contribute towards more sustainable communities by:

- accommodating future population growth and providing housing choice and diversity to suit the needs of different households, including specialist housing needs, and the services they require;
- providing land for a range of accessible community resources including affordable housing, places of employment, open space, education, health, cultural and community services;
- promoting patterns of land use which reduce the need for transport, promote the use of public transport and reduce the dependence on private cars;
- encouraging high standards of urban design and a sense of neighborhood and community identity in residential suburbs;
- promoting commercial areas as the focus for shopping, employment and community activities at the local, district and regional levels; and
- providing effective systems of community consultation at appropriate stages in the planning and development process.

A3 Economy

Planning should contribute to the economic well being of the State, regions and local communities by supporting economic wealth and development through the provision of land, facilitating decisions and resolving land use conflicts. In particular, planning should provide for economic development by:

- providing suitable zoned and serviced land for industry, business and other employment and wealth generating activities;
- avoiding land use conflicts by separating industry and other economic activities with off-site impacts from incompatible uses;
- promoting local employment opportunities in order to reduce the time and cost of travel to work;
- providing sites for tourism accommodation and facilities taking account of their special location and servicing needs; and
- ensuring that plans and policies are clear and certain, decisions are made in accordance with plans and policies, and decisions are made expeditiously.

A4 Infrastructure

Planning should ensure that physical and community infrastructure by both public and private agencies is coordinated and provided in a way that is efficient, equitable, accessible and timely. This means:

- planning for land use and development in a manner that allows for the logical and efficient provision and maintenance of infrastructure including the setting aside of land for the construction of future transport routes and essential services;
- protecting key infrastructure, including ports, airports, roads, railways and service corridors, from inappropriate land use and development;
- facilitating the efficient use of existing urban infrastructure and human services and preventing development in areas which are not well serviced, where services and facilities are difficult to provide economically and which creates unnecessary demands for infrastructure and human services; and

- encouraging providers of infrastructure, whether public or private bodies, to have regard to planning policies and assist strategic land use planning in making their investment decisions in order to ensure that land use and development is closely integrated with the provision of infrastructure services.

A5 Regional Development

Western Australia is sparsely settled with the majority of the population concentrated south-west of the line between Lancelin and Albany.

The south-west of the State is subject to growth pressures which will need to be carefully managed.

Consistent with the State Planning Strategy, the growth and development of other regional communities will be supported by assisting them to achieve their social and economic goals. Planning should assist communities of the outlying regions in achieving the opportunities comparable with towns of the south-west despite their isolation, size and climatic disadvantages. This will mean better coordination of land uses, high standards of development and the availability of land, physical and social services to make regional communities sustainable in the long term.

In the vast areas between settlements, mineral and agricultural resources and new industrial facilities will need to be developed in harmony with conservation of the natural environment ensuring that all development projects are sustainably managed.

The State Planning Strategy identifies the key regional strategies for each of the regions of the State. It provides a series of desirable actions to address the key regional strategies which are the focus of integrated planning to provide for the future prospects of each region.

6. Statement of Planning Policy No. 2.0: Environment and Natural Resources

Integrated land use planning and management is a practical way to achieve effective and efficient use of the natural resources of the State. There is a clear and explicit need to incorporate environmental considerations and resource management into the planning process to ensure that decisions are made in the context of potential impacts on the environment and our natural resources. In the same way, it is possible for more use to be made of the planning system in managing these issues. It is possible to achieve land use change and development that have positive environmental outcomes or that reduce the degree of negative impact on the environment.

The Environment and Natural Resources (ENR) policy is a broad, sector issue policy under *Statement of Planning Policy No. 8: State Planning Framework Policy.* It defines the principles and considerations that represent good and responsible planning in terms of environment and natural resource issues within the framework of the *State Planning Strategy.* The ENR policy will be supplemented by more detailed planning policies on particular natural resources matters that require additional information and guidance.

The objectives of this policy are:

- to integrate environment and natural resource management with broader land use planning and decision-making;

- to protect, conserve and enhance the natural environment; and
- to promote and assist in the wise and sustainable use and management of natural resources.

7. Statement of Planning Policy No. 2.6: State Coastal Planning Policy

The Western Australian coast is one of the State's greatest assets in terms of its environmental, economic, social and cultural resources. Over 80 per cent of the State's population currently live within 30 kilometers of the coast. Western Australians value a coastal lifestyle and the unique opportunities that our coast provides.

The Western Australian coast varies in character and patterns of use and includes:

- urban coasts, where the adjacent uses are predominantly residential and commercial and there is a high demand for recreational activity;
- natural coasts, with less intensive hinterland uses and concentrations of tourism and associated recreational activities; and
- wilderness coasts, with limited opportunity for low key tourism and associated recreational activities.

There are pressures on the coast for use by different groups in the community for a variety of purposes including a mix of recreational, residential, industrial and commercial uses. Planning for coastal land is about balancing these often competing needs and desires in a way that takes into account the values of the coast. These values include its scenic, aesthetic and ecological qualities, its recreational opportunities, and its social, indigenous, cultural and economic importance. The presence of coastal hazards is also an important consideration. The overall effect is such that the coast contributes to our psychological well-being and health.

Pressure on coastal resources is increasing. Successful coastal planning today will ensure that all Western Australians, both present and future generations, can benefit from the opportunities presented by the values and resources of the Western Australian coast.

The draft *Coastal Zone Management Policy for Western Australia* (2001) provides the whole-of-government framework for setting strategies and plans for the coast. This State Coastal Planning Policy recognises the coastal threats and pressures identified in the draft *Coastal Zone Management Policy for Western Australia* and is consistent with the vision, goal, principles, objectives and policies it has established.

Under the Environment and Natural Resources Policy planning strategies, schemes and decision-making will identify and, where appropriate, include provisions for the sustainable use of the coast.

The objectives of this Policy are to:

- protect, conserve and enhance coastal values, particularly in areas of landscape, nature conservation, indigenous and cultural significance;
- provide for public foreshore areas and access to these on the coast;
- ensure the identification of appropriate areas for the sustainable use of the coast for housing, tourism, recreation, ocean access, maritime industry, commercial and other activities; and
- ensure that the location of coastal facilities and development takes into account coastal processes including erosion, accretion, storm surge, tides, wave conditions, sea level change and biophysical criteria.

APPENDIX 3:
Features of Western Australian Rangelands

Landuse

Over the last six years there have been significant shifts in the use of Western Australian Rangelands, with an increasing use for mining, conservation and tourism purposes.

Crown Land Pastoral Leases	Area of Land (Mha)		No. of Stations	No. of leases
	1996	2003	2003	2003
Owned by family businesses	94.9	86.4	240	259
Owned by pastoral companies	-	-	127	154
Owned by mining	7.0	9.0	44	47
Owned by Indigenous groups	8.6	11.3	58	62
Owned by CALM	1.3	5.1		
Owned by Conservation groups			5	5
Special leases				

Source: PLB (May/June 2003)

Productive value in the Rangelands

Western Australian Rangelands contribute $412 million on to the Gross Value of Production (GVP) of Western Australian agriculture production of $4.4 billion in 2001 (ABS Statistic). Pastoralism contributes $316 million or 77 per cent of the GVAP.

WA Rangelands, 2000/01

ID	Southern Rangelands	Northern Rangelands	Total Rangelands	Western Australia
	$'000	$'000	$'000	$'000
Wheat	-	-	-	1,484,338
Barley	-	-	-	256,228
Oats	-	-	-	49,864
Triticale	-	-	-	4,597
Cereals	-	-	-	1,814,035
Lupins	-	-	-	156,078
Field peas	-	-	-	7,488
Chick peas	-	399	399	9,144
Faba beans	-	22	22	2,132
Legumes	-	421	421	174,841
Canola	-	-	-	111,026
Crops cut for hay	-	125	125	53,227
Pastures cut for hay	-	241	241	80,140
Vegetables	11,328	51,246	62,574	226,666
Fruit (excl grapes)	8,105	14,673	22,778	118,032
Grapes	346	348	694	102,206
Vegetable seed	-	-	-	4,417
Nurseries	34	506	540	31,213
Cut Flowers	-	-	-	42,228
Cultivated turf	144	144	288	34,349
Other crops	264	8,723	8,987	22,353
Total crops	**20,222**	**76,426**	**96,648**	**2,814,731**
Cattle and calves	35,013	176,017	211,031	458,401
Sheep and lambs	12,425	13,364	25,789	308,405
Pigs slaughtered	461	461	921	73,400
Poultry	28	28	56	98,500
Other slaughterings	5,846	6,027	11,873	7,146
Total livestock slaughterings	**53,773**	**195,897**	**249,670**	**945,852**
Wool	31,097	33,253	64,350	487,625
Milk	523	881	1,403	102,585
Eggs	342	342	683	33,596
Other livestock products	62	68	130	2,796
Total livestock products	**32,024**	**34,542**	**66,566**	**626,601**
Total value of agriculture	106,019	306,865	412,884	4,387,184

Source: ABS, Department of Agriculture

The relative contribution of agriculture compared to mining, tourism and fish in the Rangeland Regions are listed below.

