Final Report
Sustainable land use and economic development opportunities in the Western Australian Rangelands

Prepared for
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About this Report

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<th>Description</th>
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<tbody>
<tr>
<td>AACo</td>
<td>Australian Agricultural Company</td>
</tr>
<tr>
<td>ABARES</td>
<td>Australian Bureau of Agricultural and Resource Economics and Sciences</td>
</tr>
<tr>
<td>ACCU</td>
<td>Australian Carbon Credit Unit</td>
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<tr>
<td>ACRIS</td>
<td>Australian Collaborative Rangeland Information System</td>
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<tr>
<td>ADF</td>
<td>Australian Defence Force</td>
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<tr>
<td>AG</td>
<td>Auditor General</td>
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<tr>
<td>ALT</td>
<td>Aboriginal Lands Trust</td>
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<tr>
<td>APB</td>
<td>Agriculture Protection Board</td>
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<td>ARRP Act</td>
<td>Agriculture and Related Resources Protection Act 1976</td>
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<tr>
<td>AWC</td>
<td>Australian Wildlife Conservancy</td>
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<td>BAM Act</td>
<td>Biosecurity and Agricultural Management Act 2007</td>
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<td>BHA</td>
<td>Bush Heritage Fund of Australia</td>
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<td>BSG</td>
<td>(Regional) Biosecurity Group</td>
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<tr>
<td>BTEC</td>
<td>Brucellosis and Tuberculosis Eradication Campaign</td>
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<tr>
<td>CALM</td>
<td>Conservation and Land Management Act 1984</td>
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<tr>
<td>CFI</td>
<td>carbon farming initiative</td>
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<td>Carbon Credits (Carbon Farming Initiative) Act 2011</td>
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<td>CPM</td>
<td>Carbon Pricing Mechanism</td>
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<td>CSIRO</td>
<td>Commonwealth Scientific and Industrial Research Organisation</td>
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<tr>
<td>CRC</td>
<td>Cooperative Research Centre</td>
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<tr>
<td>CSLC</td>
<td>Commissioner for Soil and Land Conservation</td>
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<tr>
<td>CU</td>
<td>Cattle Unit (equivalent to LSU)</td>
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<td>DAFWA</td>
<td>Department of Agriculture and Food, Western Australia</td>
</tr>
<tr>
<td>DEC</td>
<td>Department of Environment and Conservation</td>
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<tr>
<td>DFES</td>
<td>Department of Fire and Emergency Services (formerly FESA)</td>
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<td>Department of the Premier and Cabinet</td>
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<td>DSE</td>
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<td>EBC</td>
<td>Enterprise Based Conservation</td>
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<td>greenhouse gases</td>
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<td>Gascoyne Murchison Strategy</td>
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<td>GST</td>
<td>Goods and Services Tax</td>
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<td>GVAP</td>
<td>Gross Value of Agricultural Production</td>
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<td>IHA</td>
<td>Indigenous Harvest Australia</td>
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<td>Indigenous Land Corporation</td>
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<td>ILS</td>
<td>Indigenous Landholder Service</td>
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## Abbreviations

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<td>ILUA</td>
<td>Indigenous Land Use Agreement</td>
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<td>KIMSS</td>
<td>Kimberley Indigenous Management Support Service</td>
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<td>KPI</td>
<td>Key Performance Indicator</td>
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<td>LAA</td>
<td>Land Administration Act 1997</td>
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<td>LCD</td>
<td>Land Conservation District</td>
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<td>Large Stock Unit</td>
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<td>MILS</td>
<td>Mid-West Indigenous Landholder Service</td>
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<td>NCP</td>
<td>National Competition Policy</td>
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<td>NGO</td>
<td>non-government organisation</td>
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<td>NPV</td>
<td>net present value</td>
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<td>Natural resource management</td>
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<td>NT Act</td>
<td>Native Title Act 1993</td>
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<tr>
<td>ORIA</td>
<td>Ord River Irrigation Area</td>
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<td>PCC</td>
<td>Potential Carrying Capacity</td>
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<td>PGA</td>
<td>Pastoralists and Graziers Association</td>
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<td>PILS</td>
<td>Pilbara Indigenous Landholder Service</td>
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<tr>
<td>PLB</td>
<td>Pastoral Lands Board</td>
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<td>PSCE</td>
<td>Private Sector Conservation Enterprise</td>
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<td>RBG</td>
<td>Regional Biosecurity Group</td>
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<td>RCA</td>
<td>Rangelands Condition Assessment</td>
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<td>R&amp;D</td>
<td>Research and Development</td>
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<td>R,D&amp;E</td>
<td>Research, Development and Extension</td>
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<td>Department of Regional Development and Lands</td>
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<td>RFDS</td>
<td>Royal Flying Doctor Service</td>
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<tr>
<td>RIRDC</td>
<td>Rural Industries Research and Development Corporation</td>
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<tr>
<td>ROAM</td>
<td>Return on Assets Managed</td>
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<td>ROI</td>
<td>Return on Investment</td>
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<td>RPP</td>
<td>Regional Partnerships Program</td>
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<td>SKA</td>
<td>Square Kilometre Array</td>
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<td>TFP</td>
<td>Total Factor Productivity</td>
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<td>UCL</td>
<td>Unallocated Crown Land</td>
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<td>UMR</td>
<td>Un-managed Reserves</td>
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<td>Valuer General’s Office</td>
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<td>WAITOC</td>
<td>WA Indigenous Tourism Operators Corporation</td>
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<td>WARMS</td>
<td>Western Australian Range Monitoring System</td>
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<td>ZCA</td>
<td>Zone Control Authority</td>
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Executive Summary

Towards a new era in the Western Australian rangelands

A new era is commencing in Western Australia’s rangelands, one that involves managing 87 per cent of the State’s land area for multiple values, uses and users. The Pastoral Landholding Business Community and its enterprises, supported by coordinated and determined government action has the opportunity to break from existing economic and regulatory paradigms and develop a future that widens the range of land uses, brings in new people and new money, and provides new solutions to old problems.

Government should use the opportunity presented by the Rangelands Reform Program and the lease roll-over in 2015 to send a clear signal to lessees, businesses and the rangeland community that a new era in rangeland use and development has arrived. While some of this shift can be reflected in statute and regulation, it will also require State Government leadership in clearly articulating a future vision for WA’s rangelands, ‘talking up’ the future, acting decisively to address long-standing land management issues, and investing to develop priority regional opportunities.

The evaluation of opportunities in the rangelands (and in particular the Pastoral Leasehold Estate) has been guided by the following set of principles developed by the consultant team. These are all equally important.

- Encouragement and support for sustainable occupation of the rangelands.
- Improvement of natural resources.
- Optimisation of economic opportunities across all uses and users.
- Attraction of new skills and experience and new capital into the rangelands.
- Recognition of biodiversity and landscape values and their preservation.
- Preservation of heritage, cultural values and practices.
- Provision of rational, effective and collaborative services.

Where are we now?

The WA rangelands are coming to the end of an era dominated by a pastoral leasehold governance system and an economy, outside of mining, dominated by grazing. This system is no longer able to satisfy the aspirations of a more diverse rangeland community, the State Government’s objectives in regional economic development, or the requirements of external parties interested in investing in rangeland development. Finally, the need for landscape rehabilitation across an estimated 19 per cent of the State’s land area is not being achieved under current governance arrangements.

What can be done?

This report shows that opportunities exist in the rangelands to expand the economic activities available to current and future landholders and businesses. Some of these opportunities will flow from improvements to existing land uses, such as the cattle and tourism industries, where these are founded on a solid resource base and can be made more competitive with additional investment in market development, skills and infrastructure.

Other opportunities will involve development of proven water resources located in specific areas in the rangelands for precinct-scale horticultural and agricultural developments. These will require whole-of-government intervention to ensure that land and water resources, and required advice is available to attract and support new investment and new operators. New crops and products that show promise in

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1 Determined as the area of land in the Pastoral Leasehold Estate in poor and fair range condition
Executive Summary

the rangelands need commitment to long-term research and development, and support for implementation.

Indigenous people are building their rightful place in the rangelands through the development of multiple use landholdings and partnerships with government and non-government organisations (NGOs) in managing for environmental and economic outcomes. Their stake will surely increase with growth in Indigenous tourism, fire management in the Kimberley, Pilbara and Unallocated Crown Land (UCL) areas in central WA, multiple enterprises on Indigenous landholdings, and management of cultural heritage throughout the landscape.

Recovering the ecological functioning of large areas of the rangelands will increase their attractiveness for the growing number of people seeking ‘wilderness experiences’ and will ensure that if these areas are needed for food production in future years, they can deliver sustainably. Recovery can be achieved – through marketing products such as carbon – and by providing incentives to rangeland people to deliver the desired outcomes on the community’s behalf through stewardship arrangements for specified management actions beyond normal requirements. This can extend to contracting local people to manage some of the State Government’s commitments on UCL and the Conservation Estate, and developing further the concept of landscape management as illustrated in the Great Western Woodlands and the Kimberley Science and Conservation Strategies.

Philanthropy from those living outside the rangelands will not only support the people committed to rangeland recovery and multiple use on country, but will build a valuable link between the people within and outside the Rangelands.

Delivering on the opportunity

New mechanisms, new thinking, expanded opportunities, and new money are needed to sustain the rangeland community, build resilience and encourage new people into the area.

The Rangelands Reform Program, supported by investment through the Royalties for Regions Program will assist the development of new opportunities, and will provide existing users more freedom to innovate, expand and consolidate. The legislative and regulatory reforms provide the ‘template’ upon which new opportunities and existing uses will be developed.

The reform process needs to be taken further. To achieve development on the scale desired, means that rangeland governance needs to be embrace the whole of the ‘Rangeland Estate’ – not just the Pastoral Leasehold Estate – and use a wider array of instruments and mechanisms, or to put it simply, ‘a bigger and better toolkit’. The frustration and abandonment felt by many people in the rangeland community to a significant degree results from government not being able to provide realistic and acceptable options and solutions to their difficulties. If government is to build a more diverse and resilient future, it needs a wider array of ‘tools’ to do the job.

However, one size will not fit all. Policy and administration needs to recognise regional differences in environmental and economic opportunities and constraints, and determine priorities for government intervention and support based on an assessment of a region’s potential. For example, the priorities for government action in the Kimberley, with its comparative advantages in grazing, agriculture and tourism require a very different approach to addressing long-standing difficulties across large areas of the Southern Rangelands.
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Finally, the data and information to guide government decision-making needs improving, so that the benefits and costs of current and proposed government service delivery and specific programs can be assessed in a manner that provides confidence that cost-effective outcomes are being delivered.

**Transitioning to the future**

The Figure below summarises the content and recommendations presented in this report.

<table>
<thead>
<tr>
<th><strong>The Present</strong></th>
<th><strong>The Future</strong></th>
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<tbody>
<tr>
<td>Lack of clarity about the rangeland future</td>
<td>A vision for the rangelands endorsed by community and governments</td>
</tr>
<tr>
<td>Managing a Pastoral Leasehold Estate</td>
<td>Managing a Rangeland Estate</td>
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<tr>
<td>Portfolio-specific considerations in decisions</td>
<td>Whole of government decision-making based on regional priorities considering all opportunities</td>
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<tr>
<td>Limited data and information to inform government decisions</td>
<td>Evidence-based decisions informed by adequate and transparent data and information</td>
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<tr>
<td>Capital and skill-limited businesses</td>
<td>Opportunities attract new people and new money</td>
</tr>
<tr>
<td>Limited markets and profitability in the cattle industry</td>
<td>More market options and improved production systems for the cattle industry</td>
</tr>
<tr>
<td>Rehabilitating land uses that cannot deliver economic benefits</td>
<td>Supporting transition to new land uses that deliver economic and environmental benefits</td>
</tr>
<tr>
<td>Struggling grazing businesses on Pastoral Leases</td>
<td>Multiple uses and users with resilient businesses on Rangeland Leases</td>
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<tr>
<td>Minor diversification activities on Pastoral Leases</td>
<td>Major agricultural precincts and tourism nodes based on adequate resources and timely land acquisition by government</td>
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<td>Degraded and degrading lands unable to support viable grazing businesses</td>
<td>Clear commitment to rangeland recovery through stewardship programs</td>
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<td>Inefficient service delivery in remote areas</td>
<td>Shared responsibilities for service delivery generating cost-efficiencies</td>
</tr>
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Introduction

This Report describes Sustainable Land Use and Economic Development Opportunities in the Western Australian Rangelands (‘the Project’) including:

- a profile of the environmental, economic and social situation in the rangelands in 2012;
- opportunities for development that may be facilitated by the Government’s Rangelands Reform Agenda; and
- recommendations for policy development to enable these and other opportunities to be achieved.

The Rangelands Opportunities Project was commissioned by the Department of Agriculture and Food Western Australia (DAFWA), with the Statement of Requirements set out in the RFQ AGR2012045A. The full Statement of Requirements is attached as Appendix A.

Many reviews have studied the rangelands over the last 30 years, but most have been industry-specific (reviews of the pastoral industry, strategies for achieving conservation outcomes, tourism strategies), subject-specific (economic development plans, natural resource management plans), or region-specific (Gascoyne Murchison Strategy). What has been missing is an assessment of the current situation and trends at a ‘whole of rangelands’ scale, encompassing all uses, industries, regions and stakeholders, and the interactions between them, followed by a plan to achieve significant beneficial change. This report, initiated by the need to support the Rangelands Reform Program, is an effort to address this deficiency.

1.1 Objectives

The objectives of the Project are to identify and detail economic development opportunities for WA’s Rangelands and provide recommendations and policy options that may augment the objectives of the Rangelands Reform Program. The Project was required to consider three components.

- Major trends and drivers of economic activity in Western Australia’s Rangelands:
  - an analysis of the current situation and trends in economic activity including synergies and dependencies between industry sectors;
  - a profile of the rangelands landholding community that identifies characteristics and trends in income of the pastoral landholding business community, including income derived from market-oriented livestock production activities and the relationship between income from livestock production activities and income from all other sources; and
  - perspectives and priorities of stakeholders including the pastoral, tourism and mining sectors, in regard to sustainable development of the rangelands.

- Response to pastoral viability and sustainability challenges:
  - advice on appropriate responses to the current state of pastoral landholdings in the rangelands. This should include analysis of the opportunities and risks associated with conventional structural adjustment responses such as lease amalgamations and alternative approaches based on new economic opportunities and/or government-supported measures to replace or supplement pastoral incomes. Such government supported measures may include, but not necessarily be limited to payments or concessions in return for stewardship and resource management services; and
  - recommendations framed by the land-holder profile and analysis of current situation and trends.

- Opportunities and constraints for sustainable development. Within the framework provided by the analysis of the current situation and trends, provide comment and recommendations that specifically relate to:
1 Introduction

— the outcomes of consultation with stakeholders (including pastoral, conservation, tourism, traditional owners and mining sectors) on a rangelands vision, including sectoral perspective and priorities;
— the future economic development and diversity outcomes that could flow from the current land tenure and land administration reforms;
— the principal opportunities and constraints associated with infrastructure, market access, regulation and government policy;
— the impact, opportunities and risks associated with the Australian Government’s Carbon Farming Initiative as currently assessed by DAFWA; and
— opportunities for the exploitation of native vegetation, especially sandalwood.

1.2 The Rangelands Reform Program

The Government of Western Australia has initiated a Rangelands Reform Program funded by the Royalties for Regions Program to identify and implement measures to address issues raised by previous reviews concerning the pastoral industry and conditions in the State’s rangelands. The Program reflects a shared commitment on the part of the Government, the pastoral industry and other stakeholders to effect fundamental change in the rangelands. The Program also seeks to create an enabling environment for the growth of sustainable, economically diverse rangeland communities through a combination of land tenure reform, encouragement of new investment opportunities and land uses, and the identification of measures to restore the rangeland’s productive capacity and ecological values.

Specific objectives of the Rangelands Reform Program are to:

• develop proposals for new forms of land tenure, including the options of perpetual pastoral leasehold and ‘Rangeland Leases’ to supplement existing pastoral leasehold tenure and to provide current and future landholders with greater flexibility, security and incentive to invest;
• facilitate use of the rangelands for conservation purposes, including the management of current and future leases for conservation or mixed land uses consistent with positive conservation outcomes;
• streamline government processes and procedures that affect new business development in the rangelands, including the development of a ‘one stop shop’ facility for Pastoral Lease diversification applications and approvals;
• identify region-specific economic development opportunities or adjustment responses to arrest the losses associated with the degradation of formerly productive land and water assets and/or the failure of businesses that are not well adapted to contemporary market conditions; and
• reduce regulatory impediments to rangelands economic development initiatives.
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1.3 Methodology

1.3.1 Definitions

Defining the rangelands for this Project

In this Project, WA’s ‘Rangeland Estate’, or alternatively the ‘rangelands’ are defined as that area held as Pastoral Leases including pastoral leasehold land acquired by the Department of Environment and Conservation (DEC). It includes other Crown Land tenures (including Unallocated Crown Land (UCL)), areas held by the Conservation Commission of WA as part of the Conservation Estate, local government land, and Indigenous land located within the general boundary of the pastoral areas. It does not include freehold land, or UCL to the east of the pastoral leasehold areas, or the Central Aboriginal Reserve which adjoins the Northern Territory and South Australian Borders.

The Pastoral Leasehold Estate is divided for administrative purposes into several regions by the Pastoral Lands Board (PLB) and the Department of Regional Development and Lands (DRDL), as shown in Table 1-1.

Table 1-1    Regions in the rangelands

<table>
<thead>
<tr>
<th>Region</th>
<th>Local Governments</th>
<th>Land Conservation Districts</th>
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<tbody>
<tr>
<td>Kimberley</td>
<td>Wyndham-East</td>
<td>Broome (BRM)</td>
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<td></td>
<td>Kimberley</td>
<td>Derby West Kimberley (DWK)</td>
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<td>Halls Creek</td>
<td>Halls Creek East Kimberley (HAL)</td>
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<td></td>
<td>Derby-West Kimberley</td>
<td>North Kimberley (NTK)</td>
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<td></td>
<td>Broome</td>
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<td>Pilbara</td>
<td>Port Hedland</td>
<td>De Grey (DEG)</td>
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<td>East Pilbara</td>
<td>East Pilbara (EAP)</td>
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<td>Roebourne</td>
<td>Roebourne (ROE)</td>
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<td></td>
<td>Ashburton</td>
<td>Ashburton (ASH)</td>
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<tr>
<td>Carnarvon/</td>
<td>Exmouth</td>
<td>Gascoyne-Wooramel (GAW)</td>
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<td>Gascoyne</td>
<td>Camarvon</td>
<td>Lyndon (LYN)</td>
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<td>Upper Gascoyne</td>
<td>Shark Bay (SBY)</td>
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<td></td>
<td>Shark Bay</td>
<td>Upper Gascoyne (UPG)</td>
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<td></td>
<td>Northampton</td>
<td>Binnu (BIN)</td>
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<td>Murchison</td>
<td>Wiluna</td>
<td>Wiluna (WIL)</td>
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<td>Meekatharra</td>
<td>Gascoyne Ashburton Headwaters (GAH)</td>
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<td></td>
<td>Murchison</td>
<td>Meekatharra (MEK)</td>
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<td>Cue</td>
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<td>Mullewa</td>
<td>Yalgoo (YAL)</td>
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<td>Mount Marshall (MML)</td>
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<td>Goodlands (GOO)</td>
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<td>Goldfields/</td>
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<td>Nullarbor</td>
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<td>Kalgoorlie-Boulder</td>
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The Pastoral Lands Board (PLB) and the Department of Regional Development and Lands (DRDL) manage the Pastoral Leasehold Estate.
1 Introduction

This regionalisation is used in some of the information presented in this Report. This is cross-referenced against the gazetted Land Conservation Districts (LCD) in the rangelands, which were used in defining the regions used in the Profile (see Section 1.3.2).

Definitions of landholding type

- A ‘Pastoral Lease’ is a discrete parcel of land as defined in the Land Administration Act 1997 (LAA), meaning a lease which is a Pastoral Lease of Crown Land granted under Section 101 or continued under Section 143 of the LAA.
- A ‘Pastoral Station’ (or just a ‘Station’) consists of one or more Pastoral Leases, and comprises an area of land that can be transferred between lessees in the market place, subject to the approval of the Minister for Lands. In the case where a Station comprises more than one Pastoral Lease, the individual Pastoral Leases cannot be transferred separately.
- A ‘Pastoral Business’ (or just a ‘Business’) consists of one or more Pastoral Stations held by the same lessee, with the total area of land run as one business entity. Where the Business comprises more than one Pastoral Station, the individual Pastoral Stations can be transferred separately.
- The ‘Pastoral Leasehold Estate’ – the total area of Crown Land held as Pastoral Leases in the rangelands (i.e. excluding those leases in the South West).

Definitions of domestic stock types

- A dry sheep equivalent (DSE) is an adult animal weighing 45 kg.
- A large stock unit (LSU), also termed a cattle unit (CU) is an adult steer or dry cow with a body weight of about 340 kg (Payne et al. 1988, p. 198).

1.3.2 Presentation of landholder profile in this report

Regions

The profile of the pastoral landholding business community is presented in this report, where possible, on the basis of a regional breakdown, and on the basis of Pastoral Lease ownership. The following regional definitions differ from those shown in Table 1-1 by including an ‘Agricultural region’ to recognise a number of smaller leases immediately east of the agricultural areas, and the separation of the Nullarbor area out of the Goldfields region. This analysis has also added a Meekatharra region which takes some areas out of the Murchison. The regions were chosen for this study to highlight regional differences – on the basis of shifts to cattle, or opportunities outside of pastoral enterprises.

The regional breakdowns were made on the basis of the following aggregations of LCD:

- Agricultural (BIN, GOO, MML, MOR, PER, YLG);
- Gascoyne (GAW, LYN, SBY, UPG);
- Goldfields (KAL, NEG, SAN);
- Kimberley (BRM, DWK, HAL, NTK);
- Meekatharra (GAH, MEK, WIL);
- Murchison (CUE, MTM, MUR, YAL);
- Nullarbor (NUE); and
- Pilbara (ASH, DEG, EAP, ROE).
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Where appropriate, Pastoral Lease data are presented on the basis of Businesses – being known aggregations of Pastoral Leases.

Pastoral Leaseholder categories
Pastoral Lease ownership data is reported on the following ownership classifications:

- Corporate Mining/Other (Corporate owners whose primary business is non-pastoral or agricultural, these are predominately mining companies);
- Corporate Pastoral (the primary business is in pastoral and/or agricultural activities);
- Crown Land (those Pastoral Leases that have recently been surrendered or forfeited);
- Department of Environment and Conservation (Ex Pastoral Leases that are managed by DEC for conservation objectives. Some are still to be formally transferred into the Conservation Estate.);
- Indigenous;
- Private (family business-owned but may be aggregations of multiple Stations); and
- Private Conservation.

The indicated DEC and Crown Land classifications represent areas that were once Pastoral Leases. The ex-Pastoral Leases that are currently operated by DEC are not gazetted as conservation reserves.

1.3.3 The Economic Development Working Group (EDWG)
The Project has been managed by an Economic Development Working Group, chaired by the Department of Agriculture and Food (DAFWA). Agencies represented on the EDWG are the Departments of Water (DOW), Indigenous Affairs (DIA), The Premier and Cabinet (DPC), Regional Development and Lands (DRDL), and Mines and Petroleum (DMP); and Tourism Western Australia.

The EDWG met four times through the Project, and reviewed the Pastoral Landholding Business Community Profile and the full Draft Report. URS consulted separately with the agencies represented on the EDWG.

1.3.4 Review of pastoral leasehold databases
DRDL, DAFWA and Landgate (the Valuer-General’s Office) collectively maintain data for all Pastoral Leases in the following areas:

- lease rentals, payments and arrears;
- domestic stock numbers as at 30 June each year;
- permitted activities (other than grazing) on Pastoral Leases, and the value of permitted activities;
- records of inspections of Pastoral Leases;
- information on the condition and trends in the rangeland resource (vegetation and soils); and
- lease value and lease sale data.