1999/2000 Value of Production ($ millions)
(Development Commission (Regions)

	Gascoyne	Kimberley	Pilbara
Mining	71	891	11,700
Agriculture	51	136	28
Tourism	65	431	153

Source: Indicators of Regional Development in Western Australia. Department of Local Government and Regional Development (2003).

Enterprises in the Rangelands

In recent years there has been a marked shift in the enterprise mix in the rangeland regions. There has been a general increase in cattle production and goat harvesting while sheep meat and wool have declined.

Cattle enterprise

Cattle numbers in the Rangelands of Western Australia (,000 head)			
Region	**1983**	**1993**	**2001**
Kimberley	682.2	515.3	530.9
Pilbara	110.7	129.0	250.6
Goldfields	50.7	50.0	121.6
Gascoyne	20.8	29.0	70.2

This trend has varied by Land Conservation District area.

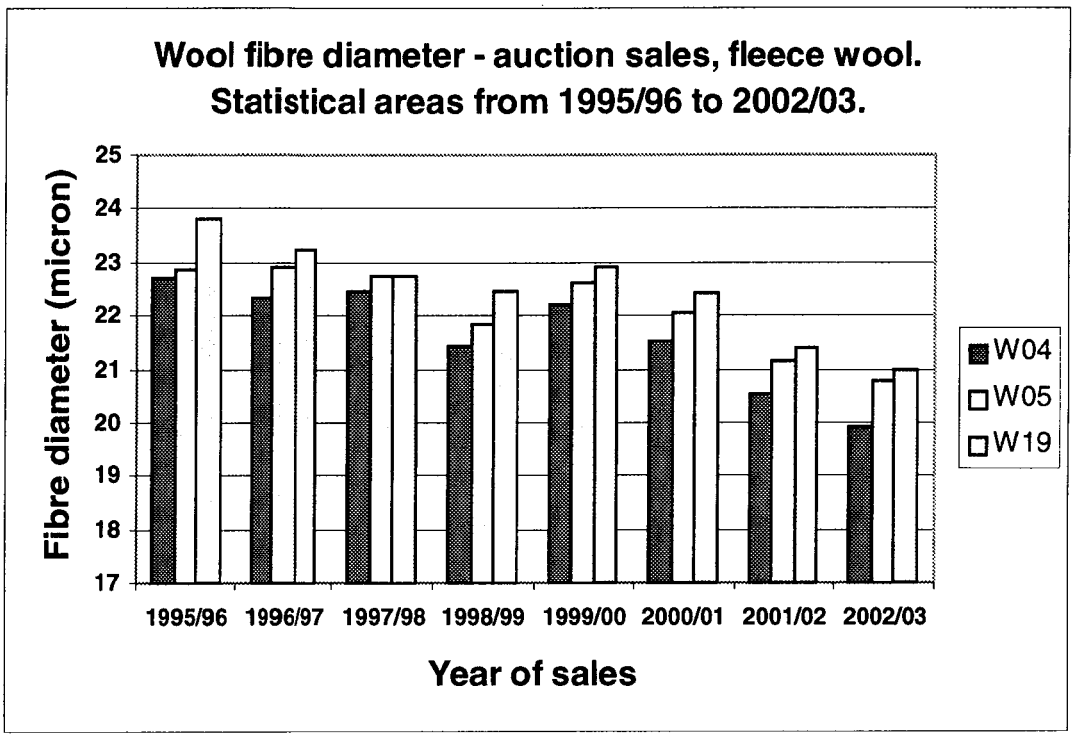
Land Conservation District (LCD)	% cattle (DSE)
Goldfields	
Kalgoorlie	17
Lyndon	80
North East Goldfields	20
Sandstone	12
Yalgoo	7
Cue	6
Wiluna	97
Mt Magnet	2
Meekatharra	51
Nullabor	31
Gascoyne	
Upper Gascoyne	81
Murchison	30
Gascoyne-Wooramel	22
Gascoyne Ashburton	100
Shark Bay	33

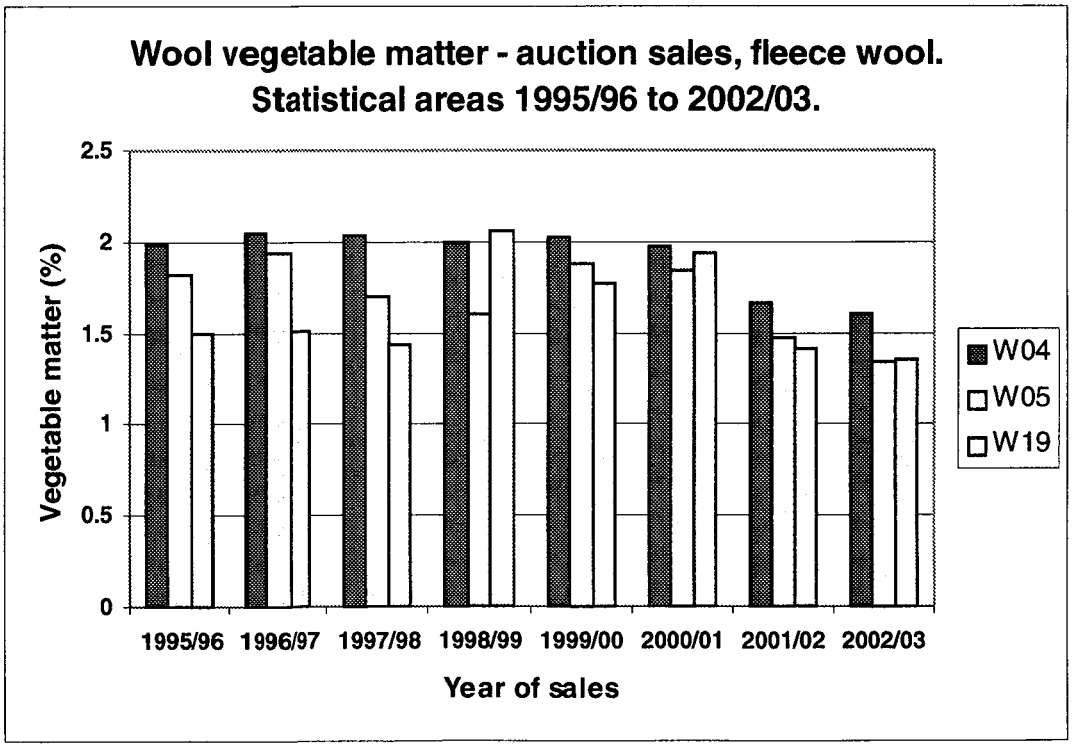
Sheep enterprise

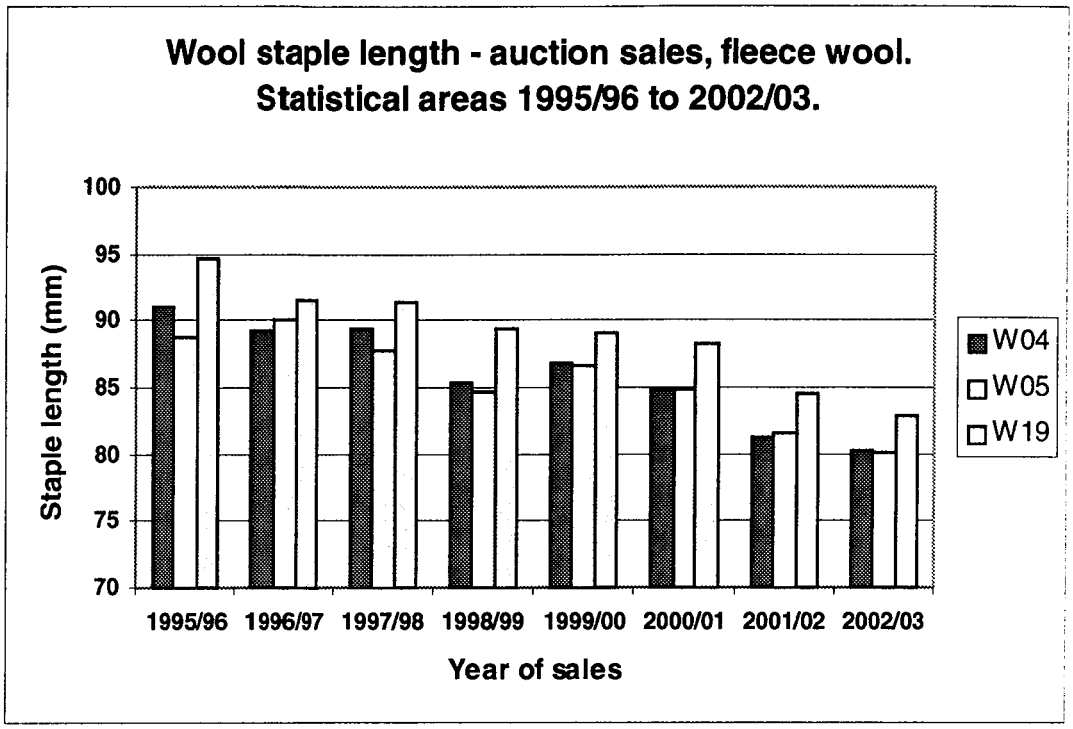
Sheep and lamb numbers in the Rangelands of Western Australia (,000 head)			
Gascoyne	533	693	480
Goldfields	1,245	1,303	1,104
Pilbara	382	289	49

WOOL: EXTRACT FROM EC CASE

Fibre diameter 1995/96 to 2002/03 – fleece wools







Goats

The number of goats are estimated at around 700,000. Goat turn off has been steadily increasing as the price has increased.