To value-add these data, URS undertook a broad survey of activities on Stations using the knowledge of local DAFWA field staff. This survey aimed to determine the types of non-grazing activities leaseholders may be undertaking, and to indicate the level of on- and off-lease income that may be supporting many Pastoral Businesses and their families.

All available data were collated and analysed by URS and used in presenting summary information by region in the Pastoral Landholding Business Community Profile.
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1.3.5 Review of documentary information
The information relating to the background, intent and actions in the Rangeland Reform Program has been summarised and presented.

There is a large amount of documentary information that has been published over many years relating to activities on Pastoral Leases. These cover the biophysical, economic and social situation in the Pastoral Leasehold Estate, strategies to address identified issues, reports on specific programs and initiatives and reports covering non-grazing activities on Pastoral Leases.

This large information source has been selectively reviewed for the items most relevant to the Scope of Requirements, and used in preparing the Pastoral Landholding Business Community Profile and in considering future options.

1.3.6 Consultation with stakeholders
URS has consulted via interview with those stakeholders identified by members of the EDWG as being significant to the Project’s Statement of Requirements. The list of stakeholder organisations consulted is presented in Appendix B. URS either met with or spoke to by telephone with 87 people from these organisations during the course of the Project.

Where possible the interviewed stakeholders were provided with a copy of the Statement of Requirements at least a day before conducting the interview. The interviews were relatively unstructured, focusing on three topics:

- What is happening in the rangelands now?
- What should be happening and how might this be achieved?
- Any commentary on the perceived impacts of the government’s Rangelands Reform Program?

In some of the latter interviews, some propositions were put to interviewees based on the first draft of the recommendations presented to EDWG on 17 August 2012.

The information provided by interviewees was recorded, and is presented thematically in Section 4. There has been no attempt made to validate the views of those interviewed, or to reconcile across the range of views expressed.

1.3.7 Assessing carbon farming opportunities and constraints
Outback Ecology was commissioned by URS to deliver the component of the Statement of Requirements that relate to the opportunities and risks of the Carbon Farming Initiative (CFI) in the WA rangelands. The methodology used by Outback Ecology involved:

- an outline of the key policy features of the CFI Legislation and Regulations and how they relate to the WA rangelands;
- a review and summary of the key sources that estimate the economic potential of carbon based enterprises;
- identification of the key technical / policy constraints that currently inhibit the ready development of carbon offset based enterprises in the region; and
- developing recommendations that can be implemented by the State Government.
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The Outback Ecology study involved a desktop assessment of the key sources of information related to the topic. Relevant assumptions were used to estimate the potential volume and value of the carbon industry to specific regions of the WA rangelands.

The Report presented by Outback Ecology (2012) contributed to assessing ‘the impact, opportunities and risks associated with the Australian Government’s CFI as currently assessed by DAFWA’ (see Scope of Requirements). This assessment is presented in Section 6.2.3.

1.3.8 The quality of data

Domestic stock data

The domestic stock number data were found to have considerable gaps in either the stock reported or years when the data were entered. For example, in some situations, stock numbers were reported for one year then not for a year or two, and then back to similar levels as in the previously reported year. These gaps were questioned as to whether a particular Pastoral Lease may have destocked over the period for which there were no data. Where it was known leases had not destocked, an average level was entered between the last and next entry. These gaps represented some 10 per cent of estimated stock numbers. This suggests that available data on domestic stock numbers may be underestimating actual numbers by that amount.

Social and economic data

Deriving economic and social data for the rangelands as defined for this Project was difficult. The economic and social data reported for the regions in which the rangelands occur include significant areas and activities outside the rangelands (as in the Mid West and Goldfields-Esperance Regions). The WA Government does not assess the aggregate benefits and costs of supporting the rangeland communities. There are varying figures for the economic return from rangeland industries, with some industries not reporting ‘rangeland-specific’ data. Further, URS was advised that the information collected about economic activities undertaken through Diversification Permits and Section 79 Special Leases is unreliable². Finally, although it is recognised that a large proportion of pastoral leaseholders earn part or most of their income ‘off-station’, there are no specific data.

Based on the above difficulties, URS has had to make a number of estimations of economic and financial transactions based on informed knowledge of what is happening on Pastoral Leases, surrogate data, and first principles. Where these estimations have been made, they are explained and qualified appropriately.

1.4 About this report

Section 2 describes the institutional setting for the rangelands, including the physical, socio-economic and governance arrangements.

Section 3 presents a Profile of the Pastoral Landholding Business Community. The section includes relevant information on the biophysical condition of the Pastoral Leasehold Estate, an analysis of activities on the estate, and available data and information on the economy of the estate. The data for the pastoral landholding business community are compared to the

² See Sections 3.2.16 and 6.3 for further information on Diversification and S-79 leases.
1 Introduction

Economic activity across all landholdings and businesses in the area outside the South West Land Division.

Section 4 presents a summary of the input from stakeholders consulted in respect of the Statement of Requirements for the Project. The list of stakeholder organisations is presented in Appendix B.

Section 5 reviews the administrative responses to the viability and sustainability challenges in the rangelands, and considers the effectiveness of these strategies, programs and plans.

Section 6 looks forward at the opportunities for changed and new economic and social developments in the rangelands and considers what these developments might deliver, and the role of the Rangelands Reform Program in progressing these opportunities.

Section 7 presents Conclusions and Recommendations.

Acknowledgements and references are included in Section 8.
The rangeland’s institutional environment

2.1 The physical setting

Approximately 87 per cent of Western Australia is considered as rangeland, being the area outside of the south west agricultural zone, not including the small areas of freehold land within this area in town sites and irrigated agricultural districts. Approximately half of this area is held as Pastoral Leases. The remaining land between the pastoral leasehold areas and the Northern Territory and South Australian borders is either Unallocated Crown Land (UCL) or is Aboriginal Reserve Land.

The area of rangelands that is leased for grazing occurs in three main biophysical assemblages. The Kimberley, north of Latitude 20° south, is located in the northern monsoonal belt, and experiences relatively short rainy summers, followed by long dry winters and springs. Much of the terrain is hilly and access into many areas is difficult. The major river systems of the Ord and Fitzroy are flanked by extensive plains supporting savannah woodlands and grasslands. The Kimberley is recognised by the WA Government for its unique and significant natural and cultural values (Government of Western Australia 2011).

Further south between Latitudes 20° and 25° south, the Pilbara has a semi-arid climate with most rain occurring as a result of cyclonic disturbances through the summer months. Winter rain is less frequent, and overall year-to-year variation in rainfall is high. The region contains the Chichester and Hamersley Ranges and is drained by several large seasonally flowing rivers, including the De Grey, the Fortescue and the Ashburton. The vegetation consists of hummock and tussock grasslands.

The Southern Rangelands occur in the remainder of the pastoral leasehold areas, with arid woodlands and shrublands extending south and east from the Gascoyne coast through to the treeless shrublands of the Nullarbor Plain. Towards Kalgoorlie, the acacia woodlands give way to the eucalypt woodlands, in the area recently defined as the Great Western Woodlands. In some areas, tussock grasslands are found on sandy soils, with hummock grasses becoming more common towards the east of the region. The climate is semi-arid throughout with low and highly variable rainfall. Lengthy dry periods can occur between short growing periods.

2.2 The socio-economic setting

2.2.1 The Rangeland Estate

Western Australia has a total area 2,527,620 km². Of this area, 7 per cent is freehold (176,933 km²), with the remainder being Crown Land (2,350,687 km²), with all of the uncleared area outside the South West Land Division (87 per cent of the total) considered as rangeland. The distribution of land tenure type is presented in Table 2-1.

This report is concerned with all of the rangeland areas (2,199,029 km²), although the main focus is on the Pastoral Leasehold Estate which includes 872,500 km² or about 40 per cent of the total rangeland area. This focus is because Rangelands Reform Program is about supporting sustainable land and economic development on those lands.

The other major ‘rangeland tenure’ is the extensive area of UCL and Unmanaged Reserves (UMR) most of which is found to the east of the ‘pastoral areas’ or in the Great Western Woodlands between the Eastern Goldfields and the agricultural areas. There are also areas of Indigenous land and conservation reserves through this area. There are some areas of UCL/UMR located within the pastoral leasehold ‘matrix’, mainly associated with the Hamersley and Chichester Ranges which are
also of interest to this Project. Similarly, the Statement of Requirements has implications for management of the conservation reserves located within the pastoral leasehold matrix.

Table 2-1  Land tenure type in WA

<table>
<thead>
<tr>
<th>Land tenure type</th>
<th>Area km² (%)</th>
<th>Responsible agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freehold land</td>
<td>177,933 (7%)</td>
<td>Not relevant</td>
</tr>
<tr>
<td>Pastoral leases (excludes PLs managed by DIA, includes PLs with known mine operators and leases with abandoned mines)</td>
<td>786,089 (31.1%)</td>
<td>DRDL/DAFWA</td>
</tr>
<tr>
<td>Indigenous areas (includes PLs managed by DIA)</td>
<td>369,047 (14.6%)</td>
<td>DIA/ALT</td>
</tr>
<tr>
<td>Unallocated Crown Land/ Unmanaged Reserves</td>
<td>963,023 (38.1%)</td>
<td>RDL, FESA, DEC</td>
</tr>
<tr>
<td>Parks and Conservation Reserves</td>
<td>194,516 (7.3%)</td>
<td>DEC</td>
</tr>
<tr>
<td>Other reserves</td>
<td>48,025 (1.9%)</td>
<td>LGAs plus state agencies</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2,527,620 (100%)</strong></td>
<td></td>
</tr>
</tbody>
</table>

Source: Information provided by the Department of Regional Development and Lands (DRDL) 2012.

2.2.2 People and economies

The WA rangelands are sparsely populated, with most people living in a few major towns, such as Kalgoorlie-Boulder, Carnarvon, Karratha, Port Hedland, Broome and Kununurra. Based on information contained in regional profiles produced by the Department of Regional Development and Lands (DRDL), the people and economies in the rangelands are summarised in Table 2-2.

Table 2-2  The people and economy in the rangelands

<table>
<thead>
<tr>
<th>Item</th>
<th>Gascoyne**</th>
<th>Goldfields- Esperance*</th>
<th>Mid West*</th>
<th>Pilbara</th>
<th>Kimberley**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>9,865</td>
<td>58,727</td>
<td>54,984</td>
<td>47,528</td>
<td>35,000</td>
</tr>
<tr>
<td>Indigenous prop’n of population %</td>
<td>17.2%</td>
<td>10.7%</td>
<td>10.6%</td>
<td>16.9%</td>
<td>47.5%</td>
</tr>
<tr>
<td>Value of industry activities</td>
<td>$0.64 bn</td>
<td>$11.67 bn</td>
<td>$4.94 bn</td>
<td>$62.98 bn</td>
<td>$2.16 bn</td>
</tr>
<tr>
<td>Gross Regional Product</td>
<td>$0.651 bn</td>
<td>$8.1 bn</td>
<td>$4.5 bn</td>
<td>$9.2 bn</td>
<td>$2.2 bn</td>
</tr>
<tr>
<td>Value of mining/ petroleum*</td>
<td>$118 m</td>
<td>$8,669 m</td>
<td>$2,537 m</td>
<td>$62,665 m</td>
<td>$1,159 m</td>
</tr>
<tr>
<td>Value of tourism</td>
<td>$197 m</td>
<td>$222 m</td>
<td>$229 m</td>
<td>$249</td>
<td>$275 m</td>
</tr>
<tr>
<td>Value of agriculture</td>
<td>$78 m</td>
<td>$587 m</td>
<td>$855 m</td>
<td>$67 m</td>
<td>$187 m</td>
</tr>
<tr>
<td>Labour force</td>
<td>5,535</td>
<td>32,954</td>
<td>28,309</td>
<td>25,419</td>
<td>16,746</td>
</tr>
</tbody>
</table>

Source: Regional Profiles 2011 except for * which are taken from DMP (2011) p. 36.
* The Goldfields and Mid West Regions include significant populations and economic activities outside the rangelands, especially in agriculture. **Value of agriculture includes pastoral and horticulture in Gascoyne and Kimberley.

2.2.3 The Pastoral Leasehold Estate

The provided data indicate that at August 2012 there were 507 Pastoral and ex-Pastoral Leases, of which 440 are still held as Pastoral Stations³. These Stations are aggregated into 333 Pastoral Businesses. The 440 Pastoral Stations cover 87,250,000 hectares which represents about 34 per cent of the State’s area. The Pastoral Leasehold Estate and the potential carrying capacity (PCC), as

³ as defined by the Pastoral Lands Unit of DRDL and in Section 1.3.2.
2 The rangeland's institutional environment

measured by dry sheep equivalents (DSE) are shown by region in Table 2-3. The Kimberley has 24 per cent of the Pastoral Lease area and 50 per cent of the potential carrying capacity.

<table>
<thead>
<tr>
<th>Region</th>
<th>Leases</th>
<th>Stations</th>
<th>Station Businesses</th>
<th>Pastoral Lease Area ('000 ha)</th>
<th>% of Pastoral Area</th>
<th>Total PCC (DSE)</th>
<th>% of PCC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural</td>
<td>19</td>
<td>14</td>
<td>14</td>
<td>987</td>
<td>1%</td>
<td>64,557</td>
<td>1%</td>
</tr>
<tr>
<td>Gascoyne</td>
<td>86</td>
<td>67</td>
<td>51</td>
<td>10,001</td>
<td>11%</td>
<td>1,046,273</td>
<td>9%</td>
</tr>
<tr>
<td>Goldfields</td>
<td>75</td>
<td>63</td>
<td>50</td>
<td>12,791</td>
<td>15%</td>
<td>761,736</td>
<td>7%</td>
</tr>
<tr>
<td>Kimberley</td>
<td>94</td>
<td>90</td>
<td>62</td>
<td>21,090</td>
<td>24%</td>
<td>5,777,212</td>
<td>50%</td>
</tr>
<tr>
<td>Meekatharra</td>
<td>58</td>
<td>54</td>
<td>40</td>
<td>13,045</td>
<td>15%</td>
<td>813,874</td>
<td>7%</td>
</tr>
<tr>
<td>Murchison</td>
<td>88</td>
<td>70</td>
<td>64</td>
<td>9,236</td>
<td>11%</td>
<td>684,018</td>
<td>6%</td>
</tr>
<tr>
<td>Nullarbor</td>
<td>20</td>
<td>20</td>
<td>11</td>
<td>6,080</td>
<td>7%</td>
<td>407,592</td>
<td>4%</td>
</tr>
<tr>
<td>Pilbara</td>
<td>67</td>
<td>62</td>
<td>41</td>
<td>14,020</td>
<td>16%</td>
<td>1,775,181</td>
<td>15%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>507</strong></td>
<td><strong>440</strong></td>
<td><strong>333</strong></td>
<td><strong>87,250</strong></td>
<td><strong>100%</strong></td>
<td><strong>11,534,424</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Source: Information provided by DAFWA 2012.

2.3 Governance of the Pastoral Leasehold Estate

2.3.1 General governance

In general terms, governance of rangeland areas that are held as Pastoral Leases occurs as for other landholdings in Western Australia.

Local governments throughout the rangelands maintain a local road network that services pastoral leaseholders, and other travellers (such as miners, government officers, and tourists). As with any other landholder, pastoral leaseholders pay shire rates with the rate varying between about 2.5 cents and 7.3 cents in the dollar of unimproved value\(^4\). However, shire rates contribute a relatively small proportion of the total revenues for shires in rural and remote areas. Whereas metropolitan shires raise about 60 per cent of their revenue through rates, in rural and remote shires about 30 per cent is raised through rates. The shortfall is met by grants from the WA and Australian Governments, with funding for local roads an important component.

In recognition of isolation from mainstream public services, specialist services provided to people living on Pastoral Leases include support for education via the School of the Air, medical services via the Royal Flying Doctor Service and visiting clinics. There are also government schemes providing financial assistance with remote power generation, water supplies (via the Rural Water Plan), education of children away from home, and telecommunications.

2.3.2 Land use and government responsibilities in the rangelands.

In the Environmental Protection Authority’s (EPA 2004) Position Statement No. 5, examples of the responsibilities for governance of land tenure in the rangelands were summarised as shown in Table 2-4 below.

\(^4\) Based on a sample of 7 rangeland local governments
2 The rangeland’s institutional environment

Table 2-4  Examples of land use and government responsibilities in the rangelands5.

<table>
<thead>
<tr>
<th>Land use</th>
<th>Authority with prime responsibility</th>
<th>Statutory Powers</th>
<th>Supporting Agencies</th>
<th>Environmental requirements</th>
</tr>
</thead>
</table>
| Pastoral Lease       | Pastoral Lands Board Commissioner for Soil and Land Conservation | Land Administration Act 1997  
Soil and Land Conservation Act 1945                                               | Department of Regional Development and Lands  
Department of Agriculture and Food                                                 | Ecologically sustainable pastoral industry  
Ensure lessees meet conditions specified in the Act  
Ensure activities do not degrade soil and land                                      |
| Mining tenements     | Department of Mines and Petroleum                        | Mining Act 1978 Petroleum and Geothermal Energy Resources Act 1967             | Department of Environment and Conservation                                            | Ensure lessees meet environmental requirements  
May refer proposals to EPA                                                                  |
| Petroleum and Geothermal Energy titles | Conservation Commission of Western Australia | Conservation and Land Management Act 1984  
Wildlife Conservation Act 1950                                                     | Department of Environment and Conservation                                            | Manage for purposes of conservation                                                        |
| Conservation reserve (various categories) | Conservation Commission of Western Australia | Conservation and Land Management Act 1984  
Wildlife Conservation Act 1950                                                     | Department of Environment and Conservation                                            | Manage for purposes of conservation                                                        |
| Special leases       | Department of Regional Development and Lands  
Local Government                                      | Land Administration Act 1997  
Local Government Act 1995                                                           | Not applicable                                                                       | Ensure lessees meet environmental requirements, or general requirements (if no specification) |
| Unallocated Crown Land | Department of Regional Development and Lands             | Land Administration Act 1997                                                     | Department of Environment and Conservation                                            | Manage for purposes of conservation                                                        |


Note: the table does not list the many other statutory responsibilities that are unrelated to tenure.

2.3.3 Specific Acts and Statements relevant to Pastoral Leases

Acts of special importance in managing the Pastoral Leasehold Estate are presented below.

Land Administration Act 1997 (LAA)

The Pastoral Lease provisions of Land Administration Act 1997 (LAA) (see Part 7) are administered by the Pastoral Lands Board (PLB) and the Minister for Lands, with operational services provided by Pastoral Lands Unit of DRDL and DAFWA. The functions of the PLB include the development of policies to prevent land degradation (s95d); to ensure pastoral leases are managed on an ecologically sustainable basis (s95c), and; to develop policies aimed at the rehabilitation of degraded land (s95e).

5 The responsible Government agencies have been updated from the original table to reflect current arrangements.
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The Act specifies the requirements for management of land on a Pastoral Lease as follows.

(1) ‘A pastoral lessee must, to the satisfaction of the Board, at all times manage and work the land under the lease to its best advantage as a pastoral property.

(2) The lessee must 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.

(3) Except with the written permission of the Board, the land under a pastoral lease must be worked as a single pastoral unit.

(4) The lessee must maintain the indigenous pasture and other vegetation on the land under the lease to the satisfaction of the Board.

(5) In satisfying itself for the purposes of subsection (4), the Board must seek and have regard to the advice and recommendations of the Commissioner [of Soil and Land Conservation] on the matter.

(6) In subsection (2) — stock means —

(a) authorised stock; and

(b) stock for which a permit has been issued under section 122A.’

Pastoral leaseholders pay an annual rent to the DRDL and must supply an annual return summarising activities over the previous 12 months. Pastoral leaseholder compliance with land use and management obligations under the LAA is monitored by DAFWA for the PLB under a Memorandum of Understanding. Where monitoring indicates an elevated risk of non-compliance, DAFWA may perform ground inspections of pastoral leases. The principal focus of these inspections is the condition of the base resource of soils and vegetation. Comment may also be made about infrastructure condition and management activities. If remedial action is required, the PLB may issue a default notice. Should the Pastoral Lessee not comply with this default notice then DRDL would act to enforce a penalty. Alternately, the PLB may refer the matter to the Commissioner for Soil Conservation under the Soil and Land Conservation Act 1945.

More information about the roles and functions of the PLB is presented in Section 2.3.4.

Agriculture and Related Resources Protection Act 1976 (ARRP Act) and Biosecurity and Agriculture Management Act 2007 (BAM Act)

The Agriculture and Related Resources Protection Act 1976 (ARRP) is administered by the Minister for Agriculture and Food and provides for prevention and control of declared plants and animals in the pastoral area. Previous structures, functions and activities authorised through the ARRP Act are now transitioning to operation under the Biosecurity and Agriculture Management Act 2007 (BAM). The BAM Act requires the Minister for Agriculture and Food to establish a Biosecurity Council. The provisions of the Act relating to the Council came into operation in October 2007 and the Council was established early in 2008.

Regional Biosecurity Groups (RBGs) established under the BAM Act have replaced the old Zone Control Authorities (ZCAs) under the ARRP Act. RBGs request the Minister to impose rates in their area, the proceeds of which are matched 50:50 by the Government. The RBGs decide what the monies are to be spent on (with the approval of the DAFWA Director General).
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DAFWA’s role is also changing in relation to the groups and is increasingly focussing on planning and assisting groups to become independent. Operational services provided by DAFWA are on a cost recovery basis. The RBGs are in the process of making the transition to operating fully under the BAM Act and the ARRP Act will be repealed when the BAM Act comes fully into force. Pastoral leaseholders will still have a duty to control declared plants and animals on their properties under the BAM Act and the capacity to carry out works at a landholder’s cost remains (advice from DAFWA 2012).

Soil and Land Conservation Act 1945
The Soil and Land Conservation Act 1945 is administered by the Minister for Agriculture and Food with advice from the Soil and Land Conservation Council. Operational services are provided by DAFWA. The Act empowers the Commissioner of Soil and Land Conservation to take action if instances of erosion or other damage to land and water resources are encountered. The Commissioner can issue a ‘Soil Conservation Notice’ which requires the landholder to take action to address the identified problem. Failure to act can result in penalties being applied.

Aboriginal Heritage Act 1972 (AHA)
Although it is an offence under the AHA Act to knowingly or unknowingly disturb an Aboriginal site, URS is not aware of instances where pastoral lessees have undertaken heritage surveys prior to erecting new infrastructure (e.g. fences, watering points).

The PLB and the Department of Indigenous Affairs (DIA) have said that ‘pastoralists can help protect and promote Aboriginal history and culture by identifying Aboriginal places of interest and reporting them to the DIA’, with the additional comment that ‘preserving Aboriginal sites can be achieved with relative ease and with little cost to the pastoralist.’ A spokesperson from the DIA is quoted as saying ‘Pastoralists should be aware that although they are legally bound to leave a site undisturbed, modifying development should be quite simple because the extensiveness of most pastoral land allows for flexibility ….. it may be as easy as building part of a fence around a site instead of through it.’ (Pastoral Lands Board 2005, p. 5).

The implication is that it is a pastoral leaseholder’s responsibility, in the course of legitimate pastoral activities, to look out for items or places of Aboriginal heritage, and to adjust management to avoid causing harm. However, there is no statement about the necessity of formal heritage surveys to be undertaken, provided that the activity is aligned with the proper operation of a pastoral business on their lease.

Other Acts
Other Acts of importance are:

- Mining Act 1978.
- Petroleum and Geothermal Resources Act 1967.
- Native Title Act 1993 (Cwth).
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The Environmental Protection Authority’s Position Statement on the rangelands
In 2004, the Environmental Protection Authority (EPA) published a Position Statement on environmental protection and ecological sustainability in the rangelands (EPA 2004). The EPA considered the land use and management principles for environmental protection and ecological sustainability of the rangelands to be:

1. Environmental protection and ecological sustainability to be achieved irrespective of economic conditions at the enterprise and industry scale;
2. Environmental and ecological sustainability objectives to be set, and standards and criteria established;
3. All enterprises to be managed in an environmentally sound manner;
4. Biodiversity to be conserved through both reservation and off-reserve conservation;
5. Cultural heritage to be protected;
6. Landowners and managers to assume responsibility for environmental performance;
7. Stewardship of the rangelands to be shared between users; and
8. Accurate and interpretable information on environmental condition and trends to be used at all levels of management.