	1999/2000	2000/2001	2001/2002
Number of goats processed	210,181	173,906	286,743
Average price ($/head)	$21.42	$27.07	$30.23
Goat meat exports (tonnes)	3,155	3,640	4,617
Goat meat exports value ($M)	9.26	10.68	14.38
Live goat exports	31,772	57,356	63,690
Value live exports ($M)	1.57	2.84	3.21
Total export value ($M)	10.83	13.52	17.59

APPENDIX 4:
Sustainability Indicators -National Land and Water Resource Audit

Biodiversity indications

The National Land and Water Resource Audit identified criteria for monitoring biodiversity.

(a) Progress towards a comprehensive, adequate and representative (CAR) reserve system.

(b) Extent of clearing of woody vegetation.

(c) Landscape function measures.

(d) Native perennial ground cover.

(w) Exotic plant species cover.

(f) Status of fire sensitive plant species and communities.

(g) Status of grazing sensitive plant species.

(h) Status of susceptible mammal species.

(i) Status of susceptible bird species.

(j) Endangered species.

Rangeland sustainability indicators

(a) Uniformity.

(b) Condition of rangeland.

(c) Frequency of woody species (number, size, density, spatial distribution).

(d) Representativeness of land units.

(e) Soil surface conditions (degradation index of soil, water, wind erosion).

(f) Potential carrying capacity.

(g) Record of incidents - fire, drought.

(h) Land unit/system productivity.

(i) Topography.

(j) Position in landscape.

(k) Distance from water.

(l) Weed spread/invasion levels.

(m) Plant and animal pest levels.

(n) Preparing buffers.

(o) Amount of intensive land use.

(p) Minimising salinisation.

Socio-economic indicators

1. Individual related indicators

(a) Age of owner/manager.
(b) Formal education.
(c) Participation in training.
(d) Management experience.
(e) Membership of Landcare Group.

2. Business related indicators

(a) Property Management Plan.
(b) Family members work on property.
(c) Employment of non-family labour.
(d) Total property family income.
(e) Family off-farm income.
(f) Cash income.
(g) Profit at full equity.
(h) Equity return.

3. Community related indicators

(a) Age dependency ratio.
(b) Youth involvement.
(c) Unemployment vote.
(d) Degree of socio economic disadvantage.
(e) Accessibility/remoteness.
(f) Regional diversification.
(f) Social capital.

4. Institutional related indicators

(a) Institutional expenditure on resource plan.

(b) Share of total expenditure for monitoring of pasture/soil/biodiversity.

(c) Share of total expenditure on 'feral animal control'.

(d) Share of total expenditure on weed control.

(e) Share of expenditure on conservation and on ground works.

(f) Share of expenditure on research.

(g) Share of expenditure on 'acquisition and management of reserve systems'.

(h) Integration across Government/industry sector with regard to achieving sustainability, economic and social targets (triple bottom line).

(i) Move to an accredited management system for reporting on progress towards the triple bottom line and meeting market expectations.

APPENDIX 5:
Role of the Department of Agriculture supporting the PLB

DAWA on the request of the PLB, or as appropriate:

- provides advice and assistance with policy development matters to assist the PLB in meeting its functions under the LAA; and
- assists the PLB in developing processes and guidance on best practice activities for lease and land management.

Pastoral lease inspection and reporting processes includes surveillance and inspection activities in accordance with the *Agriculture and Related Resource Protection Act 1976* and all data collected will be made available to the Pastoral Lands Board.

DAWA provides a Range Condition Assessment report (RCA), or any replacement report which may arise out of review processes, for all pastoral leases on the basis of no longer than a six year timeframe across the State.

The frequency of reporting and report contents will be dependent on a number of issues including the condition of the natural resource, a lease categorisation process, the use of technology including satellite imagery, and/or any other relevant information available to DAWA pertinent to the lease and district.

In undertaking the lease report DAWA holds discussions with the lessee with regards to areas of concern.

The content of the report allows the PLB to assess the rangeland condition and to assess whether the management of the lease is being conducted in an ecologically sustainable manner. DAWA provides definitive recommendations with respect to the leases in question for the determination by the Board where land management issues have been identified.

Manage*m*ent plans

Where it is made a *condition of transfer* that a Management Plan is submitted as part of the transfer in title of a pastoral lease, the plan is reviewed by DAWA to determine its suitability to address the identified land management issues.

Compliance reviews are initiated by the PLB on the basis of this information and DAWA undertakes the inspection and reporting process unless otherwise determined by the PLB.

APPENDIX 6:
Functions of the Commissioner of Soil and Land Conservation

Some of the functions of the Pastoral Lands Board can only be exercised where other laws have been complied with. With respect to the Department of Agriculture, these include:

- the Commissioner of Soil and Land Conservation must be consulted with regard to status of indigenous pasture and other vegetation on leases;
- the Board must not issue a permit unless the Soil and Land Conservation Act and Agriculture and Related Resources Protection Act have been complied with; and
- a permit to clear cannot be given before the Commissioner has been consulted.

In addition, the Soil and Land Conservation Act authorises the Commissioner to impose a soil conservation notice on any pastoral leaseholder where the Commissioner is of the view that land degradation is occurring or is likely to occur.

The Commissioner of Soil and Land Conservation's duties include (section 14):

(a) the carrying out of surveys and investigations to ascertain the nature and extent of land degradation throughout the State;

(b) the investigation and design of preventive and remedial measures in respect of land degradation;

(c) the carrying out of experiments and demonstrations in soil conservation and reclamation;

(d) the recording and publishing of the results of such surveys, investigations, designs, experiments and demonstrations;

(e) the dissemination of information with regard to land degradation and soil conservation and reclamation;

(f) the instruction and supervision of landholders in matters pertaining to soil conservation and reclamation;

(g) the advising and assistance of landholders whose land has been affected by land degradation;

(h) the coordination, having regard to the purposes of this Act, of the policies and activities of Government departments and public authorities in relation to any of the foregoing matters, and in regard to the alienation, occupation and utilisation of Crown lands or other lands vested in public authorities;

(I) the carrying out of works authorised by this Act.

These duties are sufficiently broad to enable the Commissioner to take a more active role in matters pertaining to land degradation and soil conservation in the rangelands. Coupled with the annual survey of rangeland condition that the Commissioner is required to prepare under the *Land Administration Act,* these duties provide an excellent mechanism for the Commissioner to set basic environmental bottom lines for rangeland use.

Soil conservation notices

Where the Commissioner is of the opinion that pastoral practices are likely to lead to land degradation, he can issue a soil conservation notice preventing a person from carrying out those practices (section 32). Where a notice requires a reduction in the stocking rate on a pastoral lease, this will override any inconsistent determination of the Pastoral Lands Board (section 112, LAA).

Soil conservation notices can be a powerful tool in regulating unsustainable practices on pastoral leases, and will operate to override an inconsistent determination of the Board.

Specific pastoral region local laws

The *Soil and Land Conservation Act* section 22(2) provides that the Governor may make regulations applying in land conservation districts:

(a) **Prohibiting the lighting of fires** except under such circumstances, and subject to such limitations, conditions and restrictions as may be prescribed by the regulations or pursuant thereto;

(b) regulating or prohibiting the clearing or destruction of, or interference with trees, shrubs, plants or grasses;

(c) prohibiting or **regulating any change in the use of any land**;

(d) restricting or **regulating the use of any land for** agricultural or **pastoral purposes**;

(e) generally for requiring the doing on or in respect of any land of any act or thing which may be likely to prevent or mitigate land degradation or promote soil conservation and for prohibiting the doing on or in respect of any such land of any act or thing which may be likely to facilitate land degradation.

The majority of the pastoral region is within land conservation districts(LCDs). Regulations made under this section could be powerful tool in providing mandatory standards for best practice management. It may be possible for example for regulations to be made which regulate the way in which pastoral leases are managed, perhaps by reference to a code of practice endorsed by the Commissioner or DEP.

Advisory role on pastoral lease conditions

Under section 19A of the Act, where the Commissioner is satisfied that compliance with a condition of any lease under the *Land Administration Act 1997* would cause land degradation he/she may advise the Minister for Lands. The Minister for Lands may then change those lease conditions notwithstanding anything to the contrary in the *Land Administration Act.*

While this power is only advisory, it would be unusual for a Minister not to follow the expert advice of the Commissioner in such matters.

In addition, section 19 of the Act provides that the Commissioner may advise any Government department or public authority as to the occupation, care or use of any Crown lands where the Commissioner considers that the matter of land degradation or soil conservation is relevant. The Commissioner may publish such advice. In a rangelands context, the Commissioner could use this provision to act as a *de facto* land degradation "ombudsman".