In the Position Statement, the EPA set out its operational objectives for environmental protection in the rangelands as:

- protection of biodiversity in the rangeland;
- ecologically sustainable use and management of productive capacities;
- protection of other values including water resources, air quality, landscape amenity, karst and rock art, and coastal environmental values; and
- effective monitoring and audit.

2.3.4 The role of the Pastoral Lands Board
As noted in Section 2.3.3, the Land Administration Act 1997 (see Part 7) authorises the establishment, role and functions of the Pastoral Lands Board (PLB). Under Section 95 of the LAA, the PLB functions are to:

- advise the Minister on pastoral industry policy and the administration of Pastoral Leases;
- administer Pastoral Leases in accordance with Part 7 of the LAA;
- ensure Pastoral Leases are managed on an ecologically sustainable basis;
- develop policies to prevent the degradation of rangelands;
- develop policies to rehabilitate degraded rangelands and to restore their pastoral potential;
- consider applications for the subdivision of pastoral land and make recommendations to the Minister in relation to them;
- establish and evaluate a system of pastoral land monitoring sites;
- monitor the numbers and the effect of stock and feral animals on pastoral land;
- conduct or commission research into matters considered relevant to the pastoral industry;
- provide any other assistance or advice that the Minister may require in relation to the administration of Part 7 of the Act; and
- exercise or perform such other functions as may be given under the Act or any other Act.

The DRDL’s State Land Services Division supports the Board in achieving these outcomes through its Pastoral Land Unit, with DAFWA providing inspectorial and range monitoring support.
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The PLB does not present an Annual Report to Parliament, although the Pastoralism for Sustainability Pastoral Industry Working Group (2003) recommended that a Report be compiled for the (then) Natural Resource Management Council and EPA on the state of the rangelands. This recommendation was not acted upon.

Policies
The PLB has the following policies in place, which are shown with the Policy Statement.

- **PLB vacancies.** The PLB seeks to attract members with experience and expertise in their specialist area who are committed to carrying out the duties of a Member of the PLB effectively. The PLB will endeavour to notify suitable and potential candidates when PLB positions become vacant.

- **Policy No.1 - Agistment of authorised livestock on a pastoral lease.** Agistment of authorised livestock on Pastoral Lease land will require the approval of the PLB. Approval will be in accordance with the present and/or potential carrying capacity of each lease, in association with the current Rangeland Condition Assessment (RCA).

- **Policy No.7 - Stocking of a pastoral lease.** Stock numbers on a Pastoral Lease may, except where the PLB sees fit to exercise its powers under section 111 of the LAA, be determined by the Lessee. Stock numbers should be determined with a view to reflecting the sustainable carrying capacity of the Pastoral Lease whilst ensuring that the lease is managed to its best advantage as a pastoral property.

- **Policy No.11 - Subleasing of part of a pastoral lease.** From time to time a pastoral leaseholder may wish to sublease part of their lease area to a third party. The subleasing of all or part of a lease requires the written approval of the Minister (or their delegate). The subleasing of only a part of a lease also requires the written permission of the PLB.

- **Policy No.13 - Rent relief.** In instances where a Pastoral Lease is adversely affected by a disaster or a lessee is suffering personal financial hardship as a result of poor economic conditions in the pastoral industry, the PLB may recommend to the Minister that the lessee be granted an appropriate level of rent relief.

- **Policy No.14 - Rangeland condition monitoring.** The new rangeland condition monitoring system requires pastoral lessees to report on rangeland condition trend as part of the Annual Return requirements under section 113 of the LAA.

- **Policy No.3 - Permits for Cultivation of Non-Indigenous Plant Species on a Pastoral Lease.** The cultivation of non-indigenous plant species can improve the viability of a Pastoral Lease however, some species can or have the potential to adversely affect the environment. A permit from the PLB is required for the cultivation of any plant species not indigenous to Western Australia.

Pastoral Lease reissuance in 2015
All Western Australian Pastoral Leases are due to expire in 2015. The Minister for Lands previously offered renewal for all but a few of the leases, with the new term to be the same as the current lease in each case, and in accordance with the provisions of the Land Administration Act 1997.

The expiry of the leases in 2015 is seen by the State Government as an appropriate time to negotiate exclusions from pastoral leases of key areas of land identified for public purposes. Those leases affected by exclusion areas were advised in April 2005.

The offer of lease renewal in 2015 is subject to the following conditions.
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- Compliance with lease conditions, including stocking requirements and maintenance of infrastructure, at the time of expiry on 30 June 2015.
- There being no Soil Conservation Notices or other orders by the Commissioner of Soil and Land Conservation in force.
- There being no unfulfilled requirements of the Commissioner of Soil and Land Conservation and/or the Pastoral Lands Board in relation to the observance of lease conditions under the Soil and Land Conservation Act 1945 and the Land Administration Act 1997.
- The exclusion of areas from the existing lease that may be required for public works, conservation, national park, nature reserve or other State purposes (see comment above).
- The annual lease rental for the lease up to 30 June 2015 will apply to the renewed lease. The rental review period for the renewed lease will continue to apply every five years in accordance with Section 123(4) of the Land Administration Act 1997. The first rent review for the renewed lease will be on 1 July 2019.


Diversification Permits

The PLB presents the following statement about Diversification Permits on its website (PLB 2012).

'Under section 106 of the Land Administration Act 1997 (WA), pastoral leases must not be used for purposes other than pastoral purposes, except in accordance with a Permit issued under Part 7 Division 5. Permits can only be issued on approval from the Pastoral Lands Board to pastoral lessees seeking to carry out any other activity on the lease other than the primary pastoral use of grazing native vegetation with authorised stock.' (PLB 2012).

'Permits are not transferable to a third party and permit activities may only be conducted by a pastoral lessee or their employees. Therefore, if you have a permit, as the pastoral lessee you must be in control of the permitted activity. If the Pastoral Lease is sold, the permit cannot be transferred to the new lessee. However, it may be possible for the new lessee to apply for a new permit for the same activity through a 'streamlined' process, under which a permit may be issued within a shorter timeframe than usual' (PLB 2012).

Permits may be issued by the PLB to the Pastoral Lease holder under the following sections of the LAA.

- s.119 - Sowing of non-indigenous pastures. For the lessee to sow and cultivate specific varieties of non-indigenous pasture on specified land area(s) under the lease. A permit under this section may include a permit for the sale of any produce of the pasture permitted. An approved pasture species list has been developed and pastoral lessees are advised to contact their local DAFWA rangelands office for plant species advice prior to developing a Permit application.
- s.120 - Agricultural uses of land under a lease. For the lessee to use specified land under the lease for crop, fodder, horticultural or other specified kind of agricultural production if the proposed use is reasonably related to the pastoral use of the land.
- s.121 – Low-key pastoral-based tourism. To allow the pastoral lessee to use specific land area(s) for pastoral-based tourist activities of a specified kind if the activities will be purely supplementary to the pastoral use of the lease.
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- s.122A - Keep or sell prohibited stock. To keep prohibited stock on the land under a Pastoral Lease and/or sell prohibited stock. Prohibited stock are those classes of animals not ‘authorised’. Authorised stock are controlled livestock managed according to industry codes of practice for husbandry and identification prescribed as: Sheep (Ovis aries); Cattle (Bos indicus, Bos taurus); Horses (Equus caballas); Goats (Capra hircus); and Stock kept for domestic or household use.

- s.122 - Non-pastoral use of enclosed and improved land. The use of specified land under the lease for any non-pastoral purposes if the land has been enclosed or improved. An application must specify the use proposed, any facility proposed to be constructed, and the areas of land proposed to be used (PLB 2012).

The current number of Diversification Permits (by type) and the history of permit applications is shown in Table 2-5 and Table 2-6. Approximately half of current permits and historical applications have been for pastoral-based tourist activities.

Table 2-5 Permits current at June 2012

<table>
<thead>
<tr>
<th>Current</th>
<th>s.118</th>
<th>s.119</th>
<th>s.120</th>
<th>s.121</th>
<th>s.122</th>
<th>Total</th>
</tr>
</thead>
</table>

Source: Information provided by DRDL 2012.

The data shown in Table 2-6 are for permits received at first application. Many of these permits are no longer current and in some instances the parameters of the permit application changed after this first application. Also these data do not provide any measure of how many of these applications were implemented by the applicants (advice received from DRDL 2012).

Table 2-6 History of permit applications submitted for new activities

<table>
<thead>
<tr>
<th>Year</th>
<th>s.118</th>
<th>s.119</th>
<th>s.120</th>
<th>s.121</th>
<th>s.122</th>
<th>Total</th>
</tr>
</thead>
</table>

Source: Information provided by DRDL 2012.
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Advice from Landgate suggests there are many limitations to finding alternative (especially profitable) land uses on Pastoral Leases in remote areas. These include:

- low (and poor reliability) of annual rainfall;
- limited labour availability and competition for available labour from mining operations;
- lack of knowledge and area-specific cultural information for cropping and agriculture. New crops are often trial and error;
- limited management skills available to lessees embarking on alternative land uses. For example, the skill set for irrigated agriculture is vastly different from that required for cattle management; and
- high costs of taking production to market. This can be overcome with cheaper back loading rates where leases adjoin main highways.

Native title
The PLB position in respect of native title is presented below.

“[The issuing of any of the Land Administration Act 1997 (WA) (Land Act) permits may entail a ‘future act process’ if the act of issuing that permit affects the rights and interests of native title. ‘Subdivision G – Future acts and primary production’ of the Native Title Act 1993 (Cwlth) (Native Title Act), section 24GB – ‘Acts permitting primary production on non-exclusive agricultural and pastoral leases’, sets out those activities that may not entail a ‘future act’ under this Act. Generally (but not exclusively), permits for pastoral use purposes issued under sections 119, 120, 121 and 122A of the Land Act, do not entail a ‘future act’ and as such are permitted under the Native Title Act. Non-pastoral activity however covered by section 122 of the Land Act, does require scrutiny to determine its native title status” (PLB 2012).

Given the complexity of the Native Title Act 1993 (NTA), when it is considered there may be a native title impact, permit applications are referred for legal advice. If a permit application is found to be impacted by the NTA, applicants are advised by the PLB to pursue a S-79 lease (see Section 2.3.5) instead of a pastoral diversification permit, as the higher form of tenure may be obtained for the same investment in negotiating an Indigenous Land Use Agreement (ILUA). Stakeholders advised URS that the processes involved in securing an alternative tenure or permit may take between two and three years.

There are several categories of ‘future acts’ defined in the NTA. The most likely category applying to diversification activities on Pastoral Leases is Subdivision L, Section 24LA—Low impact future acts.

s24LA Low impact future acts

(1) This Subdivision applies to a future act in relation to particular land or waters if:

(a) the act takes place before, and does not continue after, an approved determination of native title is made in relation to the land or waters, if the determination is that native title exists; and

(b) the act does not consist of, authorise or otherwise involve:

(i) the grant of a freehold estate in any of the land or waters; or

(ii) the grant of a lease over any of the land or waters; or

(iii) the conferral of a right of exclusive possession over any of the land or waters; or
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(iv) the excavation or clearing of any of the land or waters; or
(v) mining (other than fossicking by using hand-held implements); or
(vi) the construction or placing on the land, or in the waters, of any building, structure, or other thing (other than fencing or a gate), that is a fixture; or
(vii) the disposal or storing, on the land or in the waters, of any garbage or any poisonous, toxic or hazardous substance.

It is URS’ understanding that allocation of new rights to pastoral leaseholders such as rights to sandalwood or carbon would be considered as a ‘future act’ under the NTA, and would hence need to be addressed by a consent determination and addressed in an ILUA. Discussions held with Native Title Representative Bodies (see list in Appendix B) suggested that they would advise their clients to seek an ILUA in these cases.

2.3.5 Alternative Tenure Options

Where proposed activities over land comprised in a Pastoral Lease are not eligible under a Diversification Permit, a number of alternative tenures under the LAA may be considered.

Section 79 - General Lease

The Minister for Lands may grant a Lease over a parcel of State (Crown) land for any purpose and subject to any conditions. The Minister may require a performance bond for any such lease. For a Section 79 (S-79) lease to be issued, the affected land would need to be surrendered out of the relevant Pastoral Lease and legal access be determined. In line with National Competition Policy, preference is for competitive release, but under certain circumstances a private treaty arrangement may be entered into (PLB 2012).

The State has the legislative authority to compulsorily take land from a Pastoral Lease without the consent of the pastoral leaseholder and subsequently issue a S-79 lease over that land to a third party. As discussed above, this has National Competition Policy implications that require careful consideration. In practice, compulsory acquisition is reserved for public works only, although its potential use in further development of opportunities in the rangelands is considered in later sections of the Report (see Section 7.3.5).

Section 79 of the LAA provides for an excision of an area from a Pastoral Lease and allows, for example, tourism development by a third party. This may allow development of that area by a third party. Agency advice indicates that a third party can obtain a S-79 lease even without the consent of the pastoral leaseholder provided merit is seen in the proposal, although where access through a Pastoral Lease is required to reach the S-79 lease, that access will need to be negotiated with the pastoral leaseholder.

A landholding created through excision allows for the issue of a lease or other tenure, in the process introducing obligations such as future act negotiations under the NTA. It may be possible for a developer to enter into an ILUA (Tourism WA, 2012).

The Property and Valuations section of Landgate provided URS with data on the number and type of S-79 leases that are directly linked by ownership to an adjoining Pastoral Lease (see Table 2-7). There are 46 leases in total and of those only six are associated with tourism accommodation or tourism activity purposes. This may suggest little demand for this type of lease or that a S-79 lease
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...does not suit the purpose of tourism activities. Consultation did not provide strong evidence either way.

Advice from Landgate suggested there are few new general or special leases (S-79 leases) being created due to the necessity (and cost) of negotiating with registered claimants or determined native title holders. Diversification permits do overcome this hurdle however they are not transferrable and the tenure cannot be used as collateral. This has been a criticism of the current diversification permit system particularly where a proposed land use requires a large capital investment in that the underlying land cannot be used as collateral.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Number of leases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grazing</td>
<td>34</td>
</tr>
<tr>
<td>Tourism accommodation</td>
<td>5</td>
</tr>
<tr>
<td>Tourism activity</td>
<td>1</td>
</tr>
<tr>
<td>Stock yards</td>
<td>1</td>
</tr>
<tr>
<td>Irrigated Agriculture</td>
<td>4</td>
</tr>
<tr>
<td>Taking of water</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>46</strong></td>
</tr>
</tbody>
</table>

Source: Information provided by Landgate 2012.

Section 83 - Lease for the benefit of Aboriginal people
Section 83 empowers the Minister to grant leases for a fixed term or in perpetuity for the purpose of advancing the interests of any Aboriginal person or persons to that person or persons or an approved body corporate. The affected land would need to be surrendered out of the relevant Pastoral Lease prior to a S-83 lease being granted (PLB 2012).

Section 91 - Licence for co-existence with Pastoral Leases
The Minister may grant a licence that is a contractual, non-exclusive right authorising a use of land to do an act which would otherwise be a trespass or illegal. The Minister will determine the fees and conditions to be applied and may fix or extend the duration of such agreements. Licences can co-exist with Pastoral Leases and with the agreement of the pastoral lessee, can be held by third parties. A Section 91 Licence may permit a non-exclusive right for a specified short-term tourism activity. This licence provides right of access and a right to conduct an activity but does not allow ground disturbance or for any construction of infrastructure.

Recent examples of Licences issued over specified areas of Pastoral Leases have included walking tours and four-wheel drive recreational operations (PLB 2012).

2.4 The costs and returns of administering Pastoral Leases

2.4.1 Pastoral Lease rents
As of 1 July 2012 the total Pastoral Lease rent was $4,508,175 per annum (ex GST). Regional details are presented in Table 2-8. Examples of the range of rents follow:
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- the median rent paid is $4,598 per Station, whereas the average rent paid is $9,952 per Station, representing 5.18 c/ha (excl. GST);
- rents paid by South West Stations represent a lifestyle value rather than a pastoral use value (none of the South West leases will be renewed in 2015);
- the minimum rent paid for a Pastoral Lease excluding South West Stations is $1,500 (excl. GST) paid for 10 leases in the pastoral areas; and
- the highest rent paid is $94,641 p.a. (excl. GST) for a Station in the Kimberley.

Table 2-8 Regional summary of Pastoral Leases and current rents (2012-2013)

<table>
<thead>
<tr>
<th>Region</th>
<th>Average area (ha)</th>
<th>Average rate (c/ha)</th>
<th>Average rent</th>
<th>Average PCC* (LSU)</th>
<th>Average PCC* (DSE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kimberley</td>
<td>230,406</td>
<td>11.94</td>
<td>$27,509</td>
<td>8,976</td>
<td>62,830</td>
</tr>
<tr>
<td>Pilbara</td>
<td>229,831</td>
<td>5.40</td>
<td>$12,402</td>
<td>4,142</td>
<td>29,175</td>
</tr>
<tr>
<td>Carnarvon/ Gascoyne</td>
<td>149,405</td>
<td>3.45</td>
<td>$5,155</td>
<td>2,102</td>
<td>14,711</td>
</tr>
<tr>
<td>Murchison</td>
<td>176,602</td>
<td>2.31</td>
<td>$4,087</td>
<td>1,689</td>
<td>11,822</td>
</tr>
<tr>
<td>Goldfields/ Nullarbor</td>
<td>207,851</td>
<td>1.64</td>
<td>$3,410</td>
<td>1,851</td>
<td>12,957</td>
</tr>
<tr>
<td>South West</td>
<td>2,834</td>
<td>63.69</td>
<td>$1,231</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Overall</strong></td>
<td><strong>192,230</strong></td>
<td><strong>63.69</strong></td>
<td><strong>$9,952</strong></td>
<td><strong>3,665</strong></td>
<td><strong>25,655</strong></td>
</tr>
</tbody>
</table>

* PCC = Potential Carrying Capacity; LSU = cattle unit or large stock unit; and DSE = dry sheep equivalent

Source: Information provided by DAFWA, 2012.

Based on the stocking rate assessments done, which contribute to the setting of pastoral rents, the total potential carrying capacity in the rangelands is 1.66 million LSUs or 11.62 million DSEs.

2.4.2 Rental arrears

In 2010-11, the WA Government budget papers showed that some $3.6 million was received in Pastoral Lease rents. The most recent information on arrears in pastoral rents is presented in Table 2-9, with rental arrears shown by region, ownership and by business unit. As at 1 February 2012 pastoral rent arrears totalled $1,800,780 or 39 per cent of the total annual Pastoral Lease rent. Records showed that 29 pastoral lessees controlling 57 Pastoral Leases were in arrears for more than $10,000. Rental arrears predominately occur with businesses located in the Kimberley and Nullarbor and by businesses with corporate and Indigenous ownership.

Table 2-9 Rental arrears by region, ownership and by business unit

<table>
<thead>
<tr>
<th>Region</th>
<th>Rent Arrears</th>
<th>Business type</th>
<th>Rent Arrears</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural</td>
<td>0%</td>
<td>Corp. Mining/Other</td>
<td>0%</td>
</tr>
<tr>
<td>Gascoyne</td>
<td>3%</td>
<td>Corp. Pastoral</td>
<td>45%</td>
</tr>
<tr>
<td>Goldfields</td>
<td>2%</td>
<td>Crown Land</td>
<td>0%</td>
</tr>
<tr>
<td>Kimberley</td>
<td>31%</td>
<td>DEC</td>
<td>0%</td>
</tr>
<tr>
<td>Meekatharra</td>
<td>5%</td>
<td>Indigenous</td>
<td>26%</td>
</tr>
<tr>
<td>Murchison</td>
<td>1%</td>
<td>Private Cons.</td>
<td>0%</td>
</tr>
<tr>
<td>Nullarbor</td>
<td>9%</td>
<td>Private</td>
<td>6%</td>
</tr>
<tr>
<td>Pilbara</td>
<td>4%</td>
<td>Private Cons.</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td><strong>7%</strong></td>
<td><strong>Mean</strong></td>
<td><strong>7%</strong></td>
</tr>
</tbody>
</table>

Source: Based on information provided by DRDL and DAFWA 2012.
2 The rangeland’s institutional environment

Advice from the DRDL is that arrears have increased significantly since the recent review of rents in 2009 (see Figure 2-1). Recovery of the outstanding rents is underway, with the 2011-12 budget papers assuming rents owing would be paid in that financial year.

Figure 2-1 Rent arrears on pastoral leases

<table>
<thead>
<tr>
<th>Pastoral Rent Arrears &gt;90 Days</th>
<th>1 February 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>Proportion of Annual Rent</td>
</tr>
<tr>
<td>$0</td>
<td>0%</td>
</tr>
<tr>
<td>$250,000</td>
<td>10%</td>
</tr>
<tr>
<td>$500,000</td>
<td>20%</td>
</tr>
<tr>
<td>$750,000</td>
<td>30%</td>
</tr>
<tr>
<td>$1,000,000</td>
<td>40%</td>
</tr>
<tr>
<td>$1,250,000</td>
<td>50%</td>
</tr>
<tr>
<td>$1,500,000</td>
<td>60%</td>
</tr>
<tr>
<td>$1,750,000</td>
<td>70%</td>
</tr>
<tr>
<td>$2,000,000</td>
<td>80%</td>
</tr>
</tbody>
</table>

Source: Information provided by DRDL 2012.

2.4.3 The cost of administering and supporting the Pastoral Estate

Estimated expenditure in administering and supporting the pastoral estate is presented in Table 2-10. Note that this expenditure does not include the costs involved in providing services to pastoral lessees in the areas of health, education, policing, telecommunications and road access.

The total is an underestimate in that it does not include the costs to the Indigenous Land Corporation’s operations in managing its Pastoral Leases. Further, it does not include the recent investment made by the Royalties for Regions Program in wild dog control, which is not a recurrent item.

Leaving aside these anomalies, comparing pastoral rents to costs suggests that the Pastoral Leasehold estate costs the WA Government roughly four times as much as it returns in rental income.
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Table 2-10   Direct costs to Government of managing the Pastoral Estate

<table>
<thead>
<tr>
<th>Agency</th>
<th>Approximate cost ($million)</th>
<th>Purpose</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pastoral Lands Board, RDL</td>
<td>$1.90 million</td>
<td>Administration of Part 7 of the Land Administration Act 1997, collection of rents, reporting</td>
<td>Based on 12 staff @ $150,000 incl. operating, and $100,000 Board expenses</td>
</tr>
<tr>
<td>Department of Agriculture and Food</td>
<td>$7.62 million</td>
<td>Research, development, extension, biosecurity and regulation on Pastoral Leases.</td>
<td>Based on 43 staff @ $150,000 including operating</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Includes $1.17 million as Government expenditure for feral animal and weed control (matching contribution by Government for equivalent amount raised by rates on PLs)</td>
</tr>
<tr>
<td>Aboriginal Lands Trust, DIA</td>
<td>$0.35 million</td>
<td>Management of 6 pastoral leases</td>
<td>Also includes management of remaining ALT estate (27 mha, although expense there is minimal)</td>
</tr>
<tr>
<td>DEC</td>
<td>$6 million (approx.)</td>
<td>Management of UCL formerly held as Pastoral Leasehold</td>
<td>Includes costs for caretaking and wild dog control on DEC leases</td>
</tr>
<tr>
<td>Indigenous Land Corporation (ILC)</td>
<td>na</td>
<td>Management of 6 leases, plus one held as sub-lease. Support for enterprise development on several other leases</td>
<td>Costs of lease management confounded with income and costs of running the station enterprises</td>
</tr>
<tr>
<td>Indigenous Landholder Service</td>
<td>$1.36 million (approx.)</td>
<td>Support and assistance for enterprise development on Indigenous-held PLs through PILS, MILS and KIMSS</td>
<td>Joint venture funded by DAFWA and ILC. Cost not included in agency budgets above</td>
</tr>
<tr>
<td>Overall</td>
<td>$17.23 million</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Based on information provided by DRDL, DEC, DAFWA, and DIA 2012.

2.5 Managing UCL/UMR in the rangelands

Reference is made to other areas of Crown Land within the Pastoral Leasehold areas in Section 2.2.1 that are held as UCL/UMR. There is a large number of land ‘parcels’ within this category, with perhaps 25 per cent of the area involved located within the pastoral leasehold ‘matrix’ or ‘pastoral areas’. Risk management is an important issue for the State Government on these lands. Management of many of these areas remote from towns, in respect of environmental requirements (weeds, feral animals), fire and public liability presents Government with a funding and operational challenge.

For example, the Government currently spends about $3.9 million per year (2.2c/ha) to manage the UCL/UMR lands in WA, with management responsibilities divided between the DRDL for general administration, and for fire management by the Department of Fire and Emergency Services (DFES) on UCL/UMR land in urban areas and by the Department of Environment and Conservation (DEC) for fire management on UCL/UMR land in non-urban areas (information provided by DRDL 2012).
Profile of the Pastoral Landholding Business Community

3.1 Condition and trends of the rangeland resource base

3.1.1 The condition of the pastoral resource base

The WA Government program of mapping and describing the inventory and condition of the pastoral leasehold land in WA that commenced in the 1960s is nearly complete. The summary of the area surveyed and range condition is presented for each of the survey areas in Table 3-1.

Table 3-1 Summary of range condition for rangeland surveys in WA

<table>
<thead>
<tr>
<th>Region (date)</th>
<th>Total area (km²)</th>
<th>Severely degraded and eroded Km²</th>
<th>Resource condition (% of traverse assessments)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kimberley</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>West Kimberley (1972)</td>
<td>89,600</td>
<td>2,000*</td>
<td>good 20, fair 50, poor 30</td>
</tr>
<tr>
<td>Pilbara</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ashburton (1976)</td>
<td>93,600</td>
<td>534</td>
<td>good 50, fair 34, poor 16</td>
</tr>
<tr>
<td>Roebourne Plains (1987)</td>
<td>10,216</td>
<td>233</td>
<td>good 51, fair 27, poor 22</td>
</tr>
<tr>
<td>Pilbara (1995)</td>
<td>181,723</td>
<td>310</td>
<td>good 77, fair 11, poor 12</td>
</tr>
<tr>
<td>Southern Rangelands</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gascoyne catchment (1969)</td>
<td>63,400</td>
<td>1,205*</td>
<td>good 32, fair 53, poor 15</td>
</tr>
<tr>
<td>Carnarvon Basin (1980)</td>
<td>74,500</td>
<td>647</td>
<td>good 45, fair 32, poor 23</td>
</tr>
<tr>
<td>Murchison (1985)</td>
<td>88,360</td>
<td>1,560</td>
<td>good 21, fair 37, poor 42</td>
</tr>
<tr>
<td>Lower Murchison (2002)</td>
<td>13,039</td>
<td>9</td>
<td>good 78, fair 9, poor 13</td>
</tr>
<tr>
<td>North-eastern Goldfields (1988)</td>
<td>100,570</td>
<td>145</td>
<td>good 39, fair 32, poor 29</td>
</tr>
<tr>
<td>Eastern Nullarbor (1974)</td>
<td>47,400</td>
<td>0</td>
<td>good 47, fair 10, poor 40</td>
</tr>
<tr>
<td>Western Nullarbor (2010)</td>
<td>118,358**</td>
<td>0</td>
<td>good 66, fair 26, poor 8</td>
</tr>
<tr>
<td>Total</td>
<td>928,076***</td>
<td>7,095</td>
<td>good 49, fair 30, poor 21</td>
</tr>
</tbody>
</table>


This program has shown that pastoral activities have over time resulted in vegetation change and land degradation over significant areas of the pastoral resource. Based on observations at 82,590 traverse assessments and mapping of severely degraded and eroded land, at the time of survey, 7,095 km² of the leased area was severely degraded and eroded, and in extrapolating the point traverse data to area, 195,000 km² was in poor range condition and 278,000 km² was in fair range condition.

3.1.2 Trends in the pastoral resource base

The Western Australian Range Monitoring System (WARMS) measures and reports trends in the rangeland resource on Pastoral Leases in WA. WARMS is administered by DAFWA with reports provided to the PLB, the Commissioner of Soil and Land Conservation and the Australian Collaborative Rangeland Information System (ACRIS). Trends in perennial plant demographics and landscape function are measured on 1,500 fixed sites across the Pastoral Leasehold Estate, with sites

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6 The term ‘pastoral resource’ here refers to the aggregate area of the Pastoral Leases, and is the term used in the Department of Agriculture and Food’s 2011 Report to the Commissioner of Soil and Land Conservation.

7 This area is larger than the Pastoral Leasehold Estate area shown in Table 2-3, and reflects that the surveys also included areas of UCL and Conservation Estate located within the pastoral leasehold ‘matrix’ – see comment in Section 2.2.1.

8 To put this in perspective, this equates to an area from Perth to Bunbury, extending inland from the coast for 39 km.
located to represent the spatial variability in land systems, and the relative value of the systems for grazing. Most Pastoral Leases have between three and four WARMS sites located within their boundaries, located within the grazing radius of a permanent watering point. Sites in the Southern Rangelands focus on perennial shrub numbers and sizes and are recorded every five years (termed an ‘Epoch’). In the Pilbara and Kimberley grasslands, perennial grass frequency is measured every three years (also termed an ‘Epoch’). Interpretation of the raw data on changes in vegetation and soil characteristics considers seasonal conditions and stocking history over the epoch. WARMS has been in full operation since the late 1990s.

Trends in Kimberley and Pilbara grasslands
The change in the frequency of desirable perennial grasses in the northern rangelands, as detected through WARMS, is presented in Table 3-2. Desirable grasses are those that are productive, palatable and perennial (the ‘3P grasses’).

<table>
<thead>
<tr>
<th>LCD*</th>
<th>Cycle 1 (E1-E2**)</th>
<th>Cycle 2 (E2-E3)</th>
<th>Cycle 3 (E3-E4)</th>
<th>Cycle 4 (E4-E5)</th>
<th>Cycle 5 (E5-E6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kimberley</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Broome</td>
<td>+3.2%</td>
<td>-11.9%</td>
<td>-3.6%</td>
<td>+4.3%</td>
<td>-1.4%</td>
</tr>
<tr>
<td>Derby West-Kimberley</td>
<td>+8.8%</td>
<td>+7.1%</td>
<td>-0.6%</td>
<td>+2.6%</td>
<td>-0.1%</td>
</tr>
<tr>
<td>Halls Creek-East Kimberley</td>
<td>+0.8%</td>
<td>+11.0%</td>
<td>-2.4%</td>
<td>+2.9%</td>
<td>-2.7%</td>
</tr>
<tr>
<td>North Kimberley</td>
<td>+1.5%</td>
<td>+2.9%</td>
<td>-2.7%</td>
<td>+2.8%</td>
<td>+5.8%</td>
</tr>
<tr>
<td>Pilbara</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ashburton</td>
<td>+6.4%</td>
<td>-6.2%</td>
<td>na</td>
<td>-3.5%</td>
<td></td>
</tr>
<tr>
<td>DeGrey</td>
<td>+7.3%</td>
<td>-2.7%</td>
<td>-2.8%</td>
<td>-9.1%</td>
<td></td>
</tr>
<tr>
<td>East Pilbara</td>
<td></td>
<td>0.3%</td>
<td>-3.2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lyndon</td>
<td>+16.9%</td>
<td>-4.4%</td>
<td>-6.2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roebourne</td>
<td>+4.3%</td>
<td>-27.1%</td>
<td>+12.9%</td>
<td>-4.4%</td>
<td></td>
</tr>
</tbody>
</table>


Frequency increased through good seasonal conditions in the late 1990s and in most Land Conservation Districts (LCDs) until 2002 (except in the Broome LCD). Subsequent recordings have shown declines in most of the Pilbara LCDs, resulting in a net loss over the whole period. Desirable grass frequency in the Kimberley has fluctuated between 2003 and 2008, with a decline recorded in all LCDs except the North Kimberley. Through the period between 1993 and 2010, reported stock numbers have increased in all Pilbara LCDs, and have more than doubled in the De Grey and East Pilbara LCDs. Reported stock numbers have increased over the same period in all Kimberley LCDs, with the exception of numbers in the Halls Creek-East Kimberley LCD (Novelly and Thomas 2011). Considered against seasonal and stocking history, the trends suggest that the grazing pressure on the resource is preventing any sustained improvement in the condition of the resource, and resulting in a decline in range condition in areas that have experienced heavy grazing pressure.
Trends in the Southern Rangeland shrublands

The data on changes in shrub numbers on WARMS sites in the Southern Rangelands are presented in Table 3-3. Over the period from 1994 to 1999, shrub density increased in most areas. In the years since the first cycle, change in shrub density has been spatially quite variable. In general, shrub numbers have declined in the Ashburton, Gascoyne, Meekatharra, Murchison and Shark Bay areas, with numbers being stable or decreasing slightly in the more eastern and southern areas (Novelly and Thomas 2011).

As shown in Table 3-3, when the numbers recorded in the third cycle are included, the proportional decrease in shrub densities over the three cycles has been greater than the earlier proportional increase, suggesting a net downward trend in condition across the whole of the shrublands, although there are significant regional differences in the recorded changes. It is also evident, where shrub losses have been recorded, there is a higher percentage loss in the desirable shrub numbers, indicating the effect of grazing pressure.

These observations have been complemented by the findings of an investigation into the condition of the Gascoyne Catchment following floods in 2010-11 that caused major damage to infrastructure and the horticultural industry in Carnarvon. The investigation noted that perennial vegetation cover was stable on 55 per cent of the land systems within the catchment between 1989 and 2010, with a decline in cover on the other 45 per cent of the land systems (Waddell et al. 2012).

Table 3-3 Percentage change in total perennial shrub number and desirable shrub number

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All shrubs</td>
<td>Desirable shrubs</td>
<td>All shrubs</td>
</tr>
<tr>
<td>Ashburton</td>
<td>64%</td>
<td>62%</td>
<td>-11%</td>
</tr>
<tr>
<td>Cue</td>
<td>0%</td>
<td>-5%</td>
<td>10%</td>
</tr>
<tr>
<td>Gascoyne Ashburton Headwaters</td>
<td>47%</td>
<td>53%</td>
<td>-32%</td>
</tr>
<tr>
<td>Gascoyne Wooramel</td>
<td>16%</td>
<td>18%</td>
<td>-15%</td>
</tr>
<tr>
<td>Kalgoorlie</td>
<td>23%</td>
<td>27%</td>
<td>-6%</td>
</tr>
<tr>
<td>Lyndon</td>
<td>20%</td>
<td>25%</td>
<td>-20%</td>
</tr>
<tr>
<td>Meekatharra</td>
<td>7%</td>
<td>6%</td>
<td>-11%</td>
</tr>
<tr>
<td>Mt Magnet</td>
<td>-3%</td>
<td>-8%</td>
<td>9%</td>
</tr>
<tr>
<td>Murchison</td>
<td>-17%</td>
<td>-27%</td>
<td>-9%</td>
</tr>
<tr>
<td>NE Goldfields</td>
<td>33%</td>
<td>48%</td>
<td>4%</td>
</tr>
<tr>
<td>Nullarbor Eyre Highway</td>
<td>16%</td>
<td>16%</td>
<td>-8%</td>
</tr>
<tr>
<td>Sandstone</td>
<td>13%</td>
<td>10%</td>
<td>7%</td>
</tr>
<tr>
<td>Shark Bay</td>
<td>9%</td>
<td>1%</td>
<td>-25%</td>
</tr>
<tr>
<td>Upper Gascoyne</td>
<td>39%</td>
<td>38%</td>
<td>-16%</td>
</tr>
<tr>
<td>Wiluna</td>
<td>33%</td>
<td>36%</td>
<td>4%</td>
</tr>
<tr>
<td>Yalgoo</td>
<td>-7%</td>
<td>-11%</td>
<td>0%</td>
</tr>
<tr>
<td>Shrublands overall</td>
<td>18%</td>
<td>17%</td>
<td>-8%</td>
</tr>
</tbody>
</table>

Source: Information provided by DAFWA 2012.
** based on 6 completed LCDs assessed in Epoch 4 to 30 June 2012.

The WARMS data can be further analysed for the confounding effect of season on shrub demographics. Data are available for trends in desirable perennial shrub numbers in the North.
3 Profile of the Pastoral Landholding Business Community

Eastern Goldfields and Wiluna LCDs over the period from 2006 to 2011. These are presented in Table 3-4 and show quite marked declines in desirable shrub numbers in average and below average seasonal conditions. It is concerning that shrub numbers also fell on sites in the Wiluna LCD that enjoyed good seasonal conditions through this period.

Table 3-4  Change in desirable shrub numbers across seasonal conditions between 2006 and 2011

<table>
<thead>
<tr>
<th>LCD</th>
<th>Above average</th>
<th>Seasonal conditions</th>
<th>Average</th>
<th>Below average</th>
</tr>
</thead>
<tbody>
<tr>
<td>NE Goldfields</td>
<td>na</td>
<td>-8%</td>
<td>-21.6%</td>
<td></td>
</tr>
<tr>
<td>Wiluna</td>
<td>-20%</td>
<td>-14.5%</td>
<td>-42.4%</td>
<td></td>
</tr>
</tbody>
</table>

Source: Novelly and Thomas (2011).

3.1.3  Resource management by pastoral leaseholders

DAFWA uses an annual survey to collect data on land management practices adopted by pastoral leaseholders. The data reported in the Department’s Annual Reports are reproduced in Table 3-5 for the years 2008 to 2011. Between 30 and 60 per cent of leaseholders surveyed were undertaking some pro-active land management, although there is little trend evident across the four years surveyed. Further, there is no information provided on the geographical distribution of the responses.

Table 3-5  Leaseholders in WA rangelands using selected sustainable land management practices (%)

<table>
<thead>
<tr>
<th>Practice</th>
<th>2008 (n=104)</th>
<th>2009 (n=96)</th>
<th>2010 (n=80)</th>
<th>2011 (n=87)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent control methods on stock water supplies</td>
<td>52%</td>
<td>52%</td>
<td>62%</td>
<td>60%</td>
</tr>
<tr>
<td>Rotational pasture spelling during plant growth season</td>
<td>44%</td>
<td>50%</td>
<td>42%</td>
<td>36%</td>
</tr>
<tr>
<td>Fencing to land systems</td>
<td>55%</td>
<td>50%</td>
<td>56%</td>
<td>61%</td>
</tr>
<tr>
<td>Conduct a prescribed burn for management purposes</td>
<td>35%</td>
<td>41%</td>
<td>31%</td>
<td>32%</td>
</tr>
<tr>
<td>Preserve or enhance areas of conservation value</td>
<td>58%</td>
<td>50%</td>
<td>58%</td>
<td>52%</td>
</tr>
<tr>
<td>Excluded stock from areas impacted by land degradation</td>
<td>48%</td>
<td>43%</td>
<td>58%</td>
<td>61%</td>
</tr>
<tr>
<td>Protected river or creek frontages from grazing animals</td>
<td>34%</td>
<td>27%</td>
<td>23%</td>
<td>25%</td>
</tr>
<tr>
<td>Formal monitoring of vegetation/pasture conditions</td>
<td>63%</td>
<td>58%</td>
<td>65%</td>
<td>68%</td>
</tr>
<tr>
<td>Specifically spelled pasture for subsequent use by export cattle</td>
<td>28%</td>
<td>25%</td>
<td>16%</td>
<td>30%</td>
</tr>
</tbody>
</table>


The Commissioner for Soil and Land Conservation acts on management issues identified in routine inspections of Pastoral Leases by DAFWA staff. The lease inspection records for 2006 as presented in the Draft State of the Environment Report (EPA 2006) are shown in Table 3-6. These records show that nearly all of the leases inspected in the Southern Rangelands had land management or infrastructure issues to be addressed. This supports commentary elsewhere in this report on the difficult financial conditions in this Region, which may be resulting in an inability to undertake the required standard of land management.
3 Profile of the Pastoral Landholding Business Community

Table 3-6  Leases with land and/or infrastructure management issues identified

<table>
<thead>
<tr>
<th>Region</th>
<th>Number of Leases</th>
<th>Number of leases with no issues</th>
<th>Number of leases with issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kimberley</td>
<td>15</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Pilbara</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Southern Rangelands</td>
<td>39</td>
<td>7</td>
<td>32</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>58</strong></td>
<td><strong>19</strong></td>
<td><strong>39</strong></td>
</tr>
</tbody>
</table>


In summary, about 20 per cent of the Pastoral Leasehold Estate (195,000 km²) is in poor range condition, with over 7,000 km² severely degraded and eroded. Since systematic reporting of range trend commenced in the 1990s, there has been no evidence of a sustained improvement in the resource condition across the whole estate, with some indication that downward trends are occurring on many leases. Reported management practices suggest that high stocking levels are the principal cause of further deterioration, with businesses also being unable to implement specific recommended management practices.

Although the WA Government and pastoral lessees are obligated under the Land Administration Act 1997 to maintain and improve range condition (see Sections 2.3.3 and 2.3.4), it is evident that these objectives are not being achieved. The issues involved are considered in later sections of the Report and in recommendations in Sections 7.3.3 and 7.4.1.

3.1.4  Productivity growth in the Northern Australian beef industry

Estimates of total factor productivity (TFP) growth for the Northern Australian beef industry over the period from 1977-78 to 2006-07 developed by Nossal et al. (2008) are presented in Gleeson et al. (2012) and replicated in Table 3-7. Although separate results for WA are not shown, it is likely that the performance of the WA northern beef industry will have reflected trends for the whole of the northern industry. The results show no growth in productivity between 1977-78 and 1995-96, with 1.14 per cent TFP growth after 1995-96. The improvement in the northern industry was driven by strong output growth (which may reflect the growth of the live export market) and modest input growth. Larger properties tended to have higher productivity growth than smaller businesses.

Table 3-7  Total factor productivity growth in the northern beef industry

<table>
<thead>
<tr>
<th>Item</th>
<th>Number of businesses (%age of total)</th>
<th>TFP growth %</th>
<th>Output growth %</th>
<th>Input growth %</th>
</tr>
</thead>
<tbody>
<tr>
<td>All properties</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1977-78 to 2006-07</td>
<td>10,174 (100%)</td>
<td>1.05</td>
<td>0.71</td>
<td>0.34</td>
</tr>
<tr>
<td>1977-78 to 1995-96</td>
<td>5,696 (56%)</td>
<td>0</td>
<td>-0.94</td>
<td>-0.94</td>
</tr>
<tr>
<td>1995-96 to 2006-07</td>
<td>4,478 (44%)</td>
<td>1.14</td>
<td>1.9</td>
<td>0.76</td>
</tr>
</tbody>
</table>


Future productivity growth will rely on technological developments that improve operating efficiency, the widespread adoption of existing technologies, and structural adjustment as less efficient businesses cease operations or are absorbed into larger enterprises.
3 Profile of the Pastoral Landholding Business Community

3.2 Pastoral Leases – lease and lessee profile

3.2.1 Pastoral Lease ownership

By Pastoral Lease and Pastoral Station numbers

The PLB database supplied by the Department of Agriculture and Food was used to identify the ownership of 507 Pastoral Leases and ex-Leases by regional and ownership categories as described in Section 1.2. The categories, and the areas involved are shown below in Table 3-8. DEC and Crown Land leases that were originally Pastoral Stations are shown in these tables as they contain stock data for years prior to their transfer to DEC or back to Crown Land, and also to indicate the number that have changed hands. When aggregation of Pastoral Leases into Pastoral Stations is considered, the percentage breakdown of each category is shown in the right-hand column in Table 3-8. These data show there to be 440 Pastoral Stations (as at August 2012).

In Table 3-9, only Pastoral Stations are categorised, with removal of the Crown Land and DEC categories. Subsequent data include only current Pastoral Stations unless shown otherwise. The 440 Pastoral Stations current as at August 2012 represents a 13 per cent decrease in number since the 1990s following the transfer of management of some leases to DEC, the forfeiture of some, and the merger of several leases. (Note – these data exclude the Pastoral Leases that exist outside the rangeland areas.)

As shown in Table 3-9, some 65 per cent of total Pastoral Stations are privately owned/operated as a family business, and 13 per cent are owned by Indigenous organisations/businesses. Corporate pastoral ownership is highest in the Kimberley and Nullarbor, and Corporate mining/other ownership is highest in the Goldfields and Meekatharra regions with nearly a quarter of leases in the Goldfields owned by mining companies. Over 30 per cent of Stations are Indigenous owned in the Kimberley, and 15 per cent in the Pilbara.

By Pastoral Lease area

The 2011 area of Pastoral and ex-Pastoral Leases by region and ownership profile are shown in Table 3-10 and by per cent breakdown in Table 3-11. Corporate pastoral holdings form a slightly higher percentage of the total when assessed by the area held. Private holdings comprise 58 per cent of the area, and Indigenous holdings 11 per cent. Overall some 92 per cent of the area of pre-1980 Pastoral Leases are still held as Pastoral Leases and considered to be Pastoral Stations.
3 Profile of the Pastoral Landholding Business Community

Table 3-8  Number of Pastoral and ex-Pastoral Leases, and Pastoral Stations by region and ownership profile

<table>
<thead>
<tr>
<th>Number of Lease by Region and Ownership</th>
<th>Corp. Mining/Other</th>
<th>Corp. Pastoral</th>
<th>Crown Land</th>
<th>DEC</th>
<th>Indigenous</th>
<th>Private</th>
<th>Private Cons.</th>
<th>Pastoral Leases</th>
<th>Pastoral Stations*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural</td>
<td>1</td>
<td>0</td>
<td>4</td>
<td>1</td>
<td>11</td>
<td>1</td>
<td>19</td>
<td>48</td>
<td>14</td>
</tr>
<tr>
<td>Gascoyne</td>
<td>2</td>
<td>0</td>
<td>19</td>
<td>4</td>
<td>60</td>
<td>1</td>
<td>86</td>
<td>40</td>
<td>67</td>
</tr>
<tr>
<td>Goldfields</td>
<td>18</td>
<td>2</td>
<td>9</td>
<td>4</td>
<td>39</td>
<td>0</td>
<td>75</td>
<td>48</td>
<td>63</td>
</tr>
<tr>
<td>Kimberley</td>
<td>0</td>
<td>24</td>
<td>2</td>
<td>30</td>
<td>32</td>
<td>4</td>
<td>94</td>
<td>57</td>
<td>90</td>
</tr>
<tr>
<td>Meekatharra</td>
<td>9</td>
<td>0</td>
<td>4</td>
<td>5</td>
<td>40</td>
<td>0</td>
<td>58</td>
<td>14</td>
<td>54</td>
</tr>
<tr>
<td>Murchison</td>
<td>4</td>
<td>2</td>
<td>17</td>
<td>3</td>
<td>60</td>
<td>1</td>
<td>88</td>
<td>20</td>
<td>70</td>
</tr>
<tr>
<td>Nullarbor</td>
<td>0</td>
<td>8</td>
<td>0</td>
<td>12</td>
<td>0</td>
<td>0</td>
<td>20</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>Pilbara</td>
<td>14</td>
<td>4</td>
<td>5</td>
<td>10</td>
<td>34</td>
<td>0</td>
<td>67</td>
<td>48</td>
<td>62</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>48</strong></td>
<td><strong>40</strong></td>
<td><strong>7</strong></td>
<td><strong>60</strong></td>
<td><strong>57</strong></td>
<td><strong>7</strong></td>
<td><strong>507</strong></td>
<td></td>
<td><strong>440</strong></td>
</tr>
</tbody>
</table>

Source: Based on information provided by DRDL and DAFWA 2012. * - Stations exclude DEC and Crown Land leases.