APPENDIX 7:
Agriculture Protection Board and the Control of Declared Plants and Animals

The *Agriculture Protection Board Act 1950* and the *Agriculture and Related Resources Protection Act 1976* ('the Protection Act') prescribe the Board's roles and responsibilities. The Protection Act empowers the Board to do all such things necessary to manage, control, and prevent the introduction and spread of certain plants and animals to protect agriculture and related resources.

Declared plants and animals

In accordance with Sections 35 and 36 of the Protection Act, the Board has the power to 'declare' species of plants and animals for the whole of the State or any part of it and may restrict the entry, keeping, movement, control or management of each declared species by regulation. It may also approve management schemes to control populations of native animals with pest potential.

The Board assigns declared plants and animals to various categories, which determine the management action required for each species.

Declared plants

P1 Plants that should not be introduced (prevention).

Nearly all declared plants are in this category.

Declared plants are also placed in one of the following categories for the whole or part of the State.

P2 Plants that should be eradicated (eradication category).

P3 Plant numbers and distribution or both should be reduced (control category)

P4 Plants that should be prevented from spreading (containment category).

P5 Plants that should be treated only on roads or reserves.

Declared animals

A1 Animals that should not be introduced.
A2 Introduced animals that should be eradicated.
A3 Animals that should not be kept.
A4 Animals that should only be introduced under conditions and restrictions.
A5 Animals whose numbers should be reduced and kept under restriction.
A6 Animals that should only be kept under restrictions and conditions.
A7 Native animals for which there is a management plan to regulate numbers without endangering the species.

Introduced Declared Animals may be included in three categories, relating to:

- Introduction of animal (Categories A1 or A4);
- Control of the animal (Categories A2 or A5);
- Keeping of the animal (Categories A3 or A6).

Wild dog management

Distribution and abundance

Wild dogs are distributed over the whole of Western Australia rangelands and adjacent agricultural areas although their extent has been limited by control programs. There is no objective assessment of abundance although the population appears to have increased over recent years.

Destruction

Control is implemented through preventative control (involving aerial and ground baiting) and reactive control (involving ground baiting, trapping and shooting).

Regulations

Dingo hybrids and other wild dogs are declared pests under the *Agriculture and Related Resources Protection Act 1976* in category A5 (control where numbers are high). In practice, control work is directed at areas where wild dogs are posing a risk to livestock.

Issues

Long term availability of appropriate poisons (1080, strychnine)
Animal welfare of control techniques (trapping)
Involvement of landholders in control programs

Donkey control

Distribution and abundance

Feral donkeys are widespread in the rangelands of Western Australia with the largest populations occurring in the Kimberley. Populations also occur in the Pilbara and Gascoyne areas. In the early 1980's, when populations of donkeys were high, the density in the southern part of the East Kimberley as estimated from an aerial survey was 1/km^2. One donkey was counted for every three cattle seen in the survey. Current populations are estimated at 11,000.

Destruction

From 1978 to 2002, the Government has culled 537,500 feral donkeys. This number does not include animals culled by landholders and pet meat shooters. Of this number 50,000 donkeys have been culled since 1994 in the radio telemetry program.

Regulations

Feral donkeys are declared pests under the *Agriculture and Related Resources Protection Act 1976* in category A5 (control where numbers are high).

Issues

Animal welfare of control techniques (aerial shooting)

Goat management

Distribution and abundance

Feral goat distribution extends from the Ashburton River in the north through Meekatharra and Wiluna to Coolgardie in the Goldfields, throughout the Gascoyne and Murchison areas and to at least Geraldton and Lake Moore in the south.

From information collected during aerial surveys for kangaroo the population of feral goats is estimated at 750,000.

Destruction

During 2001 259,809 goats were commercially processed and 69,326 live exported.

Regulations

Feral goats are declared pests under the *Agriculture and Related Resources Protection Act 1976* in category A5 (control where numbers are high). Goats are also currently classified as 'authorised stock' under Section 17C the Land Administration Regulations (25/08/02).

Issues

Implementation of stock identification as part of best practice management required for managed goats.

Determination of 'authorised' verses 'feral' goats

Camel management

Distribution and abundance

Feral camels have limited distribution in Western Australia (WA). They are primarily found in the Eastern Region of WA on the western fringes of the Great Sandy, Gibson and Great Victoria Deserts. Some small localised populations are also present in western areas.

The number of feral camels in WA is very hard to estimate due to the low density over large tracts of land and their large home ranges. It is estimated that the population of feral camels is 20,000.

Destruction

There are no planned control programs. Opportunistic control is undertaken as part of the feral donkey program.

Regulations

Under current regulations the farming of **feral** camels is prohibited. If **domestic** camels were to be farmed on pastoral leases a permit from the Pastoral Board would need to be granted and these animals would probably be subject to the *Stock (Identification and Movement) Act.*

Issues

Increased interest in commercial utilisation/farming of camels

No objective abundance information available (NT have indicated that their population has doubled over last 8 years)

Damage to pastoral production and infrastructure is currently low

Kangaroos

Distribution and abundance

A triennial system of aerial surveys of kangaroo populations is undertaken by Department of Conservation and Land Management.

2003 population estimates for Red Kangaroo is 1,750,100 and Grey Kangaroo is > 566,700. These represent a slight increase in Red Kangaroo populations and a decline in Grey Kangaroos

Destruction

Harvest figures for 2001 were, Red Kangaroos 149,973 (quota 350,000); Grey Kangaroos 84,527 (quota 112,000); Euros 5,984 (quota 10,000).

Issues considered in discussing the kangaroo population in the Rangelands included:

- impact of pastoral improvements (water points, etc.) on population distribution and number;
- impact of dingoes on populations;
- impact of conservation areas on populations;
- impact of seasonal condition on populations; and
- control measures - open season
  - professional shooters.

Regulations

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* requires each state to prepare a annual management program for kangaroos.

The *Wildlife Conservation Act 1950* provides the authority to control the taking of kangaroos in Western Australia.

Under *Agriculture and Related Resources Protection Act 1976* kangaroos are declared A7 (management of a native species).

Kangaroos are managed in the *Wildlife Conservation Act 1950* and *Agriculture and Related Resources Protection Act 1976*. As the products are exported kangaroo harvesting is also regulated under the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999*. There is no mechanism for the management of wildlife on pastoral leases within the *LAA (1977)*.

Issues

There is no mechanism for the management of wildlife on pastoral leases within the *LAA (1997)*.

Animal welfare of control techniques (shooting)
Increase interest in kangaroo meat for human consumption
Impact of conservation areas on population distribution and number
Impact of seasonal condition on numbers
Permit system for shooters
Availability of professional shooters

Declared plant control

The main weeds subject to control programs in the rangelands are:

- Rubber vine
- Mesquite
- Noogoora burr
- Bathurst burr
- Parkinsonia

Expenditure on weed control is a landholder responsibility.

APPENDIX 8:
Change in Social Structure of Rangeland Areas in Western Australia

Under the objective of social outcomes, it is believed that the achievement of sustainable habitation impacts on sound resource management. The indicators, which would show whether sustainable habitation had been achieved are thought to be:

- increasing total population;
- equality gender ratio ;
- balanced age;
- high group membership - social capital;
- low turnover of population; and
- increasing recent training and participation level.

These parameters are examined for seven representative shires where there is little or no influence of mining or tourism. The seven Shires are Halls Creek, East Pilbara, Ashburton, Upper Gascoyne, Murchison, Meekatharra, and Sandstone for the period 1991-1996.

Total population

There are no clear trend in total population. For example, in East Pilbara there has been more than a 20 per cent decrease in total population, while in Meekatharra there has been more than a 20 per cent increase.

Indigenous population

Ashburton, Murchison, Meekatharra and Sandstone all had more than a 20 per cent increase in indigenous populations. (Of all pastoral zone shires, 13 of 26 had an indigenous population increase of more than 10 per cent).

Working age gender ratio

In six of the seven pastoral Shires, there were more than 150 males to 100 females in the working age population. In Halls Creek there were between 125 and 150.

Age structure

There were no clear trends in the size of the working age population.

Median age

The median age of the total population increased in each of the seven Shires, four only marginally between zero and two years, two by between two and four years, and one (Upper Gascoyne) by more than four years over a five year period.

Farmer median age

The farmer median age increased in six of the seven Shires. In two Shires this was between zero and two years, in one Shire between two and four years, and in three of the seven Shires, the median age of the farmer increased by more than four years.

Higher qualifications

There appears to be a general increase in the number of persons holding bachelor degrees or higher qualifications. In Halls Creek there was more than a 60 per cent increase while in three other Shires the increase was between 30 and 60 per cent, and in the remaining three shires, the increase was between 0 and 30 per cent. These could be large percentage increases from a low base.

APPENDIX 9:
Pastoralism and Sustainability Working Group Submissions

Date Received	Name	Brief Description	Organisation	Issue
13/01/2002	John Percy	Submission on behalf of Lyndon LCDC	Lyndon Land Conservation District Committee	Promotes secure tenure; control of access; no exclusions without leaseholder's consent; diversification.
30/08/2002	Jano Foulkes-Taylor	Personal submission	Tardie Station	Promotes pastoral diversification and identifies impediments & incentives; lists pressures and financial effects of public access; public perceptions; need for research.
10/09/2002	Leonie Horak	Ningaloo Reef submission	NROCA	Strongly objects to exclusion of any of their members' leasehold lands. Argues that the members (pastoralists) are best placed to manage the land.
11/09/2002	Paul Biggs	Pastoralists to become involved in the sustainable development of sandalwood	Forest Products Commission	There are opportunities for pastoral leaseholders to become involved in the sustainable development of the sandalwood resource
11/09/2002	Donald Watson	Personal submission	WA Assoc of Caravan Clubs Inc	Want access to traditional and new camping areas; access to outback areas to explore
12/09/2002	Martin Copley	Concerns	Australian Wildlife Conservancy	Proposes that "every opportunity should be taken to facilitate private sector conservation"
23/09/2002	Chris Kloss	Personal submission	Rep for Shire of Derby West Kimberley	Considers issues relating to lease size, boundary rationalisations, and human population in the Kimberley
1/10/2002	Jane Madgwick	2015 pastoral lease review	WWF	Concerns about protection of freshwater ecosystems; supports WRC proposals for exclusions to protect wild river values
2/10/2002	Alan Knapp	Personal submission		Concern about feral goats at Wooramel. Outlines the benefits of, and requirements for tourism in the pastoral regions.
8/10/2002	Geoffrey Lacy	Rising roo population	Hillview Station	Closing of waters on DCLM land is pushing roos onto neighbouring pastoral leases imposing huge grazing pressure. Culling policy is ineffective. Total Grazing Management the key to sustainability
10/10/2002	Russell Baulch	Access to Pastoral Land Discussion paper	Department of Land Administration	Outlines policy and legal issues relating to access to pastoral land (referred from Access WG)

Date Received	Name	Brief Description	Organisation	Issue
15/10/2002	John Dunne	Remlap renewal after 2015	Remlap Station	Leaseholder explained his historical involvement with Remlap; concerns about mining development and future tenure
21/10/2002	John Hayes	Rising roo population, in reference to Geoff Lacy submission	Yoothapina Station	Supports concerns about roo population; proposes culling and development of kangaroo meat industry for human consumption
31/10/2002	Anne Koeyers	What pastoralists want	Drysdale River	Ownership & money;improvements to lease & stock;assistance with landcare and more money for roads
1/11/2002	Martin Copley	Paper on background, issues and recommendations	Australian Wildlife Conservancy	The LAA is flawed and fails to provide for conservation in the rangelands
4/11/2002	William Burrell	El Questro Station proposed excision	El Questro Station	El Questro leaseholder opposes exclusion of Cockburn Range by DCLM
5/12/2002	Rod Williams	Best management practice for goats	Department of Agriculture	Model Code of Practice for the Welfare of Goats
21/01/2003	William Burrell	Proposed excision of Cockburn Range	El Questro Station	El Questro leaseholder opposes exclusion of Cockburn Range by DCLM
13/02/2003	Geoffrey Lacy	Rising roo population further on previous submission	Hillview Station	Repeats earlier submission and adds suggested solutions: sedatives in watering points;electric fencing
7/03/2003	Angas Hopkins	PPt presentation presented at meeting	DPC	Outlined principles for sustainability and their application in the rangelands
31/03/2003	Stefan Grill	Native Seed Collecting presentation	Licensed Seed Collector/Prospector	Pastoralists should not be able to unreasonably deny access to their lease by licensed seed collectors
4/04/2003	Grant Pronk	Regenerating Sandalwood in the Rangelands	Forest Products Commission	Grazing pressure is reducing the natural recruitment required for a sustainable sandalwood population--goat control on UCL is needed
5/04/2003	Atticus Fleming	Reforming pastoral lease arrangements	Australian Wildlife Conservancy	Need to provide for private sector acquisition and management of pastoral leases for conservation purposes.
	Graeme Robertson	Global Influences on Rangelands of Australia (Speech ARS Conf 2002)	Department of Agriculture	Markets are now demanding assurance/accreditation
	Norman Halse	Coastal Zone Proposal	Access Working Group	Coastal access strip should be excluded from pastoral leases in 2015 for recreational use (fishing, camping, surfing etc)
13/5/2003	Keros Keynes	Letter re leaked WG minutes	Pastoralist	Promotes commercialisation of feral goats
13/5/2003	David Steadman	Goats	Pastoralist	Promotes commercialisation of feral goats
13/5/2003	David Steadman	Future of pastoralism	Pastoralist	A dot-point SWOT approach
14/5/2003	JA & DJ Morrison	Letter re leaked WG minutes	Pastoralist	Opposes closing down of trade in feral goats

Date Received	Name	Brief Description	Organisation	Issue
14/5/2003	Bruce and Caroline May	Letter re leaked WG minutes	Pastoralists	Oppose closing down of trade in feral goats
16/5/2003	Brian Wake	Letter re leaked WG minutes	Pastoralist	Opposes closing down of trade in feral goats
15/5/2003	Don Clements	Letter re leaked WG minutes	Geraldton Meat Exports	Opposes closing down of trade in feral goats
16/5/2003	Luke Jones	Letter re leaked WG minutes	Haddleton Livestock Exporters	Opposes closing down of trade in feral goats

Source papers & submission requested and submitted by Working Group Members				
Date Received	**Name of Person**	**Brief Description**	**Organisation**	**Issue**
5/02/2002	Charlie Thorn	Goat management on pastoral leases	Department of Agriculture	Explains "authorised stock"; policy options & implications re alternative models for management of goats in pastoral areas.
20/09/2002	Graeme Rundle	State Planning Strategy	Conservation Council	Extracts from the State Planning Strategy, 1997
26/09/2002	Charlie Thorn	Rangelands - Tracking Changes and GMS Annual Report	Department of Agriculture	For information
3/10/2002	Gordon Wyre	Biodiversity in the rangelands	Department of Conservation and Land Management	The decline of biodiversity in the rangelands has significant implications; goals, targets and monitoring are needed--also resources and societal agreement (Woinarski & Fisher, ARS Confce Sept 2002)
30/10/2002	Karen Morrisey	Remlap renewal after 2015	Meeline Station	Urging that the concerns of the current leaseholder of Remlap Station be considered by the PLB in decisions about the lease's future
2/12/2002	Suzanne Woolhouse	Economic restructuring	Depatment for Planning and Infrastructure	Paper from Centre for Rural Social Research Charles Sturt Uni): Some WA wheatbelt towns have begun to reverse economic and demographic decline--local development initiatives are a significant contributor
21/01/2003	Barbara Porter	Environmental protection and sustainability of the rangelands in WA	Department of Land Administration	For information--EPA Preliminary Position Statement 5, Oct 2002
21/01/2003	Barbara Porter	National principles and guidelines for rangeland management paper	Department of Land Administration	Published by ANZECC/ARMCANZ 1999
4/02/2003	Barbara Porter	Table of export of goats 1990 - 2002	Department of Land Administration	Data on goat exports by Aust States 1990-2002 (source ABS)
8/02/2003	Gordon Wyre	Diversity and change in Aust rangelands	Department of Conservation and	Paper by J Holmes: Transition in Aust rangelands is driven by agricultural

Source papers & submission requested and submitted by Working Group Members				
Date Received	**Name of Person**	**Brief Description**	**Organisation**	**Issue**
			Land Management	overcapacity; the emergence of amenity-oriented uses; and changing societal values
8/02/2003	Gordon Wyre	Biodiversity Conservation Act for WA	Department of Conservation and Land Management	Consultation Paper, Dec 2002. Biodiversity Conservation Bill planned for 2004--will require State Biodiversity Conservation Strategy
17/02/2003	Charlie Thorn	Rangeways booklet	Department of Agriculture	Community-based planning for ecologically sustainable land use in the NE Goldfields of WA
26/03/2003	Charlie Thorn	Goat management in the rangelands	Department of Agriculture	Grazing analysis and market factors re "managed goat" industry
28/03/2003	Charlie Thorn	QLD farmers newspaper article	Department of Agriculture	Qld Govt will extend rural leases where implementation of sound environmental practices can be demonstrated
28/03/2003	Charlie Thorn	Developing an Environmental Management System (guide for pastoralists)	Department of Agriculture	For information (published December 2002)
28/03/2003	Charlie Thorn	The Western Australian Rangeland Monitoring System in the GMS	Department of Agriculture	Rational, methods and data from WARMS in the GMS (Nov 2002)
5/04/2003	Barbara Porter	Exotic Breeds and Wool Contamination	Department of Land Administration	Marketing implications of dark fibre contamination of wool --info from Tas farmers' and Graziers' Assoc
5/04/2003	Barbara Porter	Points of discussion for development of code of practice for management of Cat 5 sheep in Tasmania	Department of Land Administration	Proposal by Tasmanian Farmers' & Graziers' Assoc re management of exotic sheep
5/04/2003	Barbara Porter	Damara sheep information	Department of Land Administration	Information from Damara Breeders' Soc (Namibia) via internet
5/04/2003	Charlie Thorn	Management of pests on State land	Department of Agriculture	Framework to improve coordination of pest management across tenures in the pastoral zone
5/04/2003	Charlie Thorn	Pasture condition guides for the Pilbara	Department of Agriculture	Dept Ag Misc Publication19/2002 --for information
	Barbara Porter	Batch 3 proposed exclusions at 2015 (CALM)	Department of Land Administration	Documentation of Batch 3 proposals
		Implementing Landcare in Rangelands	Pastoralist and Graziers Association	1999 review of factors influencing pastoralists' involvement in landcare
	Charlie Thorn	Rangelands sustainability	Department of Agriculture	Summary of key indicators and topics to be included in WG report
		Outback Resources Atlas	Gascoyne	Description -Resource