Table 3-9  Number of Pastoral Stations by region and ownership profile (per cent breakdown)

<table>
<thead>
<tr>
<th>Number of Lease by Region and Ownership</th>
<th>Corp. Mining/Other</th>
<th>Corp. Pastoral</th>
<th>Crown Land</th>
<th>DEC</th>
<th>Indigenous</th>
<th>Private</th>
<th>Private Cons.</th>
<th>Pastoral Leases</th>
<th>Pastoral Stations*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural</td>
<td>7%</td>
<td>0%</td>
<td>0%</td>
<td>7%</td>
<td>79%</td>
<td>7%</td>
<td>100%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gascoyne</td>
<td>3%</td>
<td>0%</td>
<td>0%</td>
<td>6%</td>
<td>90%</td>
<td>1%</td>
<td>100%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goldfields</td>
<td>29%</td>
<td>3%</td>
<td>6%</td>
<td>62%</td>
<td>0%</td>
<td>0%</td>
<td>100%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kimberley</td>
<td>0%</td>
<td>27%</td>
<td>33%</td>
<td>36%</td>
<td>4%</td>
<td>1%</td>
<td>100%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meekatharra</td>
<td>17%</td>
<td>0%</td>
<td>9%</td>
<td>74%</td>
<td>0%</td>
<td>0%</td>
<td>100%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Murchison</td>
<td>6%</td>
<td>3%</td>
<td>4%</td>
<td>86%</td>
<td>1%</td>
<td>1%</td>
<td>100%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nullarbor</td>
<td>0%</td>
<td>40%</td>
<td>0%</td>
<td>60%</td>
<td>0%</td>
<td>0%</td>
<td>100%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pilbara</td>
<td>23%</td>
<td>6%</td>
<td>16%</td>
<td>55%</td>
<td>0%</td>
<td>0%</td>
<td>100%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>11%</strong></td>
<td><strong>9%</strong></td>
<td><strong>13%</strong></td>
<td><strong>65%</strong></td>
<td><strong>2%</strong></td>
<td><strong>100%</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* - Stations exclude DEC and Crown Land leases.
3 Profile of the Pastoral Landholding Business Community

Table 3-10  Area of Pastoral and ex-Pastoral Leases by region and ownership profile (.000ha)

<table>
<thead>
<tr>
<th>Area of Lease by Region and Ownership (.000ha)</th>
<th>Corp. Mining/Other</th>
<th>Corp. Pastoral</th>
<th>Crown Land</th>
<th>DEC</th>
<th>Indigenous</th>
<th>Private</th>
<th>Private Cons.</th>
<th>Total Area</th>
<th>Pastoral Leases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural</td>
<td>123</td>
<td>-</td>
<td>4</td>
<td>316</td>
<td>8</td>
<td>787</td>
<td>68</td>
<td>1,308</td>
<td>987</td>
</tr>
<tr>
<td>Gascoyne</td>
<td>156</td>
<td>-</td>
<td>-</td>
<td>1,690</td>
<td>574</td>
<td>9,265</td>
<td>6</td>
<td>11,691</td>
<td>10,001</td>
</tr>
<tr>
<td>Goldfields</td>
<td>3,714</td>
<td>476</td>
<td>637</td>
<td>1,468</td>
<td>510</td>
<td>7,946</td>
<td>-</td>
<td>14,896</td>
<td>12,791</td>
</tr>
<tr>
<td>Kimberley</td>
<td>-</td>
<td>6,203</td>
<td>183</td>
<td>428</td>
<td>6,518</td>
<td>7,384</td>
<td>986</td>
<td>21,701</td>
<td>21,090</td>
</tr>
<tr>
<td>Meekatharra</td>
<td>1,804</td>
<td>-</td>
<td>-</td>
<td>1,158</td>
<td>1,262</td>
<td>9,979</td>
<td>-</td>
<td>14,203</td>
<td>13,045</td>
</tr>
<tr>
<td>Murchison</td>
<td>471</td>
<td>296</td>
<td>52</td>
<td>1,351</td>
<td>435</td>
<td>7,904</td>
<td>131</td>
<td>10,638</td>
<td>9,236</td>
</tr>
<tr>
<td>Nullarbor</td>
<td>-</td>
<td>2,416</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3,664</td>
<td>-</td>
<td>6,080</td>
<td>6,080</td>
</tr>
<tr>
<td>Pilbara</td>
<td>3,381</td>
<td>1,134</td>
<td>-</td>
<td>566</td>
<td>1,706</td>
<td>7,799</td>
<td>-</td>
<td>14,586</td>
<td>14,020</td>
</tr>
<tr>
<td>Total</td>
<td>9,648</td>
<td>10,524</td>
<td>876</td>
<td>6,977</td>
<td>11,013</td>
<td>54,728</td>
<td>1,191</td>
<td>95,103</td>
<td>87,250</td>
</tr>
</tbody>
</table>

Source: URS analysis of information provided by DRDL and DAFWA 2012.

Table 3-11  Area of Pastoral and ex-Pastoral Leases by region and ownership profile (per cent breakdown)

<table>
<thead>
<tr>
<th>Area of Lease by Region and Ownership</th>
<th>Corp. Mining/Other</th>
<th>Corp. Pastoral</th>
<th>Crown Land</th>
<th>DEC</th>
<th>Indigenous</th>
<th>Private</th>
<th>Private Cons.</th>
<th>Total Area</th>
<th>Pastoral Leases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural</td>
<td>9%</td>
<td>0%</td>
<td>0%</td>
<td>24%</td>
<td>1%</td>
<td>60%</td>
<td>5%</td>
<td>100%</td>
<td>75%</td>
</tr>
<tr>
<td>Gascoyne</td>
<td>1%</td>
<td>0%</td>
<td>0%</td>
<td>14%</td>
<td>4%</td>
<td>80%</td>
<td>0%</td>
<td>100%</td>
<td>86%</td>
</tr>
<tr>
<td>Goldfields</td>
<td>25%</td>
<td>3%</td>
<td>4%</td>
<td>10%</td>
<td>3%</td>
<td>54%</td>
<td>0%</td>
<td>100%</td>
<td>86%</td>
</tr>
<tr>
<td>Kimberley</td>
<td>0%</td>
<td>29%</td>
<td>1%</td>
<td>2%</td>
<td>30%</td>
<td>34%</td>
<td>5%</td>
<td>100%</td>
<td>97%</td>
</tr>
<tr>
<td>Meekatharra</td>
<td>13%</td>
<td>0%</td>
<td>0%</td>
<td>8%</td>
<td>9%</td>
<td>71%</td>
<td>0%</td>
<td>100%</td>
<td>92%</td>
</tr>
<tr>
<td>Murchison</td>
<td>4%</td>
<td>3%</td>
<td>0%</td>
<td>13%</td>
<td>4%</td>
<td>74%</td>
<td>1%</td>
<td>100%</td>
<td>87%</td>
</tr>
<tr>
<td>Nullarbor</td>
<td>0%</td>
<td>40%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>60%</td>
<td>0%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Pilbara</td>
<td>23%</td>
<td>8%</td>
<td>0%</td>
<td>4%</td>
<td>12%</td>
<td>53%</td>
<td>0%</td>
<td>100%</td>
<td>96%</td>
</tr>
<tr>
<td>Total</td>
<td>10%</td>
<td>11%</td>
<td>1%</td>
<td>7%</td>
<td>11%</td>
<td>58%</td>
<td>1%</td>
<td>100%</td>
<td>92%</td>
</tr>
</tbody>
</table>
Trends in the Pastoral Lease areas held by ownership categories

Trends in the ownership categories (in terms of total areas) are compared across years since 1996, as shown in Table 3-12. This shows that the percentage of the total lease area held by corporate, corporate mining and family Pastoral Businesses has declined from 91 per cent in 1996 to 79 per cent in 2012.

Table 3-12 Pastoral Lease profile (1996-2012)

<table>
<thead>
<tr>
<th>Category</th>
<th>% age area in 1996*</th>
<th>% age area in 2003*</th>
<th>% age area 2012**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporate pastoral businesses</td>
<td>85%</td>
<td>77%</td>
<td>10%</td>
</tr>
<tr>
<td>Family (private) pastoral businesses</td>
<td>58%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corporate mining</td>
<td>6%</td>
<td>8%</td>
<td>11%</td>
</tr>
<tr>
<td>Indigenous corporations</td>
<td>8%</td>
<td>10%</td>
<td>11%</td>
</tr>
<tr>
<td>Public Conservation Estate</td>
<td>1%</td>
<td>5%</td>
<td>8%</td>
</tr>
<tr>
<td>Private Conservation Estate</td>
<td>Na</td>
<td>na</td>
<td>1%</td>
</tr>
</tbody>
</table>

* Source: Anon (2003), p. 86. ** from Table 3-11.

3.2.2 Pastoral Station value and turnover rate

Landgate provided data describing the number of Pastoral Station sales by region (Table 3-13) and estimates of changes in Pastoral Station value over time (Table 3-14). Note the low number of sales that may be associated with value change in 2008 and 2009. These values are not adjusted for inflation. These data indicate low turnover in recent years and a drop in the value of sheep properties, but seemingly only back to long term levels. Discussions suggest low turnover rates have continued into 2012 and values have declined further on those indicated for 2010-11.

These values are estimates only and for general market movement reference purposes only. There may be significant variations in values between individual Stations in any area. Sales volumes are often small or non-existent in certain areas and in certain years requiring extrapolations of values from other areas. There are very few sheep properties left in the rangelands, with the bulk of grazing given over to cattle. The property market peaked in 2008-09 and has since been declining in every region. URS has been advised this is due to declining profitability and nervousness about the sustainability of the live export market, steadily increasing overheads and limited alternative markets (advice from Landgate 2012).

Table 3-13 Station sales by region

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Kimberley</td>
<td>2</td>
<td>8</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Pilbara</td>
<td>1</td>
<td>5</td>
<td>2</td>
<td>6</td>
<td>5</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Southern range cattle</td>
<td>10</td>
<td>12</td>
<td>4</td>
<td>0</td>
<td>5</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>Southern range sheep</td>
<td>10</td>
<td>18</td>
<td>16</td>
<td>2</td>
<td>8</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>23</td>
<td>43</td>
<td>24</td>
<td>11</td>
<td>18</td>
<td>11</td>
<td>16</td>
</tr>
</tbody>
</table>

Source: Information provided by Landgate 2012.

Note: These include arms length pastoral sales that exclude mining company purchases, related party transfers and whole or partial lease government acquisitions and deceased estates. Excluded sales double the total number of transactions.
3 Profile of the Pastoral Landholding Business Community

Table 3-14  Changes in Pastoral Station values over time ($/CU or $/DSE)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pilbara / CU*</td>
<td>$150</td>
<td>$200</td>
<td>$250</td>
<td>$300</td>
<td>$400</td>
<td>$450</td>
<td>$500</td>
<td>$600</td>
<td>$600</td>
<td>$550</td>
<td>$500</td>
<td>$400</td>
</tr>
<tr>
<td>Kimberley /CU*</td>
<td>$170</td>
<td>$220</td>
<td>$250</td>
<td>$350</td>
<td>$450</td>
<td>$450</td>
<td>$625</td>
<td>$725</td>
<td>$650</td>
<td>$650</td>
<td>$600</td>
<td>$500</td>
</tr>
<tr>
<td>Southern sheep/ DSE*</td>
<td>$60</td>
<td>$60</td>
<td>$65</td>
<td>$70</td>
<td>$75</td>
<td>$80</td>
<td>$90</td>
<td>$90</td>
<td>$120</td>
<td>$130</td>
<td>$100</td>
<td>$70</td>
</tr>
</tbody>
</table>

Source: Information provided by Landgate 2012.
Lease & improvements values (bare).* CU = cattle unit. DSE = dry sheep equivalent.

A brief review of Pastoral Stations for sale in the rangelands and listed with major agents (website searches August 2012) showed that most listings are from the Southern Rangelands. For Stations in these areas, the offered prices vary between $7.14 and $14.10 per hectare, with the purchase including all stock, fixed infrastructure and normally mobile plant. For properties with little or no stock, the listed price is about $4 per hectare.

3.2.3  Pastoral Businesses

PLB lease data was used as the basis to determine discrete Pastoral Businesses. These are single or multiple Pastoral Leases that are owned or operated collectively. Commonly these Pastoral Businesses are also operated in conjunction with agricultural area farms, and sometimes with leases in other States or Territories. Lease aggregations have presumably been sought to take any advantage of economies of scale, to reduce risk of adverse seasons, and to provide a supply chain to markets.

Table 3-15 and Table 3-16 present Station and Business numbers, by region and ownership type. BU 1 is a single Station business, whereas BU 4 is a four Station business aggregation. It is not known how integrated or independent the operations of these multi-Station businesses are.

Businesses were aligned to the region in which the majority of the Pastoral Leases, as measured by potential carrying capacity, were located.

These data indicate that there are some aggregations, with some 44 businesses comprising two Stations, and 22 with three or more. There are 267 pastoral businesses comprising one Station. Twenty seven of the 44 BU 2s are privately owned. The larger aggregations are mostly owned by corporates. Most Indigenous owned Stations are single lease businesses (35 of 45), and there are eight two-Station operations.
3 Profile of the Pastoral Landholding Business Community

### Table 3-15  Station and Business numbers by region

<table>
<thead>
<tr>
<th>Station and Business numbers by Region</th>
<th>Stations</th>
<th>Businesses</th>
<th>BU 1</th>
<th>BU 2</th>
<th>BU 3</th>
<th>BU 4</th>
<th>BU 5</th>
<th>BU 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural</td>
<td>14</td>
<td>14</td>
<td>14</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Gascoyne</td>
<td>67</td>
<td>51</td>
<td>42</td>
<td>7</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Goldfields</td>
<td>63</td>
<td>50</td>
<td>42</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Kimberley</td>
<td>90</td>
<td>62</td>
<td>44</td>
<td>11</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Meekatharra</td>
<td>54</td>
<td>40</td>
<td>29</td>
<td>10</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Murchison</td>
<td>70</td>
<td>64</td>
<td>57</td>
<td>5</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Nullarbor</td>
<td>20</td>
<td>11</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Pilbara</td>
<td>62</td>
<td>41</td>
<td>31</td>
<td>7</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>440</strong></td>
<td><strong>333</strong></td>
<td><strong>267</strong></td>
<td><strong>44</strong></td>
<td><strong>12</strong></td>
<td><strong>4</strong></td>
<td><strong>3</strong></td>
<td><strong>3</strong></td>
</tr>
</tbody>
</table>

Source: URS analysis of information provided by DRDL and DAFWA 2012.

### Table 3-16  Station and Business numbers by ownership

<table>
<thead>
<tr>
<th>Station and Business numbers by ownership</th>
<th>Stations</th>
<th>Businesses</th>
<th>BU 1</th>
<th>BU 2</th>
<th>BU 3</th>
<th>BU 4</th>
<th>BU 5</th>
<th>BU 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corp. Mining/Other</td>
<td>48</td>
<td>28</td>
<td>20</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Corp. Pastoral</td>
<td>40</td>
<td>14</td>
<td>2</td>
<td>6</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Crown Land</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>DEC</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Indigenous</td>
<td>57</td>
<td>45</td>
<td>35</td>
<td>8</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Private</td>
<td>288</td>
<td>239</td>
<td>203</td>
<td>27</td>
<td>5</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Private Cons.</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>440</strong></td>
<td><strong>333</strong></td>
<td><strong>267</strong></td>
<td><strong>44</strong></td>
<td><strong>12</strong></td>
<td><strong>4</strong></td>
<td><strong>3</strong></td>
<td><strong>3</strong></td>
</tr>
</tbody>
</table>

Source: URS analysis of information provided by DRDL and DAFWA 2012.

#### 3.2.4 Assessment of Pastoral Station viability based on biophysical assessment

DAFWA has recently undertaken a desktop assessment of all Pastoral Stations⁹ for their ability to support a viable grazing enterprise, based on the nature and condition of the rangelands resources on the Stations. The following definition of viable pastoralism was used - ‘…. an enterprise that must simultaneously:

1) Maintain or improve the condition of the rangeland as required by legislation;

2) Generate a sufficient financial income to meet:
   a. Fixed costs (overheads);
   b. Variable costs (operating); and
   c. Provision for depreciation of capital items.

3) Sustain both 1 & 2 over time and during periods of seasonal and market variability’ (Novelly and Warburton 2012a, p. 5).

⁹ In the original material provided by DAFWA, the individual units were termed as Pastoral Leases, but URS has subsequently been advised that the assessment was done at Pastoral Station scale.
Three categories of viability were developed, as follows:

**Category A.** Station viable as a stand-alone pastoral enterprise in 2011, with a capacity to remain so under appropriate management;

**Category B.** Station not viable as a stand-alone pastoral enterprise in 2011, but able to attain viability following five years of rehabilitative management (essentially destocking);

**Category C.** Station not viable as a stand-alone pastoral enterprise in 2011 and having insufficient biophysical land capability for pastoralism to become so within a decadal time scale.

In the Kimberley and Pilbara, Category A viability was defined as a Station with a capacity to graze 4,000 LSUs (termed the ‘viability threshold’ in present range condition, excluding consideration of those land systems with low pastoral potential.

In the Southern Rangelands, Category A viability was defined as a Station with a capacity to graze 10,000 DSEs (1,333 LCUs\(^{10}\)) on land systems within the lease able to carry 7.5 DSE or more per square kilometre.

These lease viability classifications are presented on the basis of the number of leases per regional and ownership aggregation, and on the basis of Station class areas by region and ownership grouping in Table 3-17, Table 3-18, Table 3-19 and Table 3-20.

Across the two Novelly and Warburton reports some 455 Stations were assessed – this includes Pastoral Leases that are now either abandoned Pastoral Leases and classed as Crown Land, or leases managed by DEC for conservation purposes. Of the current 440 Stations, 27 per cent are classed as A, four per cent B, and 69 per cent C, or by area 38 per cent A, four per cent B, and 58 per cent C.

This assessment shows that of the 87.2 million hectares classified and currently held as Pastoral Leases, 33 million hectares comprise Stations that are considered to be viable on biophysical criteria, with more than half of that area being in the Kimberley. In terms of Station numbers, 117 of 440 (27%) were assessed as being able to support viable businesses as stand-alone Stations.

**Table 3-17  Current Stations by viability class by region**

<table>
<thead>
<tr>
<th>Station Viability Class by Region</th>
<th>Stations Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>Agricultural</td>
<td>14</td>
<td>0</td>
</tr>
<tr>
<td>Gascoyne</td>
<td>67</td>
<td>20</td>
</tr>
<tr>
<td>Goldfields</td>
<td>63</td>
<td>4</td>
</tr>
<tr>
<td>Kimberley</td>
<td>90</td>
<td>59</td>
</tr>
<tr>
<td>Meekatharra</td>
<td>54</td>
<td>9</td>
</tr>
<tr>
<td>Murchison</td>
<td>70</td>
<td>6</td>
</tr>
<tr>
<td>Nullarbor</td>
<td>20</td>
<td>7</td>
</tr>
<tr>
<td>Pilbara</td>
<td>62</td>
<td>12</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>440</td>
<td>117</td>
</tr>
</tbody>
</table>


\(^{10}\)A conversion of 1 LSU or CU being equivalent to 7.5 DSE, as described in Section 1.3.1
3 Profile of the Pastoral Landholding Business Community

Table 3-18  Current Stations by viability class by ownership classification

<table>
<thead>
<tr>
<th>Station Viability Class by ownership</th>
<th>Classified</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>Corp. Mining/Other</td>
<td>48</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Corp. Pastoral</td>
<td>40</td>
<td>23</td>
<td>3</td>
</tr>
<tr>
<td>Crown Land</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>DEC</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Indigenous</td>
<td>57</td>
<td>17</td>
<td>2</td>
</tr>
<tr>
<td>Private</td>
<td>288</td>
<td>69</td>
<td>11</td>
</tr>
<tr>
<td>Private Cons.</td>
<td>7</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>440</td>
<td>117</td>
<td>18</td>
</tr>
</tbody>
</table>


Seventy nine per cent of the Stations in the Kimberley were classed A (79 per cent, by area, of the Kimberley Stations is classed as A), but only 6 and 9 per cent of the Stations in the Goldfields and Murchison respectively were classed as A. Over half of the area classified as A is located in the Kimberley. Corporate pastoral owned Stations have proportionally more land classed as A viability than C, whereas 85 per cent of the Stations owned by corporate mining/other are classed as C viability. Sixty three per cent of privately held Pastoral Stations are classified as C viability.

Table 3-19  Station area by viability class and region ('000 ha)

<table>
<thead>
<tr>
<th>Station Viability Class by Region</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>A+B+C</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural</td>
<td>-</td>
<td>-</td>
<td>987</td>
<td>987</td>
<td>0%</td>
</tr>
<tr>
<td>Gascoyne</td>
<td>3,930</td>
<td>343</td>
<td>5,727</td>
<td>10,001</td>
<td>39%</td>
</tr>
<tr>
<td>Goldfields</td>
<td>1,488</td>
<td>-</td>
<td>11,157</td>
<td>12,646</td>
<td>12%</td>
</tr>
<tr>
<td>Kimberley</td>
<td>16,770</td>
<td>1,247</td>
<td>3,074</td>
<td>21,090</td>
<td>79%</td>
</tr>
<tr>
<td>Meekatharra</td>
<td>3,139</td>
<td>466</td>
<td>9,633</td>
<td>13,237</td>
<td>24%</td>
</tr>
<tr>
<td>Murchison</td>
<td>1,680</td>
<td>569</td>
<td>6,929</td>
<td>9,178</td>
<td>18%</td>
</tr>
<tr>
<td>Nullarbor</td>
<td>2,558</td>
<td>186</td>
<td>3,335</td>
<td>6,080</td>
<td>42%</td>
</tr>
<tr>
<td>Pilbara</td>
<td>3,454</td>
<td>1,079</td>
<td>9,486</td>
<td>14,020</td>
<td>24%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>33,020</td>
<td>3,891</td>
<td>50,329</td>
<td>87,239</td>
<td>38%</td>
</tr>
</tbody>
</table>


As shown in Table 3-20, 68 per cent (34.4 million ha) of the total area classed with C viability (50.3 million ha) is privately owned.
3 Profile of the Pastoral Landholding Business Community

Table 3-20  Station area by viability class and ownership classification ('000 ha)

<table>
<thead>
<tr>
<th>Station Viability Class by ownership</th>
<th>Area ('000 ha)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>Corp. Mining/Other</td>
<td>1,543</td>
<td>657</td>
</tr>
<tr>
<td>Corp. Pastoral</td>
<td>7,140</td>
<td>603</td>
</tr>
<tr>
<td>Crown Land</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DEC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indigenous</td>
<td>5,205</td>
<td>499</td>
</tr>
<tr>
<td>Private</td>
<td>18,399</td>
<td>2,132</td>
</tr>
<tr>
<td>Private Cons.</td>
<td>732</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>33,020</td>
<td>3,891</td>
</tr>
</tbody>
</table>


These data need to be interpreted with caution. By focusing on viability at ‘stand-alone Station’ scale, the assessment overlooks all situations where adjacent Stations are held by the same leaseholder and run as the one Business. This can result in two Category C Stations being combined to run as a Category A Business. Further, as the analysis acknowledges, the assessment does not account for variation in the ‘viability threshold’ for different pastoral enterprises, differences in variable and fixed costs due to logistical factors, the spatial distribution of land systems across the Station, and differences in managerial skill and lifestyle expectations. They also ignore the fact that many pastoral leaseholders undertake more than grazing-based economic activities.

Leaving aside these assumptions, the analysis shows that only 26 per cent of Stations, covering about 42 per cent of the current Pastoral Leasehold Estate area are capable of supporting a viable grazing business on a stand-alone basis. The implication for government is in allowing the other 74 per cent of Stations to be transferred between lessees (subject to ministerial approval), amounts to implicit acceptance that these Stations cannot, on their own, support viable grazing enterprises. This presents a problem for administration of the Pastoral Leasehold Estate. It is worth noting that s101 of the Land Administration Act 1997 states inter alia:

‘(5) A Pastoral Lease must not be granted unless —

(a) the [Pastoral Lands] Board is satisfied that the land under the lease will be capable, when fully developed, of carrying sufficient authorised stock to enable it to be worked as an economically viable and ecologically sustainable pastoral business unit;

(b) the lease is to be amalgamated with an adjoining pastoral lease; or

(c) the lease is to become, together with an adjoining Pastoral Lease or part of an adjoining pastoral lease, a pastoral business unit under section 142A, the creation of which has been approved under section 142A(1).’