Source papers & submission requested and submitted by Working Group Members				
Date Received	**Name of Person**	**Brief Description**	**Organisation**	**Issue**
			Murchison Strategy	database for southern rangelands
	Barbara Porter	Useful websites	Department of Land Administration	Website addresses--for information
	Barbara Porter	Effects of exclusions on lease viablity	Department of Land Administration	Brief summary of process to assess effect of exclusion on viability
	Gordon Wyre	Paper on Terms of Reference	Department of Conservation and Land Management	TOR 3 Requirements for CAR reserve system
	Barbara Porter	Roads and access	Department of Land Administration	Summary of provisions under the LAA for roads, rights-of-way, reserves, public access routes
	WG coordinator	Paper on Australian Rangeland Society 12th Biennial Conference Shifting Camp	Department of Land Administration	Official Opening Speech, Sept 2002: Urgent need for rangeland stakeholders to address changing context
	Barbara Porter	Sustainable Rangeland Management	Department of Land Administration	Concern about degradation in rangelands, loss of productivity/profitability and social capital (Draft State Sustainability Strategy)
	WG coordinator	Interim Bio Regional Areas	Department of Land Administration	Map showing Interim Bioregional Areas of WA
	Barbara Porter	Batch 1 & 2 proposals (CALM)	Department of Land Administration	Contribution of batch 1 &2 to IBRA conservation targets
	Suzanne Woolhouse	The French Parc Naturel as a model for Regional Development in Rural Australia	DPI	French model for population maintenance based on community ownership, cultural preservation, economic stimulation
	WG coordinator	2015 references for exclusions	Department of Land Administration	Publications referring to DCLM Batch 1 & 2 exclusions
		Extract from the CALM Act 1984 Part 16	Department of Conservation and Land Management	Management of private or leasehold land for nature conservation
9/5/2003	Charlie Thorn	Gascoyne Murchison Rangelands Survey	Department of Agriculture	Gascoyne Murchison Rangelands Survey
		Biodiversity monitoring in the rangelands	Department of Agriculture	Biodiversity monitoring in the rangelands (Anita Smyth, CSIRO, CAZR)
17/5/2003	Charlie Thorn	Nothing new under the sun	Department of Agriculture	Discussion on property rights (Qld Dept Natural Res & Mines)

APPENDIX 10:
ECONOMIC ANALYSIS SOUTHERN RANGELANDS- REPORT OF WILL DALTON REGIONAL ECONOMIST

A REVIEW OF PASTORALISM IN THE SOUTHERN RANGELANDS REGION OF WESTERN AUSTRALIA 2002/03

Will Dalton, Regional Economist, Southern Rangelands Program

Main findings

- Recent climatic events have had a large impact on profitability forcing many pastoralists in the Southern Rangelands to de-stock or consider alternative feeding strategies. Low lambing/calving percentages, high death rates and breeding stock that are in poor condition will affect fertility in the future. Rebuilding herds may take several years and will affect profitability.
- Pastoral enterprises within 11 of the 15 LCDs in the Southern Rangelands are profitable under current prices and drought induced sell-off strategies. This is particularly evident in the northern fringe due to high proportions of cattle DSEs. However, only eight (8) of the 15 LCDs appear to be financially sustainable over the medium-term.
- Over the medium term, northern LCDs should experience greater losses to profitability in comparison to the LCDs that rely mainly on sheep income This is due to proportionately greater reductions in cattle herds as a result of the dry spell. These LCDs face less risk from wool price variability but are now more prone to movements in livestock market fluctuations.
- Future cashflow is likely to be negative as pastoralists endure herd rebuilding processes. Implications are that many businesses need to alter plans and utilise Farm Management Deposits (FMDs).
- Goats and Damaras have become an important part of the pastoral system.
- It seems likely that pastoralists will be faced with continued declining terms of trade even in light of positive commodity price outlooks.

This economic analysis examines the profitability of pastoralism in fifteen land conservation districts (LCDs) within the Southern Rangelands region of Western Australia. It is an updated version of the original report prepared by Karen White in 1999.

Jennings (1979), in a review of the industry nearly 15 years ago concluded that a significant number of pastoralists were in financial trouble due to worsening terms of trade. Cunningham (1993), in a review of the industry concluded that the clean price indicator needed to increase by 50 per cent for businesses to remain viable. White (1999), mentioned lease restructuring for improving the sustainability of the pastoral industry in the Southern Rangelands of Western Australia, in particular for those LCDs with good underlying productivity but small current business sizes. So where is the industry at now?

With the aid of recent benchmarking data (RCS 2001/2002) and the statutory declarations made by leasees to the Pastoral Lands Board (PLB) an updated version of the Pastoral Wool Industry Taskforce (PWITF) model is possible. Where information is lacking the Meekatharra Area Financial Information Analysis (MAFIA) data is used as well as information from abattoirs, personal communication with pastoralists and relevant Department of Agriculture publications.

Following the collapse of the reserve price scheme in the early 1990s poor wool prices resulted for the remainder of the decade. This trend has shown that price movements can have significant impacts on the makeup of typical pastoral enterprises and the profitability of the industry. To illustrate this there has been a significant swing into cattle production, goats have become important in the system and an increased interest in heavier, meat breeds of sheep such as Damaras. Climate also has an enormous impact on profitability forcing many pastoralists to de-stock or consider alternative feeding strategies, which may take the business years to recover. This analysis attempts to quantify the impact that the run of dry seasons and high commodity prices has had on each LCD within the Southern Rangelands.

The methodology is predominately as used in the economic analysis section of the report *Regional Relativities of Sustainable Pastoral Sheep Production in Western Australia* (Holm et. al., October 1995), which uses a current and medium-term scenario. The current scenario uses current business

size (DSE) from returns to the Pastoral Lands Board (PLB) along with current prices and costs, whilst the medium-term scenario uses potential business size derived from the land resource information surveys of the past. Expected commodity price scenarios are also used to develop a picture of the profitability of pastoralism over the medium term (2006/07). Both models reflect current costs (which have been obtained from recent RCS benchmarking studies). They also include cattle, damaras and goats which form a significant proportion of livestock on some properties in the Southern Rangelands. The underlying productivity information is taken from the original report and readers should refer back to this report for detailed information on how sheep production, land capability, length of fences and number of water points were derived.

THE ANALYSIS

The derivation of income and costs for each of the LCDs is described below.

Area of the lease

The average area of the lease in each LCD was calculated by averaging the area of leases that fall within the LCD boundaries. Where a lease covers a LCD boundary it was included in the average for the LCD in which the majority of the lease falls. Lease size information from the Pastoral Lands Board statutory declarations for 2002 was used for the current model, whilst the medium-term model uses the existing estimates derived from land resource information surveys. Generally the two figures are reasonable close which provides a good indication of authenticity in the methods used to determine lease area.

Average business size (DSEs)

The average business size was calculated by dividing the average area of lease by the long term stock capability rating (LTSCR) as given in Table 1. The LTSCR is derived from land capability information from land resource surveys and Beard vegetation maps combined with seasonal information for the soil water balance model WATBAL (Fitzpatrick et al. 1967).

Table 1: Average lease area and current business size of pastoral businesses in the Southern Rangelands of Western Australia.

LCD	Average Lease Area (ha)	LTSCR* (ha/DSE)	Potential Average Business Size* (DSEs)	Actual Average Business Size** (DSEs)
Nullarbor	281,783	9.8	28,753	29,559
Kalgoorlie	159,047	14.2	11,200	10,851
Lyndon	138,504	11.1	12,478	14,912
Gascoyne-Wooramel	119,324	10.6	11,257	11,387
Murchison	164,494	14.6	11,267	11,152
Gascoyne-Ashburton	299,355	21.6	13,859	14,039
North East Goldfields	190,183	17.8	10,684	11,185
Meekatharra	185,035	20.3	9,115	8,910
Shark Bay	128,832	12.4	10,390	10,285
Mt Magnet	90,361	15.5	5,830	5,947
Wiluna	255,943	22.1	11,581	11,034
Sandstone	183,943	19.9	9,243	9,869
Cue	100,173	16.9	5,927	5,927
Yalgoo	118,806	20.7	5,739	5,719
Upper Gascoyne	178,661	22.3	8,012	7,576

*derived from resource information ** from PLB statutory declarations

INCOME

Wool Income

Wool cut per head, yield, micron and percentage of fleece wool in the clip were taken from the Australian Wool Corporation database of sales.

The wool price used in the current analysis is an average Western Market Indicator (WMI) price from March 2003. The medium-term model forecasts are based on a conservative WMI of 800 cents per kilogram clean using ABARE and Woolmark estimates.

Sheep (meat) and cattle income
In the northern LCDs a greater proportion of wethers and cattle were sold whilst ewes were kept. This is to reflect the particularly dry conditions. The Southern LCDs sold stock at normal rates. A standard cull rate of 730 sheep per 10,000 sheep carried was used for both ewes and wethers. Standard cattle turnoffs differed for each LCD.

Income from livestock sales is determined by the number of stock sold and the distance to the nearest point of sale. Freight per head is then deducted from the sale price, if the net price is positive it is multiplied by the number of sale stock to give income from sales.

Goats and Damara income
Approximate feral goat numbers per LCD were estimated from deliveries to abbatoirs, Department of Agriculture aerial counts and RCS benchmarking data.

Damara numbers were estimated using local Departmental sources and through discussions with pastoralists from various LCDs. Twenty per cent of the Damara flock is sold each year in the budget, whilst 60 per cent of the entire goat herd is turned off.

Turnoff percentage
By working out the number of stock sold from the PLB (2001) survey results, turnoff percentages could be established for each LCD. Significant rises were witnessed in comparison to the 1999 update reflecting the forced sell-off strategies many pastoralists faced. RCS benchmarking information was also utilised in determining turnoff percentages.

Sheep and cattle DSEs
Proportions of sheep and cattle DSEs were taken directly from the PLB (2001) survey results. The common theme was in relation to cattle DSEs and the proportionate increase across many LCDs.

Current and expected prices used in the models

Demand for **fibres** is expected to strengthen over the next few years as the world economy grows, but competition among the various fibres will remain intense in terms of price and technical information (ABARE 2001). The Australian Wool Exchange (AWEX) predicts that Eastern Market Indicator (EMI) prices will remain between 930 and 1050 cents per kg for the rest of 2002/03 and the first half of 2003/04 before lifting to around 1160 in the second half of 2003/04. Another cyclical downturn is expected in 2004/05 which will push prices down to around 930 cents for a few months in the second half of 2004/05. A WMI price of 850 cents per kg has been assumed for the medium-term model. For the current model an average WMI price of 1000 cents clean is assumed.

The demand outlook for **sheep and goat meat** is particularly positive from the US and Taiwan. The Australian Bureau of Statistics (ABARE) is forecasting a 15 per cent increase in lamb production over the five years to the 2006/07 season. Rising lamb supplies are forecast to result in an easing of prices but strong export demand from the US should ensure prices aren't affected too greatly. Mutton prices are expected to remain solid. A price of $30 per pastoral ewe, $50 per Damara, $30 per light pastoral wether and $30 per head for goats has been assumed for the medium-term model. For the current model an average price of $37.5 per pastoral ewe for March 2003 is assumed, $40 per light pastoral wether, $65 per Damara and $27 per head for goats.

The demand outlook for **cattle** will depend heavily upon demand developments in key importing nations, as almost two-thirds of Australia's beef is exported. Over the medium term (2006/07) cattle prices are forecast to decline due to rises in US production and exports. An average steer price of $600 is assumed for the medium-term model whilst for the current model an average steer price of $635 for March 2003.

COSTS

Aircraft, Fuel and Oil, Wages
Costs which are largely associated with mustering were calculated based on recent benchmarking data and relate to the area of the lease. An average cost per hectare (from the 2001/02 RCS survey) was assumed for each LCD and multiplied by the area of the lease.

Infrastructure replacement (fences and water)
The average length of fencing per 1000 DSE was multiplied by the number of DSE to calculate the average length of fence per lease for each LCDC. The average lease area was divided by the average area per water point to calculate the average number of water points per lease. Costs of $13000 per water point and $800 per kilometre of fence with an expected life of 30 years were used to calculate a yearly replacement cost for infrastructure for each LCD. The water point cost was significantly upgraded from the last analysis and reflects a complete replacement cost for an entire unit.

Shearing, packs, stock costs, wool freight
These costs relate to the number of DSE on a lease and are determined by multiplying the average number of DSE per lease, by the average cost per DSE from RCS 2001/02 and MAFIA 2001 benchmark information.

Other costs
All other costs are the average of the costs incurred by the properties in the RCS 2001/02 and MAFIA 2001 survey.

Costs not included in the analysis are income tax, wool tax, loan repayments and education costs. Personal drawings are represented by wages and stores only.

RESULTS
The results are summarised in the tables below.

Table 2: Current profit and break-even business size of pastoral businesses in the Southern Rangelands of Western Australia.

LCD	Profit before tax ($)	Current proportion of cattle DSE	Current steer price	Wool price (c/kg clean)	Potential Business Size (DSEs)	Break-even Business Size (DSEs)
Nullarbor	$297,048	31%	$635	1026	28,753	7,202
Kalgoorlie	$88,483	17%	$635	1006	11,200	5,420
Lyndon	$312,217	80%	$635	1001	12,478	3,838
Gascoyne-Wooramel	$177,795	22%	$635	1005	11,257	2,485
Murchison	$125,460	30%	$635	991	11,267	4,682
Gascoyne-Ashburton	$266,301	100%	$635	n/a	13,859	3,813
North East Goldfields	$87,306	20%	$635	991	10,684	5,707
Meekatharra	$12,749	51%	$635	1003	9,115	7,878
Shark Bay	$83,533	33%	$635	988	10,390	5,741
Mt Magnet	($2,589)	2%	$635	991	5,830	6,109
Wiluna	$136,628	97%	$635	1003	11,581	4,772
Sandstone	($494)	12%	$635	968	9,243	9,924
Cue	($53,533)	6%	$635	991	5,927	10,865
Yalgoo	($23,766)	7%	$635	989	5,739	7,671
Upper Gascoyne	$97,465	81%	$635	996	8,012	3,575

Table ?? illustrates that pastoral enterprises within eleven of the fifteen LCDs in the Southern Rangelands are profitable under current prices and sell-off strategies. This is particularly evident in many of the LCDs on the northern fringe of the rangelands such as *Upper Gascoyne, Gascoyne Wooramel, Wiluna, Lyndon and Gascoyne Ashburton,* and is due to large numbers of cattle being sold

at favorable prices as a result of dry conditions. The least profitable areas are those that exhibit low proportions of cattle DSEs. However, current high wool prices and the increase in goat receipts in recent times have lifted profitability in all areas since 1999. But is pastoralism in the Southern Rangelands sustainable in the medium term.

Modifications to prices, proportions of cattle DSE's and cattle turnoffs were made to the current model to reflect the industry in the medium-term (2006/07). Table 3 lists the results.

Table 3 Medium-term profit and break-even business size of pastoral businesses in the Southern Rangelands of Western Australia.

LCD	Profit before tax ($)	Proportion of cattle DSE	Steer price	Wool price (c/kg clean)	Potential Business Size (DSEs)	Break-even Business Size (DSEs)
Nullarbor	$224,874	31%	$600	872	28,753	10,067
Kalgoorlie	$51,447	17%	$600	855	11,200	7,356
Lyndon	$7,454	55%	$600	851	12,478	11,717
Gascoyne-Wooramel	$91,465	22%	$600	854	11,257	4,088
Murchison	$26,701	19%	$600	843	11,267	8,908
Gascoyne-Ashburton	($3,843)	50%	$600	826	13,859	14,384
North East Goldfields	$2,228	20%	$600	842	10,684	10,453
Meekatharra	($15,952)	51%	$600	853	9,115	10,832
Shark Bay	($29,874)	33%	$600	839	10,390	14,072
Mt Magnet	($19,316)	2%	$600	843	5,830	7,298
Wiluna	$9,959	50%	$600	853	11,581	10,550
Sandstone	($35,939)	12%	$600	823	9,243	9,853
Cue	($65,390)	6%	$600	843	5,927	13,164
Yalgoo	($48,972)	7%	$600	840	5,739	11,418
Upper Gascoyne	$4,278	50%	$600	847	8,012	7,620

Table 3 shows that only eight of the fifteen LCDs would now be profitable. This information is presented graphically in Figure ?. Perhaps the greatest concern relates to future cashflow. The analysis demonstrates that over the medium term, profitability in the LCDs with high cattle DSEs will erode at a faster rate than the sheep dominated areas. This is due to a lengthy herd rebuilding process and subsequent drop in income from cattle. The sheep focused LCDs will be affected by slightly lower wool prices than what we are currently experiencing, which will force some of the smaller stations to re-think their livestock mix, especially considering the uncertainty that is associated with wool prices.

The results of the analysis suggest a strong likelihood that future cashflow will be negative due to current high percentages of de-stocking. The implication of this is that many pastoralists may have to alter plans in order to avoid a cash shortfall. Typically, FMDs provide a way of managing cashflow by allowing property owners to set aside pre-tax primary production income in profitable years to be accessed in less profitable years. The aim is to balance income between good and bad years, spreading taxable income.

Profitability is influenced by the potential carrying capacity of the average lease. Sustainability of the pastoral lease is affected by the ability to manage a rangelands pastoral business without a long term degradation of the resource base. Leases with lower potential carrying capacities are generally less profitable because their overhead costs such as administration, rates, finance costs, etc. per DSE are higher. LCDs such as Mt Magnet and Cue which have reasonable good underlying productivity (represented by their LTSCR) are at a disadvantage when compared to LCDs with similar underlying productivity such as Murchison and the North-East Goldfields LCDs because of the smaller average area of leases in these LCDs and the lower proportion of cattle DSEs.