The implications of the requirement under s101 (5) are considered in later sections of the Report.
3.2.5  Trends in livestock numbers by region

PLB Pastoral Lease stock records have been aggregated on a regional basis to track livestock numbers from 1985 to 2011. Small stock and cattle numbers are presented as dry sheep equivalents (DSE). The total livestock numbers are presented as total DSE in Figure 3-1.

Figure 3-1  Stock in the rangelands - Total DSE by region (1985 – 2011)

These data show the dominance in total DSE in the Kimberley, and the recent return of stock in the Kimberley to levels attained in 1987. There has been a steady increase since 1994 after the adjustment presumably following the brucellosis and tuberculosis eradication campaign (BTEC). Numbers in the Pilbara have also been rising since the early 1990s, but with a modest drop over the past two years. Each of the other regions displays a sharp decline in DSE over the last two years of available data.

In aggregate, total DSEs have increased since the late 1980s from some 6 million DSE to a peak of 8.5 million DSE in 2008 and 2009. This is an increase of over 40 per cent.

Livestock numbers are broken down into small stock DSE and cattle DSE in Figure 3-2 and Figure 3-3. The decline of sheep numbers and the pastoral wool industry commenced in 1990 (associated with the collapse of the Wool Reserve Price Scheme) but these charts present a dramatic reduction in small stock numbers since 1995. The Gascoyne, Murchison and Goldfields have experienced the greatest reduction in sheep numbers. In 1990 there were 2.4 million small stock DSE, in 2011 only 15 per cent or 335,000 remained on Pastoral Leases. This decline in small stock numbers has been offset to some extent in the southern regions by increases in cattle numbers, as shown by Figure 3-3. However, increases in cattle numbers in the Pilbara and Kimberley contribute to an aggregate increase in DSE across the whole pastoral area since the mid 1980s.
3 Profile of the Pastoral Landholding Business Community

Figure 3-2  Stock in the rangelands - Small stock DSE by region (1985 – 2011)

![Small Stock DSE by Region](image)

Source: Information provided by DRDL 2012.

Figure 3-3  Stock in the rangelands – Cattle DSE by region (1985-2011)

![Cattle DSE by Region](image)

Source: Information provided by DRDL 2012.
3 Profile of the Pastoral Landholding Business Community

3.2.6  Trends in livestock numbers by lease ownership

Figure 3-4 presents the total stock numbers (DSE) on Pastoral Leases by type of lease ownership. The greatest increase in stock numbers has occurred on privately owned properties. Numbers on corporately owned properties have been stable since the late 1990s. These data also show an increase in total DSE on Indigenous owned properties since 2004.

The stock number by lease ownership categories are broken down between cattle and small stock in Figure 3-5 and Figure 3-6. The drop in small stock numbers (sheep) has been most dramatic on privately owned leases. These properties have always carried the bulk of the pastoral sheep. Correspondingly privately owned leases are those that have increased their cattle numbers the most.

Figure 3-4  Stock in the rangelands - Total DSE by ownership type (1985 – 2011)
3 Profile of the Pastoral Landholding Business Community

Figure 3-5 Stock in the rangelands – Small Stock DSE by ownership type (1985 – 2011)

Source: Information provided by DRDL 2012.

Figure 3-6 Stock in the rangelands – Cattle DSE by ownership type (1985 – 2011)

Source: Information provided by DRDL 2012.
3 Profile of the Pastoral Landholding Business Community

3.2.7 Stock numbers by Station viability classification

The total stock numbers (measured by DSE) have been tracked according to the Novelly and Warburton (2012a and 2012b) lease viability classifications in Figure 3-7. Stock numbers have only increased on the category A Stations (those considered viable as a stand-alone pastoral enterprise in 2011, with a capacity to remain so under appropriate management). Stock numbers on the category C Stations (not viable as a stand-alone pastoral enterprise in 2011 and having insufficient biophysical land capability for pastoralism to become so within a decadal time scale) have oscillated since 1990 but are now at their lowest number since 1985.

Figure 3-7 Stock in Rangeland – Total DSE by Station viability classification (1985 – 2011)

3.2.8 Stock numbers by groups of Stations per Pastoral Business

The Stations were aggregated on the basis of ownership and classified as Pastoral Businesses. Stock numbers (total DSE) are presented for each Pastoral Business in Figure 3-8. Any increase in stock numbers since 1990 has occurred in Businesses operating one or two leases. The corporates that tend to own three or more leases have tended to maintain stock numbers over the considered period.
3 Profile of the Pastoral Landholding Business Community

Figure 3-8   Stock in rangeland – Total DSE by number of leases per Business (1985 – 2011)

![Graph showing Total DSE by number of leases per Business](image)


3.2.9 Pastoral Businesses with a minimum PCC and DSE

PLB stock data and potential carrying capacity data have been used to determine the proportion of Pastoral Businesses (single or multiple leases) that either have a PCC less than the actual reported DSE numbers, or are stocked at less than the reported DSE numbers. Stocking levels are based on a five year mean from 2007 to 2011. These data exclude Pastoral Leases that have transferred to DEC or Crown Land.

Over the years, various industry experts have suggested minimum enterprise sizes to meet viability criteria. As terms of trade and cost structures of sheep and cattle pastoral enterprise have shifted this minimum size benchmark has increased. Given individual expectations and capacity to generate non-pastoral income the ‘viability line’ is not clear. Pastoral viability is not the only criterion for capacity to live on a Pastoral Lease. Many families/businesses continue with seemingly unsustainable grazing incomes, thus suggesting they survive by other means. The following data may provide an indication of how many Businesses are likely to be surviving by reliance on non-pastoral support and/or alternatives.

Table 3-21 indicates the percentage of Businesses with less than indicated PCC or reported DSE by region, and Table 3-22 shows per cent of Businesses with less than indicated PCC or reported DSE by ownership class. Each table presents data for Businesses, but the bottom line shows the Pastoral Lease mean to compare against the Business mean.

Across the rangelands some 53 per cent of Businesses have the capacity to, or have carried less than 10,000 DSE over the past five years. In the Agricultural fringe, the Goldfields and the Murchison more than 85 per cent of Businesses carry less than 10,000 DSE.
3 Profile of the Pastoral Landholding Business Community

Given the general shift from sheep to cattle across most areas now, 25,000 DSE (approximately 3,500 LSUs) is considered by some as a minimum size for a financially viable grazing enterprise. Seventy five per cent of Businesses, or 79 per cent of Pastoral Leases, don’t have the capacity (PCC) nor do they run this many stock.

Correspondingly, some 69 per cent of Kimberley, and 54 per cent of Pilbara businesses have the PCC and carry more than 25,000 DSE. There is little difference in the results when they are considered by Businesses or by individual leases.

Table 3-21  Proportion of Businesses with less than indicated PCC or DSE – by region (%)

<table>
<thead>
<tr>
<th>Region and Business</th>
<th>5,000 DSE</th>
<th>10,000 DSE</th>
<th>15,000 DSE</th>
<th>20,000 DSE</th>
<th>25,000 DSE</th>
<th>50,000 DSE</th>
<th>100,000 DSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Gascoyne</td>
<td>29%</td>
<td>51%</td>
<td>61%</td>
<td>75%</td>
<td>80%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Goldfields</td>
<td>62%</td>
<td>88%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Kimberley</td>
<td>5%</td>
<td>11%</td>
<td>23%</td>
<td>26%</td>
<td>31%</td>
<td>66%</td>
<td>79%</td>
</tr>
<tr>
<td>Meekatharra</td>
<td>23%</td>
<td>50%</td>
<td>73%</td>
<td>80%</td>
<td>90%</td>
<td>98%</td>
<td>100%</td>
</tr>
<tr>
<td>Murchison</td>
<td>66%</td>
<td>86%</td>
<td>95%</td>
<td>98%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Nullarbor</td>
<td>27%</td>
<td>36%</td>
<td>55%</td>
<td>55%</td>
<td>64%</td>
<td>91%</td>
<td>100%</td>
</tr>
<tr>
<td>Pilbara</td>
<td>10%</td>
<td>12%</td>
<td>20%</td>
<td>44%</td>
<td>46%</td>
<td>76%</td>
<td>95%</td>
</tr>
<tr>
<td>Pastoral Business Mean</td>
<td>36%</td>
<td>53%</td>
<td>64%</td>
<td>71%</td>
<td>75%</td>
<td>90%</td>
<td>95%</td>
</tr>
<tr>
<td>Pastoral Lease Mean</td>
<td>38%</td>
<td>55%</td>
<td>65%</td>
<td>71%</td>
<td>75%</td>
<td>79%</td>
<td>93%</td>
</tr>
</tbody>
</table>

Source: URS analysis of information provided by DRDL 2012.

There is less difference between ownership type than between regions, except for corporate pastoral which have much bigger operations than the mean – some 55 per cent of corporate pastoral owned Businesses have more than 100,000 DSE. Conversely, corporate mining/other Pastoral Leases generally have a lower PCC and run less stock than others.

Table 3-22  Proportion of Businesses with less than indicated PCC or DSE – by ownership (%)

<table>
<thead>
<tr>
<th>Owner and Business</th>
<th>5,000 DSE</th>
<th>10,000 DSE</th>
<th>15,000 DSE</th>
<th>20,000 DSE</th>
<th>25,000 DSE</th>
<th>50,000 DSE</th>
<th>100,000 DSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corp. Mining/Other</td>
<td>57%</td>
<td>75%</td>
<td>82%</td>
<td>82%</td>
<td>82%</td>
<td>86%</td>
<td>96%</td>
</tr>
<tr>
<td>Corp. Pastoral</td>
<td>14%</td>
<td>21%</td>
<td>21%</td>
<td>21%</td>
<td>21%</td>
<td>29%</td>
<td>43%</td>
</tr>
<tr>
<td>Crown Land</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DEC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indigenous</td>
<td>33%</td>
<td>47%</td>
<td>62%</td>
<td>71%</td>
<td>73%</td>
<td>96%</td>
<td>96%</td>
</tr>
<tr>
<td>Private</td>
<td>36%</td>
<td>54%</td>
<td>65%</td>
<td>74%</td>
<td>79%</td>
<td>93%</td>
<td>98%</td>
</tr>
<tr>
<td>Private Cons.</td>
<td>43%</td>
<td>43%</td>
<td>43%</td>
<td>43%</td>
<td>43%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Pastoral Business Mean</td>
<td>36%</td>
<td>53%</td>
<td>64%</td>
<td>71%</td>
<td>75%</td>
<td>90%</td>
<td>95%</td>
</tr>
<tr>
<td>Pastoral Lease Mean</td>
<td>38%</td>
<td>55%</td>
<td>65%</td>
<td>75%</td>
<td>79%</td>
<td>93%</td>
<td>98%</td>
</tr>
</tbody>
</table>

Source: URS analysis of information provided by DRDL 2012.
3.2.10 Class A and B viability Stations stocked at a minimum DSE

This report does not aim to determine the viability or the capacity of a leaseholder to make a living whilst occupying a Pastoral Lease. People have been shown to find non-grazing sources of income to substitute or to complement their income from grazing stock, and are seemingly prepared to accept a variety of income levels so that they may remain living on their Pastoral Leases. However this report is interested in the extent and location of Pastoral Leases that are viable or otherwise for the purposes of grazing stock.

Novelly and Warburton (2012a and 2012b) categorised the biophysical viability of Pastoral Stations. As discussed in Section 3.2.4, Category A viability was defined as a Station with a capacity to graze 4,000 LSUs (or 30,000 DSE) in the Kimberley and Pilbara excluding those land systems with low and very low grazing potential, and in the Southern Rangelands, Category A viability was defined as a Station with a capacity to graze 10,000 DSEs (1,333 LSUs) on land systems within the Station able to carry 7.5 DSE or more per square kilometre.

Leases with A and B category viability have been assessed to show the actual numbers of stock that have been run on these Stations. Stocking levels were determined as the mean number over the five years from 2007 to 2011. Data indicate the number of Stations in each region (Table 3-23), or by ownership type (Table 3-24), that are category A or B viability, and have carried a minimum average stocking level (DSE) over the past five years.

This analysis suggests that of the 136 Stations classified as A or B, about half (67) carried an average of more than 30,000 DSE (equivalent to 4,000 LSU) over the five years from 2007 to 2011. Of these 67 leases, 49 are in the Kimberley and 12 are in the Pilbara. Only six are outside the Kimberley or Pilbara. In terms of ownership, 34 of the 67 are privately owned and 20 are under corporate pastoral ownership. If 30,000 DSE is indicative of a minimum number for the viability of a cattle grazing business (equivalent to 4,000 LSU), then only 67 leases of the 440 Stations may be viable in the long term – if grazing is the only source of income. Note that this analysis was undertaken on the Station, rather than Business basis, as it is the Stations that are assessed by the biophysical viability reports. The 136 category A and B Stations are part of 104 Businesses, so the number of Businesses that may be viable, just for grazing, is less than the number of Stations indicated.

Table 3-23  A and B Stations stocked at a minimum DSE over the past five years– by region

<table>
<thead>
<tr>
<th>A and B Stations with a min PCC and DSE</th>
<th>5,000</th>
<th>10,000</th>
<th>15,000</th>
<th>20,000</th>
<th>30,000</th>
<th>50,000</th>
<th>100,000</th>
<th>Total A&amp;B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Gascoyne</td>
<td>21</td>
<td>18</td>
<td>14</td>
<td>8</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>22</td>
</tr>
<tr>
<td>Goldfields</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Kimberley</td>
<td>66</td>
<td>65</td>
<td>60</td>
<td>57</td>
<td>49</td>
<td>31</td>
<td>13</td>
<td>67</td>
</tr>
<tr>
<td>Meekatharra</td>
<td>8</td>
<td>7</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Murchison</td>
<td>6</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>Nullarbor</td>
<td>8</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Pilbara</td>
<td>16</td>
<td>16</td>
<td>15</td>
<td>14</td>
<td>12</td>
<td>6</td>
<td>1</td>
<td>16</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>128</strong></td>
<td><strong>115</strong></td>
<td><strong>96</strong></td>
<td><strong>82</strong></td>
<td><strong>67</strong></td>
<td><strong>37</strong></td>
<td><strong>14</strong></td>
<td><strong>136</strong></td>
</tr>
</tbody>
</table>

3 Profile of the Pastoral Landholding Business Community

Table 3-24  A and B Stations stocked at a minimum DSE over the past five years – by ownership

<table>
<thead>
<tr>
<th>A and B Stations with a min PCC and DSE</th>
<th>5,000</th>
<th>10,000</th>
<th>15,000</th>
<th>20,000</th>
<th>30,000</th>
<th>50,000</th>
<th>100,000</th>
<th>Total A&amp;B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corp. Mining/Other</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>5</td>
<td>2</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>Corp. Pastoral</td>
<td>26</td>
<td>23</td>
<td>21</td>
<td>20</td>
<td>20</td>
<td>17</td>
<td>7</td>
<td>26</td>
</tr>
<tr>
<td>Crown Land</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>DEC</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Indigenous</td>
<td>17</td>
<td>16</td>
<td>12</td>
<td>9</td>
<td>6</td>
<td>3</td>
<td>2</td>
<td>19</td>
</tr>
<tr>
<td>Private</td>
<td>76</td>
<td>67</td>
<td>54</td>
<td>44</td>
<td>34</td>
<td>15</td>
<td>5</td>
<td>80</td>
</tr>
<tr>
<td>Private Cons.</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>128</td>
<td>115</td>
<td>96</td>
<td>82</td>
<td>67</td>
<td>37</td>
<td>14</td>
<td>136</td>
</tr>
</tbody>
</table>


3.2.11 Stock number trends on A and C viability class Stations

Stock number trends are compared between A and C viability class Stations in Table 3-25 and Table 3-26. These results show some differences between the two classes. For example, in the Gascoyne there has been a slight increase in stock numbers on A classified Stations but a decrease on C classified Stations. In the Kimberley stock numbers have increased at a greater rate on the C Stations than on the A Stations. In the Murchison the greatest decline has been on C classified Stations.

Table 3-25  Ratio of stock numbers to PCC for A and C rated Stations by region (5 year means)

<table>
<thead>
<tr>
<th>Stock numbers / Rated PCC</th>
<th>(87-91)</th>
<th>(92-96)</th>
<th>(97-01)</th>
<th>(02-06)</th>
<th>(07-11)</th>
<th>(87-91)</th>
<th>(92-96)</th>
<th>(97-01)</th>
<th>(02-06)</th>
<th>(07-11)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Station Viability Class</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Agricultural</td>
<td>151%</td>
<td>106%</td>
<td>79%</td>
<td>50%</td>
<td>34%</td>
<td>101%</td>
<td>101%</td>
<td>70%</td>
<td>72%</td>
<td></td>
</tr>
<tr>
<td>Gascoyne</td>
<td>70%</td>
<td>69%</td>
<td>68%</td>
<td>63%</td>
<td>75%</td>
<td>99%</td>
<td>101%</td>
<td>101%</td>
<td>70%</td>
<td>72%</td>
</tr>
<tr>
<td>Goldfields</td>
<td>50%</td>
<td>35%</td>
<td>37%</td>
<td>28%</td>
<td>32%</td>
<td>59%</td>
<td>49%</td>
<td>44%</td>
<td>34%</td>
<td>24%</td>
</tr>
<tr>
<td>Kimberley</td>
<td>78%</td>
<td>58%</td>
<td>60%</td>
<td>68%</td>
<td>83%</td>
<td>76%</td>
<td>63%</td>
<td>60%</td>
<td>64%</td>
<td>103%</td>
</tr>
<tr>
<td>Meekatharra</td>
<td>51%</td>
<td>48%</td>
<td>67%</td>
<td>77%</td>
<td>67%</td>
<td>73%</td>
<td>56%</td>
<td>65%</td>
<td>58%</td>
<td>65%</td>
</tr>
<tr>
<td>Murchison</td>
<td>69%</td>
<td>74%</td>
<td>69%</td>
<td>48%</td>
<td>43%</td>
<td>100%</td>
<td>104%</td>
<td>91%</td>
<td>55%</td>
<td>48%</td>
</tr>
<tr>
<td>Nullarbor</td>
<td>44%</td>
<td>59%</td>
<td>64%</td>
<td>55%</td>
<td>44%</td>
<td>43%</td>
<td>54%</td>
<td>56%</td>
<td>46%</td>
<td>36%</td>
</tr>
<tr>
<td>Pilbara</td>
<td>60%</td>
<td>52%</td>
<td>77%</td>
<td>87%</td>
<td>98%</td>
<td>75%</td>
<td>64%</td>
<td>88%</td>
<td>99%</td>
<td>103%</td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td>69%</td>
<td>59%</td>
<td>63%</td>
<td>66%</td>
<td>76%</td>
<td>83%</td>
<td>75%</td>
<td>75%</td>
<td>60%</td>
<td>60%</td>
</tr>
</tbody>
</table>


In terms of ownership, corporate mining/other owned leases have shown an increase in stocking levels on category A Stations but a decrease on C classified Stations. Corporate Pastoral Stations have decreased stock numbers across both classes. Indigenous owned properties have reduced their stock numbers between 1992 and 2001 and then increased them after 2001 on both Station classifications. Privately owned Stations have increased stocking levels on category A Stations but declined on C.
3 Profile of the Pastoral Landholding Business Community

Table 3-26  Ratio of stock numbers to PCC for A and C rated Stations by ownership (5 year means)

<table>
<thead>
<tr>
<th>Stock numbers/ Rated PCC</th>
<th>(87-91)</th>
<th>(92-96)</th>
<th>(97-01)</th>
<th>(02-06)</th>
<th>(07-11)</th>
<th>(87-91)</th>
<th>(92-96)</th>
<th>(97-01)</th>
<th>(02-06)</th>
<th>(07-11)</th>
</tr>
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<tbody>
<tr>
<td>Station Viability Class</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Corp. Mining</td>
<td>54%</td>
<td>46%</td>
<td>49%</td>
<td>62%</td>
<td>71%</td>
<td>68%</td>
<td>59%</td>
<td>51%</td>
<td>38%</td>
<td>34%</td>
</tr>
<tr>
<td>Corp. Pastoral</td>
<td>92%</td>
<td>82%</td>
<td>88%</td>
<td>81%</td>
<td>85%</td>
<td>88%</td>
<td>77%</td>
<td>89%</td>
<td>79%</td>
<td>72%</td>
</tr>
<tr>
<td>Crown Land</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DEC</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indigenous</td>
<td>52%</td>
<td>35%</td>
<td>36%</td>
<td>41%</td>
<td>47%</td>
<td>78%</td>
<td>59%</td>
<td>46%</td>
<td>43%</td>
<td>70%</td>
</tr>
<tr>
<td>Private</td>
<td>60%</td>
<td>56%</td>
<td>64%</td>
<td>69%</td>
<td>78%</td>
<td>86%</td>
<td>80%</td>
<td>85%</td>
<td>69%</td>
<td>67%</td>
</tr>
<tr>
<td>Private Cons.</td>
<td>47%</td>
<td>24%</td>
<td>44%</td>
<td>62%</td>
<td>71%</td>
<td>47%</td>
<td>60%</td>
<td>46%</td>
<td>8%</td>
<td>21%</td>
</tr>
<tr>
<td>Mean</td>
<td>65%</td>
<td>57%</td>
<td>64%</td>
<td>67%</td>
<td>75%</td>
<td>85%</td>
<td>77%</td>
<td>77%</td>
<td>62%</td>
<td>63%</td>
</tr>
</tbody>
</table>


3.2.12 Stock number as a proportion of potential carrying capacity – by Business

The average stocking level across each Business was calculated on the basis of 2011 stock numbers compared to potential carrying capacity. The results were categorised in those, for example, carrying less than 25 per cent of PCC, or more than 250 per cent of PCC. The numbers of Businesses in each category were assessed on the basis of region and ownership and are presented in Table 3-27 and Table 3-28.

These data show that 85 per cent of Pastoral Businesses in the Goldfields are stocked at less than 50 per cent of their PCC. In the Murchison it is 57 per cent of businesses and on the Nullarbor 54 per cent of Businesses are stocked at less than 50 per cent of their PCC. These results suggest that for these areas especially it is unlikely that the owners are deriving sufficient income to meet their requirements from the operation of their grazing enterprises. It is presumed that many are involved in other economic activities in order to make a living, and it is known that some of these Businesses have received income support through Centrelink (see Keogh et al. 2011).

At the other end of the scale these data indicate that 20 per cent of Pilbara Businesses are stocked at between 150 and 250 per cent of their rated PCC.

Across ownership classes, 60 per cent of Indigenous Businesses, and 40 per cent of privately owned Businesses are stocked at less than 50 per cent of their PCC. Eight per cent of private Businesses and seven per cent of corporate Pastoral Businesses are stocked at between 150 and 250 per cent of their rated PCC.

These results suggest there are polarised uses of pastoral rangelands. While some areas are now generally under-utilised for pastoral purposes (e.g. Goldfields, Murchison), in the Pilbara 20 per cent of businesses are supporting stock numbers well above the PPC.
3 Profile of the Pastoral Landholding Business Community

Table 3-27 2011 stock numbers as a percentage of Potential Carrying Capacity by region and Business

<table>
<thead>
<tr>
<th>Stock numbers as percentage of PCC by Business</th>
<th>0-25%</th>
<th>25-50%</th>
<th>50-75%</th>
<th>75-100%</th>
<th>100-125%</th>
<th>125-150%</th>
<th>150-250%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural</td>
<td>64%</td>
<td>7%</td>
<td>14%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>14%</td>
</tr>
<tr>
<td>Gascoyne</td>
<td>18%</td>
<td>16%</td>
<td>20%</td>
<td>22%</td>
<td>14%</td>
<td>4%</td>
<td>8%</td>
</tr>
<tr>
<td>Goldfields</td>
<td>63%</td>
<td>22%</td>
<td>10%</td>
<td>2%</td>
<td>0%</td>
<td>2%</td>
<td>0%</td>
</tr>
<tr>
<td>Kimberley</td>
<td>8%</td>
<td>21%</td>
<td>19%</td>
<td>34%</td>
<td>11%</td>
<td>0%</td>
<td>6%</td>
</tr>
<tr>
<td>Meekatharra</td>
<td>10%</td>
<td>28%</td>
<td>23%</td>
<td>18%</td>
<td>8%</td>
<td>10%</td>
<td>5%</td>
</tr>
<tr>
<td>Murchison</td>
<td>30%</td>
<td>20%</td>
<td>38%</td>
<td>9%</td>
<td>0%</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>Nullarbor</td>
<td>36%</td>
<td>18%</td>
<td>18%</td>
<td>18%</td>
<td>9%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Pilbara</td>
<td>5%</td>
<td>10%</td>
<td>17%</td>
<td>22%</td>
<td>22%</td>
<td>5%</td>
<td>20%</td>
</tr>
<tr>
<td>Mean</td>
<td>25%</td>
<td>19%</td>
<td>21%</td>
<td>17%</td>
<td>8%</td>
<td>3%</td>
<td>6%</td>
</tr>
</tbody>
</table>

Source: URS analysis of information provided by DRDL 2012.