It seems likely that pastoralists will be faced with continued declining terms of trade. The benchmarking data used in this latest analysis highlights the rise in input costs compared to the 1999

update of the model. Although commodity price forecasts for wool, sheep meat and beef look positive over the medium term, higher input costs are likely to erode any substantial gains in commodity prices.

In order to compare the profitability of pastoralism in each LCD as determined by their underlying productive potential the profitability of LCDs was compared for four different business sizes, 12000, 10000, 7000 and 3500 DSEs. The results are given in Table4 (overleaf).

Table 4: Sustainable (medium-term) profit of pastoral businesses in the Southern Rangelands of Western Australian based on standard size businesses.

		Business size (DSEs)			
	Potential profit	**12000**	**10000**	**7000**	**3500**
Kalgoorlie	$51,447	$62,147	$35,380	($4,770)	($51,612)
Nullarbor	$224,874	$23,261	($808)	($36,910)	($79,030)
Gascoyne-Wooramel	$91,465	$100,945	$75,427	$37,150	($7,506)
Murchison	$26,701	$35,000	$12,364	($21,590)	($61,203)
Mt Magnet	($19,316)	$61,837	$35,532	($3,925)	($49,957)
Lyndon	$7,454	$2,772	($16,822)	($46,213)	($80,503)
North East Goldfields	$2,228	$14,890	($4,360)	($33,234)	($66,920)
Gascoyne-Ashburton	($3,843)	($17,457)	($32,105)	($54,076)	($79,709)
Meekatharra	($15,952)	$10,842	($7,732)	($35,595)	($68,101)
Cue	($65,390)	($10,516)	($28,589)	($55,698)	($56,013)
Shark Bay	($29,874)	$16,810	($33,035)	($57,372)	($85,765)
Sandstone	($35,939)	($16,782)	($30,681)	($51,530)	($75,853)
Yalgoo	($48,972)	$5,020	($12,228)	($38,100)	($68,285)
Wiluna	$9,959	$14,055	($5,312)	($34,288)	($68,093)
Upper Gascoyne	$4,278	$47,875	$26,013	($6,781)	($45,041)

Table 4 shows that at a business size of 10,000 DSEs five of the 15 LCDs would be profitable. A typical lease in the Mt Magnet LCD (5,830 DSEs) which doesn't appear to be sustainable (potential losses of $19,316) would be profitable at a business size of 10,000 DSEs. Only the Gascoyne - Wooramel shows a profit at a 7000 DSE business size. This comparison underlies the importance of lease restructuring for improving the profitability of the pastoral industry in the Southern Rangelands of Western Australia, in particular for those LCDs with good underlying productivity but small current business sizes.

As with the previous analysis undertaken for the Pastoral Wool Industry Task Force this analysis is intended to illustrate the relative sustainability of the industry in different areas of the Southern Rangelands. Just as the sustainability of the industry varies between LCDs within the region, so will the sustainability of individual business vary between individual leases within each LCD.

What has become evidently clear from this analysis is that stations that historically relied on sheep but who have diversified and shifted into beef, are currently in a healthy financial position accentuated by the recent sell-off strategies employed to combat the effects of the drought.

Given the decreased reliance on wool income, particularly in the northern LCDs, the impact of wool price variability will not be as profound over the medium-term compared with variability witnessed in livestock markets. The shift to meatier breeds of sheep along with increases in goat receipts in many of the pastoral systems also helps to support this trend.

REFERENCES

ABARE (March Qtr 2003). Australian commodities, vol 8. no. 1

Holm, A. McR., O'Connor, R., Foster, I., Stevens, M., Beeston, G., (Oct 1995*) Regional Relativities of Sustainable Pastoral Sheep Production in Western Australia – A submission to the Pastoral Wool Industry Task Force and Wool Strategy Task Force.*

Johnson, T., (2001) Finishing rangeland goats in feedlots/on farms in the agricultural region. Dept Agriculture. Sth Perth.

Figure 1. Sustainable Profitability of Pastoral Wool Businesses

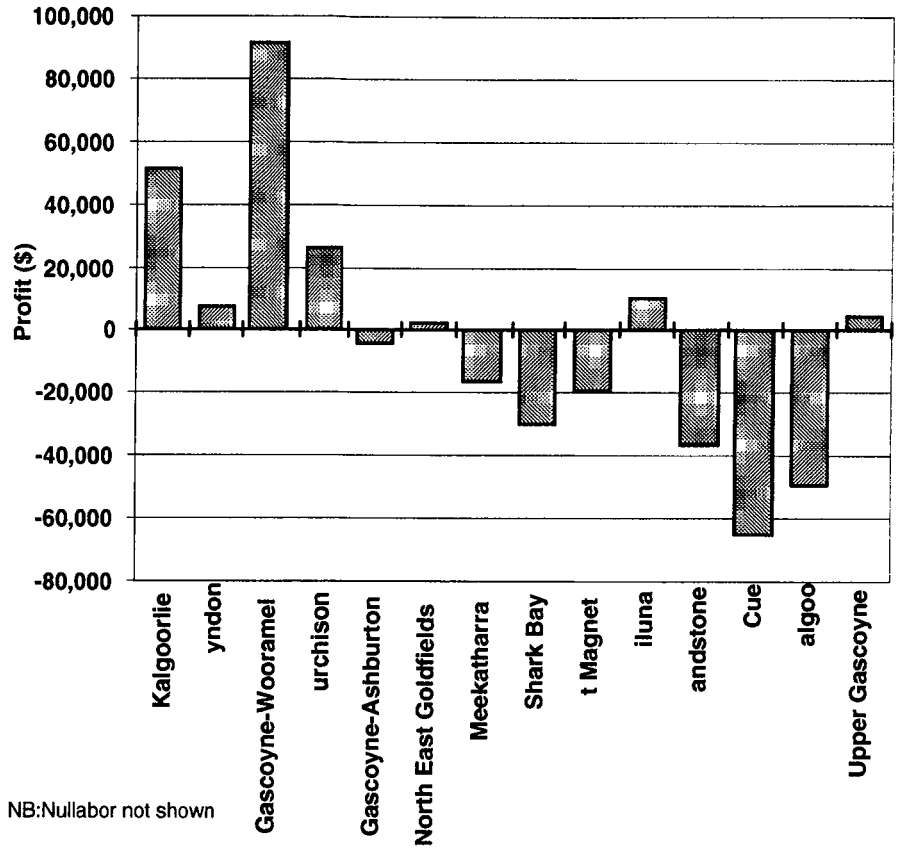
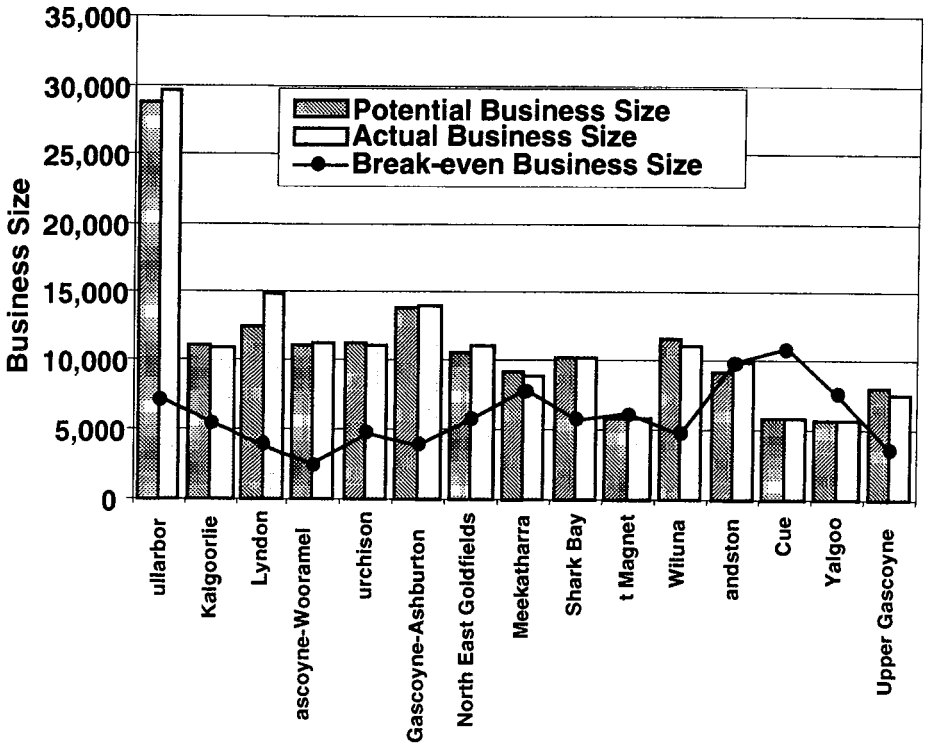


Figure 2. Current Average Business Size and Break even Business



igure 3. Sustainable (medium-term) Average Business Size and Breakeven Break ven Business Size (DSEs)