Table 3-28 2011 stock numbers as a percentage of Potential Carrying Capacity by ownership and Business

<table>
<thead>
<tr>
<th>Stock numbers as percentage of PCC by Business</th>
<th>0-25%</th>
<th>25-50%</th>
<th>50-75%</th>
<th>75-100%</th>
<th>100-125%</th>
<th>125-150%</th>
<th>150-250%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corp. Mining/Other</td>
<td>52%</td>
<td>15%</td>
<td>22%</td>
<td>7%</td>
<td>4%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Corp. Pastoral</td>
<td>7%</td>
<td>14%</td>
<td>29%</td>
<td>21%</td>
<td>21%</td>
<td>0%</td>
<td>7%</td>
</tr>
<tr>
<td>Crown Land</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indigenous</td>
<td>38%</td>
<td>22%</td>
<td>18%</td>
<td>11%</td>
<td>7%</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>Private</td>
<td>20%</td>
<td>19%</td>
<td>22%</td>
<td>19%</td>
<td>8%</td>
<td>4%</td>
<td>8%</td>
</tr>
<tr>
<td>Private Cons.</td>
<td>43%</td>
<td>14%</td>
<td>14%</td>
<td>14%</td>
<td>14%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Mean</td>
<td>25%</td>
<td>19%</td>
<td>21%</td>
<td>17%</td>
<td>8%</td>
<td>3%</td>
<td>6%</td>
</tr>
</tbody>
</table>

Source: URS analysis of information provided by DRDL 2012.

3.2.13 Non-pastoral activities undertaken by pastoral lessees

People continue to want live on Pastoral Leases, often when stocking level data suggest those grazing enterprises are likely to generate small or negative net incomes. A key question is ... 'What are people doing to maintain themselves without sufficient pastoral incomes?' Since 1998, some 144 Diversification Permits have been issued for agricultural/horticultural activities, and pastoral-based tourist activities. This suggests a demand by pastoral leaseholders to diversify their income base or to find other enterprises to allow them to continue to live on their Pastoral Lease.

This report collated PLB lease ownership data, Diversification Permit data, with associated income and cost data, and undertook a broad survey of activities on Stations using the knowledge of local DAFWA field staff. This survey aimed to determine the types of non-grazing activities leaseholders may be undertaking, and to indicate the level of on- and off-lease income that may be supporting many Pastoral Businesses and their families.

The aim of this survey was not to try and determine what is viable or what level of income any individual, or family, or business needs to survive. As such no specific income levels were sought but an indication of whether businesses had some, or major, alternative sources other than grazing-
derived income. The Diversification Permit data did provide some indication of income and expenses but this is only considered indicative as costs are not well accounted for between enterprises and income or value may be un-costed if the enterprise provides fodder directly to the grazing enterprise. Diversification Permit income greater than $50,000 was considered as major, otherwise a subjective measure was applied where ‘major’ assumed people were deriving more from non-grazing income sources than from their grazing income, and ‘some’ indicated a minor enterprise or intermittent non-grazing income sources.

The results of this analysis and the survey are presented in Table 3-29 and Table 3-30 where data are shown on the basis or region and Business ownership. Note that results are presented for Pastoral Businesses rather than individual Pastoral Stations or Pastoral Leases. About 97 per cent of Businesses were covered by the assessment data and local expert knowledge.

**Pastoral only**

Overall 27 per cent of Pastoral Businesses are suggested to be ‘pastoral only’ Businesses without any external sources of income or alternative on- or off-lease enterprises. Sixty four per cent of Nullarbor Businesses were classed as ‘pastoral only’, along with 43 per cent in the Meekatharra region, 37 per cent in the Pilbara, 45 per cent in the Gascoyne, and 26 per cent in the Kimberley. Only six per cent of Pastoral Businesses are ‘pastoral only’ in the Goldfields and 14 per cent in the Murchison. Sixty nine per cent of corporate Pastoral Businesses were classed as ‘pastoral only’, whereas only 10 per cent of Indigenous owned and 32 per cent of privately owned Businesses were considered ‘pastoral only’.

**Diversification Permits**

Currently there are some 83 Diversification Permits, with some Pastoral Leases/lessees having multiple permits. There was a mismatch of some 10 Pastoral Leases between data indicating income and costs from a permit and those Pastoral Leases indicated as having a permit. Some of this discrepancy results from Pastoral Leases with activities approved prior to the current permitting system. The data suggest that some 71 Pastoral Leases or 67 Businesses have a permit. The frequency or number of permits does not correlate with the state of the pastoral industry in a region, but more with the opportunity for alternative enterprises.

Thirty four per cent of businesses in the Kimberley have a Diversification Permit and 33 per cent in the Murchison. Only three per cent of Businesses in the Meekatharra region have a permit, and 10 per cent in the Goldfields where the pastoral industry has the lowest percentage of “pastoral only” Businesses. Only six of 68 Businesses with a permit suggested they netted more than $20,000 from their permitted activity. This suggests 90 per cent of permitted activities make marginal returns at best.

Tourism, accommodation, and training activities are most common with 23 per cent of Kimberley Businesses, and 28 per cent of Murchison Businesses having this type of permit. Anecdotal evidence suggests that not all accommodation-based enterprises have a Diversification Permit and that informal arrangements take advantage of short term opportunities, especially those associated with the mining industry. However, these activities provide useful support to mining companies, especially when projects are in the exploration or development stages (see Section 3.3.8).
3 Profile of the Pastoral Landholding Business Community

A review of the Diversification Permit process in 2009 was commissioned by DAFWA (2009) and conducted by a multi-agency senior officers’ group. The Review Group recognised benefits from diversification on Pastoral Leases including improving the viability of Businesses on Pastoral Leases, and reducing the pressure on the land resource through intensifying land use.

However, the Review found that there were a number of operational constraints that inhibited the effectiveness and efficiency of the diversification permitting process, and recommendations were made for reforms to the process. These remain to be acted upon in full. However, the Review did not consider the problem associated with the permitting process which affects third party involvement or capital in the new enterprise (see Section 2.3.5). This was reported to URS as being a disincentive to industry development.

Sandalwood contractors

Forest Products Commission (FPC), who issue the contracts for wild sandalwood harvest, advised URS that 9 pastoral lessees hold contracts for delivery of green and dead wood, with about 12 holding contracts for delivery of dead wood. The native sandalwood industry is discussed in more detail in Section 3.3.3.

Community bases, lifestyle, or non-commercial

Thirteen per cent of Pastoral Businesses were described as primarily being community bases, lifestyle or non-commercial, with the majority being in the Kimberley, Agricultural fringe, and Goldfields. This covers a wide range of uses and objectives. Many Indigenous owned properties do not support commercial grazing enterprises but maintain a ‘subsistence herd’ and provide useful training opportunities. Lifestyle properties are those supported with off-lease incomes where the lessee may or may not live on the Pastoral Lease. The ‘non-commercial’ category describes a few Pastoral Leases that are either abandoned or largely destocked. Sixty nine per cent of Indigenous owned Pastoral Leases were described as being in this category. However, the stock number data indicate stocking levels are increasing on Indigenous owned leases.

Linked to farms or other leases

Some 10 per cent of Pastoral Businesses are linked with a farm or another lease outside of WA. Some 14 per cent of privately owned Pastoral Leases are linked in this way. Twenty six per cent of Indigenous owned Pastoral Leases are sub-leased to another Pastoral Business for grazing uses. This provides some income to communities who want an association with the country but don’t necessarily want to operate a commercial grazing enterprise.

Non-pastoral income - on-lease

Sixteen per cent of Businesses were indicated as deriving some non-pastoral income from on-lease activities (5% major and 11% some). Notably this is less than the number of Businesses with Diversification Permits – an indication that many Permits are not actively used (or the income is not declared, or it is insignificant).

Twenty eight per cent of Businesses have some form of off-lease income (23% major and 5% some). Private and Indigenous owned Pastoral Leases have the highest level of on or off-lease income, with 29 per cent of privately owned Businesses having ‘major’ off-lease income. In the Goldfields 60 per
cent of Businesses have off-lease income (54% major) and between 28 and 42 per cent of pastoral lessees in the Meekatharra, Murchison and Nullarbor regions have off-lease income sources. In the Goldfields this income is primarily associated with working for, or contracting to the mining industry. Aside from the few Businesses in the Agricultural area the lowest level of non-pastoral income is in the Kimberley and Pilbara.

In aggregate some 41 per cent of Pastoral Businesses have some form of non-grazing income. In the Goldfields 68 per cent of Businesses are suggested to have some form of non-grazing dependant income, and in the Murchison it is 58 per cent of Businesses. Overall about half of privately owned businesses have some form of non-grazing income.
### Table 3-29 Activities undertaken on Pastoral Lease areas – by Business and region

<table>
<thead>
<tr>
<th></th>
<th>Pastoral Only</th>
<th>Permit</th>
<th>Profit &gt;$20k</th>
<th>Tourist/ Accom/ Training</th>
<th>Pasture/ agric</th>
<th>Hort/ Veg/ Aqua</th>
<th>Sandalwood Contract</th>
<th>Commty, Lifestyle, Non-commercial</th>
<th>Linked to other/ farm</th>
<th>Sub-leased to other</th>
<th>On lease Non-Past Income (major)</th>
<th>On lease Non-Past Income (some)</th>
<th>Off-lease Income (major)</th>
<th>Off-lease Income (some)</th>
<th>Any non-grazing income</th>
<th>Responses</th>
<th>Number of Businesses</th>
<th>Businesses with data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural</td>
<td>0%</td>
<td>14%</td>
<td>0%</td>
<td>21%</td>
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<td>0%</td>
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<td>21%</td>
<td>19</td>
<td>14</td>
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</tr>
<tr>
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<td>12%</td>
<td>4%</td>
<td>8%</td>
<td>0%</td>
<td>4%</td>
<td>10%</td>
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<td>56</td>
<td>49</td>
<td>96%</td>
</tr>
<tr>
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<td>2%</td>
<td>2%</td>
<td>4%</td>
<td>16%</td>
<td>6%</td>
<td>2%</td>
<td>6%</td>
<td>12%</td>
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<td>6%</td>
<td>68%</td>
<td>79</td>
<td>50</td>
<td>100%</td>
</tr>
<tr>
<td>Kimberley</td>
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<td>10%</td>
<td>23%</td>
<td>16%</td>
<td>3%</td>
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<td>29%</td>
<td>2%</td>
<td>13%</td>
<td>11%</td>
<td>11%</td>
<td>6%</td>
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<td>116</td>
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<tr>
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<td>0%</td>
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<td>8%</td>
<td>13%</td>
<td>3%</td>
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<tr>
<td>Murchison</td>
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<td>33%</td>
<td>5%</td>
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<td>4%</td>
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<td>33%</td>
<td>9%</td>
<td>58%</td>
<td>90</td>
<td>57</td>
<td>89%</td>
</tr>
<tr>
<td>Nullarbor</td>
<td>64%</td>
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<td>9%</td>
<td>0%</td>
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<td>9%</td>
<td>27%</td>
<td>9%</td>
<td>45%</td>
<td>10</td>
<td>11</td>
<td>100%</td>
</tr>
<tr>
<td>Pilbara</td>
<td>37%</td>
<td>17%</td>
<td>29%</td>
<td>10%</td>
<td>10%</td>
<td>0%</td>
<td>0%</td>
<td>12%</td>
<td>12%</td>
<td>5%</td>
<td>5%</td>
<td>5%</td>
<td>2%</td>
<td>10%</td>
<td>22%</td>
<td>45</td>
<td>41</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td><strong>27%</strong></td>
<td><strong>21%</strong></td>
<td><strong>10%</strong></td>
<td><strong>16%</strong></td>
<td><strong>6%</strong></td>
<td><strong>3%</strong></td>
<td><strong>1%</strong></td>
<td><strong>13%</strong></td>
<td><strong>10%</strong></td>
<td><strong>4%</strong></td>
<td><strong>5%</strong></td>
<td><strong>11%</strong></td>
<td><strong>23%</strong></td>
<td><strong>5%</strong></td>
<td><strong>41%</strong></td>
<td><strong>445</strong></td>
<td><strong>324</strong></td>
<td><strong>97%</strong></td>
</tr>
</tbody>
</table>

Source: URS analysis of information provided by DRDL and DAFWA 2012.
### 3 Profile of the Pastoral Landholding Business Community

#### Table 3-30  Activities undertaken on Pastoral Lease areas – by Business and ownership class

| Ownership Class | Pastoral Only | Permit | Profit >$20k (% of permits) | Tourism/Accomm/Training | Pasture/agric | Hort, Veg, Aqua | Sandalwood Contract | Commly, Lifestyle, Non-commercial | Linked to other/farm | Sub-leased to other | On lease: Non-Past Income (major) | On lease: Non-Past Income (some) | Off-lease Income (major) | Off-lease Income (some) | Any non-grazing income | Responses | Number of Businesses | Businesses with data |
|-----------------|--------------|-------|-----------------------------|-------------------------|---------------|---------------|-----------------|---------------------|---------------------|------------------|-----------------------------|--------------------------|--------------------------|---------------------------|-----------------|-----------------------|------------------------|
| Corp. Mining/Other | 0%           | 15%   | 0%                          | 0%                      | 0%            | 0%            | 0%              | 0%                  | 0%                  | 0%               | 7%                          | 0%                       | 0%                       | 0%                        | 7%              | 37                    | 27                      | 96%             |
| Corp. Pastoral   | 69%          | 23%   | 33%                         | 8%                      | 23%           | 8%            | 0%              | 8%                  | 0%                  | 23%              | 0%                          | 0%                       | 0%                       | 23%                        | 7%              | 21                    | 13                      | 93%             |
| Crown Land       |              |       |                             |                         |               |               |                 |                     |                     |                  |                             |                          |                          |                            |                |                       |                          |                  |
| DEC             |              |       |                             |                         |               |               |                 |                     |                     |                  |                             |                          |                          |                            |                |                       |                          |                  |
| Indigenous       | 10%          | 12%   | 0%                          | 10%                     | 2%            | 0%            | 0%              | 69%                 | 2%                  | 26%              | 2%                          | 7%                       | 10%                      | 0%                        | 19%              | 70                    | 42                      | 93%             |
| Private         | 32%          | 22%   | 12%                         | 18%                     | 5%            | 3%            | 1%              | 6%                  | 14%                 | 0%               | 6%                          | 11%                      | 29%                      | 7%                        | 49%              | 307                   | 235                     | 98%             |
| Private Cons.    | 0%           | 43%   | 0%                          | 71%                     | 0%            | 0%            | 0%              | 0%                  | 0%                  | 0%               | 71%                        | 0%                       | 0%                       | 71%                        | 0%               | 15                    | 7                       | 100%            |
| **Mean**        | **27%**      | **21%**| **10%**                     | **16%**                 | **6%**        | **3%**        | **1%**          | **13%**             | **10%**             | **4%**          | **5%**                     | **11%**                  | **23%**                   | **5%**                     | **41%**        | **445**               | **324**                   | **97%**         |

Source: URS analysis of information provided by DRDL and DAFWA 2012.
3.2.14 Financial health of Pastoral Businesses

In this section, available data and information on the financial health of Pastoral Businesses are reviewed, with the focus being on the metrics associated with grazing enterprises. As explained in other sections, obtaining valid and reliable data on income earned by pastoral leaseholders operating non-grazing enterprises is difficult.

Kimberley region

The most recent analysis of the physical and financial health of the pastoral industry in the Kimberley is contained in a report by Gleeson et al. (2012), which assessed the risks and opportunities in the Northern Australian Beef Industry. The report was prepared for the Northern Australian Ministerial Council. Given the live export issue in 2011, the report focuses on the importance of that trade to the northern beef industry.

The data presented for the WA industry are shown in Table 3.1. This includes average data across all cattle businesses (carrying more than 100 cattle) in northern WA, with a breakdown into those located in the Kimberley and those in the Pilbara.

Table 3.1 Physical and financial performance of businesses (avg. for 2008-09, 2009-10 and 2010-11)

<table>
<thead>
<tr>
<th>Item</th>
<th>Northern WA</th>
<th>Kimberley</th>
<th>Pilbara-Gascoyne</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of businesses*</td>
<td>107</td>
<td>67</td>
<td>51 (110)**</td>
</tr>
<tr>
<td>Physical performance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average area operated (km²)</td>
<td>2,347</td>
<td>3,325</td>
<td>1,928</td>
</tr>
<tr>
<td>Average cattle number</td>
<td>7,100</td>
<td>13,500</td>
<td>4,300</td>
</tr>
<tr>
<td>Average stocking rate (ha/beast)</td>
<td>33</td>
<td>24</td>
<td>44</td>
</tr>
<tr>
<td>Net cattle turnoff %</td>
<td>26%</td>
<td>25%</td>
<td>27%</td>
</tr>
<tr>
<td>Branding rate %</td>
<td>63%</td>
<td>66%</td>
<td>61%</td>
</tr>
<tr>
<td>Stacking rate (ha/LSU)</td>
<td>36</td>
<td>24</td>
<td>41</td>
</tr>
<tr>
<td>Financial performance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farm cash income</td>
<td>$269,500</td>
<td>$540,000</td>
<td>$153,300</td>
</tr>
<tr>
<td>Cash operating margin</td>
<td>23%</td>
<td>25%</td>
<td>22%</td>
</tr>
<tr>
<td>Business profit</td>
<td>$78,000</td>
<td>$264,800</td>
<td>($2,100)</td>
</tr>
<tr>
<td>Profit margin</td>
<td>4%</td>
<td>13%</td>
<td>0%</td>
</tr>
<tr>
<td>Profit margin at full equity</td>
<td>12%</td>
<td>14%</td>
<td>11%</td>
</tr>
<tr>
<td>Rate of return</td>
<td>1.4%</td>
<td>1.7%</td>
<td>1.3%</td>
</tr>
<tr>
<td>Land value per LSU</td>
<td>$700</td>
<td>$700</td>
<td>$740</td>
</tr>
<tr>
<td>Equity</td>
<td>na</td>
<td>na</td>
<td>80%</td>
</tr>
<tr>
<td>Debt servicing ratio</td>
<td>na</td>
<td>na</td>
<td>34%</td>
</tr>
<tr>
<td>Non-pastoral income</td>
<td>na</td>
<td>na</td>
<td>$39,300</td>
</tr>
</tbody>
</table>

* there is a discrepancy in total numbers; ** 51 businesses in the Pilbara, 110 covering both Pilbara and Gascoyne. Physical and financial data in this column are for Pilbara and Gascoyne combined.

The data show a reasonable profit margin, but a low return on assets in the Kimberley and Pilbara-Gascoyne, and a relatively high debt servicing ratio in the latter region. Although separate data are not presented for Kimberley businesses, business debt levels in family businesses across the northern
live cattle export region have increased by 232 per cent since 1999-2000, from an average of $280,000 in June 2000 to $650,000 in June 2011, in real terms (Gleeson et al. 2012, p. 42). However, it is worth noting that debt has increased across agricultural enterprises in most regions of Australia in the same period, but the northern live cattle export region experienced one of the largest increases.

In an earlier study funded by Meat and Livestock Australia Limited, McCosker et al. (2010) analysed the economic and financial situation in the northern Australian beef industry. They focused on four study regions, one of which was the Pilbara, and the work preceded the live cattle export issues that arose in 2011. Although the Kimberley was not included as one of the study regions, the following findings for the northern areas are relevant to the Kimberley businesses.

- The average return on assets across all areas in 2009 was between 0.3 and 2.0 per cent, with average beef producers spending more than earnings in 6 of the previous 7 years.
- Increasing land values have encouraged high debt levels (see previous paragraph), with debt levels doubling on a per LSU basis over the decade to 2010. Finance ratios (finance costs/ gross product) have reached 20 per cent which given low return on assets, means the business was at risk.
- Queensland data show that the number of animals required to meet fixed (overhead) costs increased over the decade from 1,123 to 2,504.
- Higher performing businesses were related to the number of animals/ scale of the operation, individual animal productivity, skills of the manager and associated running costs. The quality of strategic and management decisions around overheads and scale was found to be paramount in determining profitability (adapted from McCosker et al. 2010, pp. 3-4.).

**Pilbara region**

There are 47 Pastoral Businesses in the Pilbara that can be considered commercial (Dray et al. 2010). The most recent review of the Pilbara pastoral industry (Holmes et al. 2010) contributed to the McCosker et al. report referred to above and investigated in detail the performance of three Businesses in the region over the years 2002-03 to 2007-08.

The aggregated physical and financial attributes of the three Businesses across these years is shown in Table 3-32. The information presented show that a positive return on assets managed (ROAM) was achieved in only three of the six years. This was despite generally good seasons with the exception of 2004-05. In analysing the drivers for performance, stocking rate only contributed 17 per cent of the variation in profits between herds over time, with profit per breeder being vital to overall profit.

The performance data were used to determine key performance indicators (KPIs) over the three properties for the six years of records. Holmes et al. (2010) compared the Pilbara performance on the KPIs shown in Table 3-33 against targets for what was (in 2010) being achieved in other rangeland regions, and the levels of performance required to achieve economic sustainability. Closing the gap between actual and target performance is a challenge for the Pilbara Pastoral Businesses, and has led DAFWA to commence a benchmarking project in the Pilbara as a means for pastoral lessees to identify areas for improvement within their own businesses (DAFWA pers. comm.).
Table 3-32  Averaged performance of three Pilbara Pastoral Businesses 2002-2008

<table>
<thead>
<tr>
<th>Item</th>
<th>02/03</th>
<th>03/04</th>
<th>04/05</th>
<th>05/06</th>
<th>06/07</th>
<th>07/08</th>
<th>Ave</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical attributes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effective area (km$^2$)</td>
<td>1,704</td>
<td>1,704</td>
<td>1,704</td>
<td>1,704</td>
<td>1,704</td>
<td>1,704</td>
<td>1,704</td>
</tr>
<tr>
<td>Total breeders</td>
<td>3,816</td>
<td>3,543</td>
<td>3,417</td>
<td>3,655</td>
<td>3,614</td>
<td>4,292</td>
<td>3,723</td>
</tr>
<tr>
<td>Total cattle</td>
<td>9,817</td>
<td>8,961</td>
<td>8,664</td>
<td>8,377</td>
<td>8,788</td>
<td>10,071</td>
<td>9,251</td>
</tr>
<tr>
<td>Weaners/ cows mated%</td>
<td>67</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breeder deaths%</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females sold</td>
<td>806</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steers sold</td>
<td>1,548</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total sales</td>
<td>2,354</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rainfall (mm)</td>
<td>250</td>
<td>598</td>
<td>189</td>
<td>664</td>
<td>318</td>
<td>259</td>
<td>380</td>
</tr>
</tbody>
</table>

**Financial attributes**

<table>
<thead>
<tr>
<th>Item</th>
<th>02/03</th>
<th>03/04</th>
<th>04/05</th>
<th>05/06</th>
<th>06/07</th>
<th>07/08</th>
<th>Ave</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross profit ($'000)</td>
<td>987</td>
<td>559</td>
<td>1,451</td>
<td>858</td>
<td>1,681</td>
<td>1,294</td>
<td>1,138</td>
</tr>
<tr>
<td>Enterprise costs ($'000)</td>
<td>371</td>
<td>206</td>
<td>248</td>
<td>168</td>
<td>220</td>
<td>203</td>
<td>236</td>
</tr>
<tr>
<td>Overheads ($'000)</td>
<td>724</td>
<td>662</td>
<td>803</td>
<td>674</td>
<td>769</td>
<td>559</td>
<td>699</td>
</tr>
<tr>
<td>EBIT ($'000)</td>
<td>(107)</td>
<td>(310)</td>
<td>400</td>
<td>17</td>
<td>692</td>
<td>531</td>
<td>204</td>
</tr>
<tr>
<td>Interest/ lease ($'000)</td>
<td>29</td>
<td>49</td>
<td>60</td>
<td>52</td>
<td>55</td>
<td>78</td>
<td>54</td>
</tr>
<tr>
<td>Profit after interest ($'000)</td>
<td>(136)</td>
<td>(358)</td>
<td>340</td>
<td>(35)</td>
<td>638</td>
<td>454</td>
<td>150</td>
</tr>
<tr>
<td>ROAM %</td>
<td>(5.5)</td>
<td>(2.5)</td>
<td>1.8</td>
<td>(0.4)</td>
<td>6.1</td>
<td>3.5</td>
<td>na</td>
</tr>
<tr>
<td>Equity %</td>
<td>87</td>
<td>78</td>
<td>80</td>
<td>80</td>
<td>78</td>
<td>77</td>
<td>na</td>
</tr>
<tr>
<td>Net asset value change%</td>
<td>(11.4)</td>
<td>(0.8)</td>
<td>(0.6)</td>
<td>(6.2)</td>
<td>10.0</td>
<td>1.9</td>
<td>na</td>
</tr>
<tr>
<td>Total business return %</td>
<td>(16.9)</td>
<td>(3.3)</td>
<td>1.2</td>
<td>(6.6)</td>
<td>16.1</td>
<td>5.3</td>
<td>na</td>
</tr>
</tbody>
</table>

Holmes et al. (2010).

Table 3-33  KPIs for Pilbara Pastoral Businesses and requirements for economic sustainability

<table>
<thead>
<tr>
<th>Indicator/ benchmark</th>
<th>Pilbara</th>
<th>Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return on assets</td>
<td>0.50%</td>
<td>&gt;3%</td>
</tr>
<tr>
<td>Total business return</td>
<td>-0.70%</td>
<td>&gt;9%</td>
</tr>
<tr>
<td>Equity</td>
<td>80%</td>
<td>&gt;85%</td>
</tr>
<tr>
<td>Income/ breeder</td>
<td>$309</td>
<td>$375</td>
</tr>
<tr>
<td>Enterprises expenses/ breeder</td>
<td>$103</td>
<td>$295</td>
</tr>
<tr>
<td>Gross margin/ breeder</td>
<td>$206</td>
<td>$170</td>
</tr>
<tr>
<td>EBIT/ breeder</td>
<td>$0</td>
<td>$125</td>
</tr>
<tr>
<td>Cost production/ kg beef</td>
<td>$1.31</td>
<td>&lt;$0.90</td>
</tr>
<tr>
<td>Operating margin/ kg beef</td>
<td>$0.12</td>
<td>&gt;$0.50</td>
</tr>
<tr>
<td>Gross $/ head sold</td>
<td>$427</td>
<td>&gt;$525</td>
</tr>
<tr>
<td>Kg beef/ breeder</td>
<td>257</td>
<td>&gt;300</td>
</tr>
<tr>
<td>Breeders/ labour unit</td>
<td>382</td>
<td>&gt;800</td>
</tr>
</tbody>
</table>

Holmes et al. (2010), p. 15.
Holmes et al. (2010) concluded that:

‘... the major issues and risks to sustainability in the Pilbara were identified by the study as:
- Sub-optimal breeder productivity;
- The high risk and impact of failed growing seasons;
- Sub-optimal labour efficiency; and
- High mustering costs (p. 5).’

The rapid increase in cattle numbers in the Pilbara as shown earlier in Section 3.2.5 is reflected in the stocking rate data for the Pilbara-Gascoyne presented in Table 3-31, which at 44 ha/beast is well above recommended PCCs for the Pilbara and Gascoyne areas on a whole Station basis. In Table 3-32, the average stocking rate in 2008 for the three properties investigated was 18 effective ha/beast. The reports cited have not considered any risk to the condition land resource resulting from these high stocking rates.

The information presented by Holmes et al. (2010) can be compared to that presented by Gleeson et al. (2012) shown in Table 3-31, with the larger ABARES sample including properties in the Pilbara and Gascoyne. There is reasonable alignment in the KPIs presented in the two reports, in that return on assets managed, profit and equity levels are all below desirable levels in both samples.

**Southern Rangelands region**

The situation in the Southern Rangelands, being those areas south of the Gascoyne River that were traditionally reliant on small stock (sheep and goats) as the main source of grazing income has changed dramatically in the years since 1990, with the rate of change accelerating in the period after 2005. Basically, small stock have almost disappeared from the Southern Rangelands areas, replacement with large stock has been haphazard and incomes from grazing enterprises have reduced. In effect, net income from grazing activities (i.e. meat and fibre sales) now comprises a minor proportion of leaseholder disposable income for many Businesses, with most of these located in the Murchison and Goldfields regions (see comments about the number of Businesses obtaining non-grazing income in Section 3.3).

The most recent review of the financial situation of pastoral leases in this area was completed by Herbert (2010). The following quotation and Figure 3-9 and Figure 3-10 are taken from that Report.

*By arrangement, DAFWA has been receiving the ABARE Farm Survey information for an average farm customised to the DAFWA administration regions – which included a grouping to represent the southern rangelands – excluding the Pilbara. ABARE has pointed out that this grouping does not have statistical relevance in comparison to their broader region 512. However, with a sample size of 10-20 pastoral businesses each year, it provides some indication of annual financial health since 1989. (Herbert 2010, p. 20).*

Although the sample of Businesses is not large, the trends show that incomes are low, and have been declining since the mid 2000s. In nearly all years since 1991 (when the Wool Price Reserve Scheme collapsed), less than 50 per cent of Pastoral Businesses have been delivering a positive profit from grazing activities.
3 Profile of the Pastoral Landholding Business Community

Figure 3-9 Southern Rangelands - trend in cash incomes

![Southern Rangelands - Real (1997 base) net farm cash income and 5 year moving average. From ABARE Farm Surveys.](image)

Figure 3-10 Southern rangelands- percentage of businesses with positive farm business profit

![Southern Rangelands - % of farms with positive farm business profit and 5 year moving average. From ABARE Farm Surveys.](image)

Indigenous Pastoral Businesses
Fifty seven Pastoral Leases (covering some 11.0 million hectares) are held by:

- Indigenous lessees on behalf of families or Aboriginal Corporations (as incorporated under the Commonwealth Corporations (Aboriginal and Torres Strait Islander) Act 2006); or
- Indigenous lessees on behalf of Aboriginal Corporations incorporated under Western Australian legislation; or
- the Indigenous Land Corporation who have acquired the leases and are managing them directly, or have divested the leases to Traditional Owners, or are in the process of divesting those leases; or
- the WA Aboriginal Lands Trust who have acquired the leases and are managing them directly, or who have sub-leased the Pastoral Leases to other parties.
3 Profile of the Pastoral Landholding Business Community

At Commonwealth level, pastoral leasehold acquisition, management and divestment to traditional owners occurs through the Indigenous Land Corporation (ILC), which is an Australian Government agency. Since 1999, the ILC has acquired 11 Pastoral Leases in WA covering an area of 2.48 million hectares. Currently, the ILC holds and manages six of those leases, and another one has been sub-leased back to ILC. The Corporation is involved in supporting, via funding, economic development on a further 10 leases. The ILC will continue to acquire Pastoral Leases for traditional owners, based on sound cases for the economic and social viability of the intended business as presented by the applicants, and given the availability of funding (ILC pers. comm.).

At WA Government level, the Aboriginal Lands Trust (ALT) is responsible for the management of 27 million hectares (11% of the state’s area), most of which is reserve land in Central Australia outside the scope of this Project. The ALT receives an allocation of $350,000 pa to manage its total estate (equates to 1.3c/ha). Included are six pastoral leases, two of which are sub-leased, with one now passed to an Aboriginal Corporation, with the remaining three managed directly. The ALT is not acquiring further Pastoral Leases (advice from DIA 2012). The ALT Estate also includes a large number of smaller reserves located within the rangelands, as defined for this Project that in many cases support significant populations.

The government bodies that have purchased Pastoral Leases have done so with the objectives of supporting Traditional Owners who want access to country, and/or to support Indigenous participation in the pastoral economy and/or for other economic and community development objectives. However, many of the leases acquired are not viable for grazing purposes (using the DAFWA categorisation) which presents the lessees with a challenge in terms of delivering benefits. For example, significant land management issues exist on two of leases held by the ALT, with the Trust’s resources and local management being unable to address the scale of the problems.

It is readily acknowledged that many Indigenous lessees also require support with capital, technical skills and managerial capability in realising the potential of their leases. For this reason, the ILC and the ALT have retained operational control of several Pastoral Leases in the Kimberley, while others have been or are being divested to Traditional Owners or native title claimants. Both organisations have training programs in pastoral management for Indigenous people on leases directly managed, with successes claimed for subsequent work placements.

The ILC and DAFWA have combined to set up the Indigenous Landholder Service (ILS), which provides support and assistance to the lessees and managers of Pastoral Leases acquired by or for Indigenous people. This occurs through the Pilbara Indigenous Landholder Service (PILS), the Mid West Indigenous Landholder Services (MILS) and the Kimberley Indigenous Management Support Service (KIMSS).

A concern expressed to URS during consultations is that because many Indigenous properties have low pastoral viability, and are not compliant with lease obligations (including those operated by the WA Government), there is a risk that the leases may not be ‘rolled-over’ as at 2015. However, URS has been advised this is a situation not confined to Indigenous lessees, and there may be many instances across the Pastoral Leasehold Estate. The Rangelands Reform Program offers an opportunity for all lessees to convert Pastoral Leases to Rangeland Leases where this transition enables the lessees to define preferred uses for the land that may include other activities as well as grazing.
3 Profile of the Pastoral Landholding Business Community

Equity in Pastoral Businesses

The equity of 45 Pastoral Businesses in the Pilbara and Southern Rangelands was investigated in 2011, through enquiry of the major financial institutions that lend to this sector (Alan Peggs Rural, 2011). Of these businesses:

- 70 per cent have more than 65 per cent equity (and are considered viable);
- 18 per cent have between 50 and 65 per cent equity (and are considered marginal); and
- 12 per cent have less than 50 per cent equity (and are considered unviable).

There are no data presented on actual values for assets and liabilities, although in case studies for the Pilbara, Gascoyne and Murchison included in the report, total assets (land, stock, fixed infrastructure, plant) are valued at between $15.70 and $25.78/ hectare, and between $10 and $12/ha for land alone, which is higher than the listed prices for properties for sale shown in Section 3.2.2. Thus it may be that given current prices, a higher percentage of properties may be in difficulty than shown in the breakdown above.

Employment in the pastoral industry

The 2006 and 2011 population and employment data for a number of the more remote local governments in the rangelands are shown in Table 3-34.

<table>
<thead>
<tr>
<th>Local Government Area</th>
<th>Year</th>
<th>Total population</th>
<th>Indigenous population (% of total)</th>
<th>Median Age (Indigenous)</th>
<th>Total workforce**</th>
<th>Agricultural workforce (% of total)**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cue</td>
<td>2006</td>
<td>327</td>
<td>110 (33%)</td>
<td>37 (na)</td>
<td>141</td>
<td>11 (7%)</td>
</tr>
<tr>
<td></td>
<td>2011</td>
<td>272</td>
<td>71 (26%)</td>
<td>49 (na)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Halls Creek</td>
<td>2006</td>
<td>3,136</td>
<td>2,480 (79%)</td>
<td>25 (na)</td>
<td>1,088</td>
<td>64 (5%)</td>
</tr>
<tr>
<td></td>
<td>2011</td>
<td>3,560</td>
<td>2,784 (78%)</td>
<td>26 (23)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meekatharra</td>
<td>2006</td>
<td>1,137</td>
<td>459 (40%)</td>
<td>32 (23)</td>
<td>459</td>
<td>53 (11%)</td>
</tr>
<tr>
<td></td>
<td>2011</td>
<td>1,377</td>
<td>451 (32%)</td>
<td>34 (na)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mount Magnet</td>
<td>2006</td>
<td>458</td>
<td>91 (19%)</td>
<td>36 (na)</td>
<td>203</td>
<td>12 (5%)</td>
</tr>
<tr>
<td></td>
<td>2011</td>
<td>643</td>
<td>233 (36%)</td>
<td>37 (24)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Murchison</td>
<td>2006</td>
<td>110</td>
<td>33 (30%)</td>
<td>35 (na)</td>
<td>62</td>
<td>32 (51%)</td>
</tr>
<tr>
<td></td>
<td>2011</td>
<td>114</td>
<td>37 (32%)</td>
<td>38 (na)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Menzies</td>
<td>2006</td>
<td>216</td>
<td>135 (62%)</td>
<td>40 (na)</td>
<td>95</td>
<td>12 (12%)</td>
</tr>
<tr>
<td></td>
<td>2011</td>
<td>384</td>
<td>255 (66%)</td>
<td>37 (31)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sandstone</td>
<td>2006</td>
<td>119</td>
<td>24 (20%)</td>
<td>48 (na)</td>
<td>60</td>
<td>8 (13%)</td>
</tr>
<tr>
<td></td>
<td>2011</td>
<td>105</td>
<td>4 (3%)</td>
<td>48 (na)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper Gascoyne</td>
<td>2006</td>
<td>285</td>
<td>158 (55%)</td>
<td>26 (17)</td>
<td>144</td>
<td>22 (15%)</td>
</tr>
<tr>
<td></td>
<td>2011</td>
<td>251</td>
<td>140 (55%)</td>
<td>27 (na)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yalgoo</td>
<td>2006</td>
<td>242</td>
<td>92 (38%)</td>
<td>39 (na)</td>
<td>124</td>
<td>22 (17%)</td>
</tr>
<tr>
<td></td>
<td>2011</td>
<td>406</td>
<td>91 (23%)</td>
<td>33 (na)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>2,376</td>
<td>236 (10%)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


These data show the disparity between the total workforce numbers and the numbers employed in agriculture (i.e. grazing enterprises). Across these shires, approximately 10 per cent of the workforce is employed by grazing enterprises. The other important item in the table is the relatively high
3 Profile of the Pastoral Landholding Business Community

percentage of Indigenous people resident in these Shires, and where comparative data are available, the younger age structure within that sector of the community.

ABS data from the 2006 census reported in Gleeson et al. (2012) show that 150 people were employed in agriculture in the Pilbara and 426 in the Kimberley, although a proportion of the latter will have been working in irrigated agriculture in the Ord River Irrigation Area. In a survey of Kimberley and Pilbara Pastoral Businesses in 2010, an average of about 5 permanent employees worked on 67 Kimberley businesses, being a total of 335 (Dray et al. 2010).

Although it is not possible to determine an accurate number, and recognising seasonality in labour demand in the cattle industry, it is likely that the total full-time employment in the WA pastoral industry will be of the order of 1,000 people. This highlights previous research indicating the relatively small contribution that the pastoral industry makes to local and regional economies (see Fargher et al. 2003).

3.2.15 Gross value of livestock production from the rangelands

There are a range of figures for the value of livestock production from Pastoral Businesses in WA in recent years, provided by separate organisations. All sources and estimates available to URS are presented below.

In 2008-2009, the gross value of livestock production was estimated at around $240 million, comprising: $180 million in cattle sales; $34 million in wool production; $12 million in sheep sales; and $12 million in goat sales (www.rdl.wa.gov.au/programsandprojects/pastoral/ RangelandReform/Pages/ Default.aspx accessed 3 August 2012).

In a 2009 submission to the Department of Environment and Conservation regarding the Kimberley Science and Conservation Strategy, the Department of Agriculture and Food nominated $84 million for the value of cattle production in the Kimberley, based on a herd size of 560,000 (DAFWA pers. comm.)

ABARES reported that in 2009-2010, the Kimberley cattle industry generated $160.3 million, with cattle enterprises in the Pilbara generating $52 million (see Table 3-35). Livestock production in the Gascoyne area in 2008-2009 was reported as $31.2 million, which will have included cattle and small stock (sheep and goats) products (Gleeson et al. 2012).

Table 3-35 Production data from the cattle industry in the Kimberley and Pilbara (2009-2010)

<table>
<thead>
<tr>
<th>Item</th>
<th>Kimberley</th>
<th>Pilbara</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of businesses</td>
<td>67</td>
<td>51</td>
</tr>
<tr>
<td>Number of cattle (2009-10)</td>
<td>678,000</td>
<td>219,300</td>
</tr>
<tr>
<td>Gross value of pastoral production (2009-2010)</td>
<td>$160.3 m</td>
<td>$52.0 m</td>
</tr>
</tbody>
</table>


ABS figures supplied by DAFWA for livestock (sheep and cattle) production from the rangelands for the three recent years are shown in Table 3-36.
Table 3-36   Value of livestock products from the rangelands ($’000)

<table>
<thead>
<tr>
<th>Item</th>
<th>2005-2006</th>
<th>2009-2010</th>
<th>2010-2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle Sales (Northern Rangelands)</td>
<td>116,550</td>
<td>211,779</td>
<td>279,600</td>
</tr>
<tr>
<td>Cattle sales (Southern Rangelands)</td>
<td>29,544</td>
<td>17,572</td>
<td>49,800</td>
</tr>
<tr>
<td>Sheep sales (Southern Rangelands)</td>
<td>9,945</td>
<td>9,766</td>
<td>11,200</td>
</tr>
<tr>
<td>Wool sales (Southern Rangelands)</td>
<td>15,592</td>
<td>11,487</td>
<td>9,900</td>
</tr>
<tr>
<td>Total</td>
<td>171,731</td>
<td>250,604</td>
<td>350,500</td>
</tr>
</tbody>
</table>

Source: ABS as provided by DAFWA, November 2012.

The data show the steadily declining value of the wool clip from the rangelands, and the increasing value of cattle sales based on live exports\(^{11}\). The proportion of the total value coming from the Northern Rangelands (Kimberley and Pilbara) has increased from 67 to 79 per cent over these years.

When the data presented in Table 3-36 showing gross income from cattle sales are compared with the data for financial performance in the cattle industry presented in Table 3-31 and Table 3-32, it is evident that increased gross income is not translating sufficiently to higher Business profits or percentage returns on assets managed (ROAM).

The estimated value of horticultural enterprises on Pastoral Leases (or excisions from Pastoral Leases) is given in Section 3.3.1.

Summary of the performance of the rangeland livestock industry

The pastoral industry is currently generating about $350 million per annum in gross value of livestock production, although the reported value varies between information sources. The gross value of livestock production from Pastoral Businesses in the Northern Rangelands has increased markedly over the last decade. In the Southern Rangelands, income from cattle is increasing, given that the wool sheep industry has virtually disappeared, and the feral goat harvest has all but ceased.

Despite the increasing value of cattle sales to 2010-11, available analyses of the financial health of Pastoral Businesses throughout the WA rangelands show that on average, poor production characteristics, low income per stock unit, low returns on assets managed, and increasing debt levels occur. Further, productivity gains have been low, and are insufficient to address declining terms of trade.

The available data suggest that relatively few Businesses are returning real profits sufficient to meet commitments to maintaining infrastructure, increasing productivity and managing the land resource. This analysis corresponds with the analysis of Pastoral Business size and activity, which shows that about 20 per cent of Businesses have sufficient scale to generate acceptable returns from livestock enterprises, with only 27 per cent of Pastoral Businesses now ‘pastoral only’ in terms of the enterprise structure.

Where these businesses occur, they are mainly in the Kimberley, with some in the Pilbara, the Gascoyne, the Nullarbor and a few others elsewhere in the Southern Rangelands.

\(^{11}\) Note - the 2010-11 data for cattle sales does not show any loss of income associated with the cessation of live exports during the latter half of 2011.
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Contribution to State and National Production
The economic contribution of the northern Western Australian beef industry to Australian production was calculated for 2009-10 by the Australian Bureau of Agricultural and Resource Economics (ABARES) as shown in Table 3-37. These numbers, which reflect the situation before the disruption of the live export trade in 2011 puts the WA pastoral cattle industry into a national perspective. Note also that the numbers in this assessment are different to those presented in Table 3-37, with part of that accounted for by inclusion here of cattle income from northern Western Australia only.

Table 3-37 Economic contribution of the northern WA beef industries (2012)

<table>
<thead>
<tr>
<th>Activity</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross value of cattle and calf slaughter</td>
<td>$123.3 million</td>
</tr>
<tr>
<td>Share of Australian total cattle GVP</td>
<td>1.9%</td>
</tr>
<tr>
<td>Value of live cattle exports (ex of exports from ports south of the Kimberley)</td>
<td>$109.9 million</td>
</tr>
<tr>
<td>Share of Australian total</td>
<td>20.0%</td>
</tr>
<tr>
<td>Total cattle GVP</td>
<td>$233 million</td>
</tr>
<tr>
<td>Proportion of Australian total cattle GVP</td>
<td>3.3%</td>
</tr>
<tr>
<td>Beef processing value added</td>
<td>$49.3 million</td>
</tr>
<tr>
<td>Total industry value</td>
<td>$282.5 million</td>
</tr>
</tbody>
</table>

Source: (Gleeson et al. 2012, p. 13).

The pastoral areas support 40 per cent of the state’s beef cattle numbers.

The gross value of agricultural production (GVAP) in WA in 2010-2011 was $5,387 million (ABS data). Livestock production from the rangelands represents about 6 per cent of that total.

In 2003, the rangelands contributed $316 million GVAP representing 8 per cent of state production (Anon 2003). In summary, there has been little growth in the agricultural production from the Pastoral Businesses in the rangelands over the period to 2011, and the relative value compared to state GVAP has been declining.

3.2.16 Reported value of permitted activities
The reported value of Diversification Permit activities is provided in Table 3-38, showing the submitted income and expenditure data for 2011 (PLB 2012). These do not align with Diversification Permit types but have been broadly described as fodder and cropping, horticulture, and tourism and accommodation. Fodder and cropping activities might be expected to be undertaken to ‘some’ or a ‘major’ extent for on-lease consumption. As such the value will be underestimated if the product is not sold. However, these activities indicate a net cash loss of $1.04 million. No activity was reported for horticulture income or costs.

Tourism and accommodation activities are indicated to have lost nearly $2 million for the year, having had some 25,000 visitor nights. Of the 29 reported low key tourism ventures only four reported gross income over $100,000, and a further seven between $10,000 and the $35,000. The majority reported gross income of less than $10,000. Only three enterprises reported total visitor nights exceeding 1,000. These data exclude the known two largest and more vertically integrated tourism operations, which represent a different scale of operation and target market.

Note: Although the data are from the same source, this number is higher than that shown in Table 3-35.
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Table 3-38  Value of Diversification Permit activities

<table>
<thead>
<tr>
<th>Activity</th>
<th>Gross Income ($)</th>
<th>Expenditure ($)</th>
<th>Net Profit/ Loss ($)</th>
<th>Tourism Guests (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fodder and cropping</td>
<td>381,407</td>
<td>1,418,113</td>
<td>-1,036,706</td>
<td></td>
</tr>
<tr>
<td>Horticulture</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tourism and accommodation</td>
<td>11,899,439</td>
<td>12,819,914</td>
<td>-920,475</td>
<td>25,251</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>12,280,846</strong></td>
<td><strong>14,238,027</strong></td>
<td><strong>-1,957,181</strong></td>
<td></td>
</tr>
</tbody>
</table>

Source: URS analysis of information provided by DRDL 2012.

A breakdown of the visitor nights by region is presented in Table 3-39. Some 70 per cent of the visitors are shared equally between the Kimberley and the Pilbara, with 20 per cent in the Gascoyne. The other regions had negligible numbers reported. Of these visitors, 94 per cent stayed on privately owned leases and three per cent on Indigenous owned leases. Assuming an average value of $100 per person per night, these tourism and accommodation enterprises generate some $2.5 million annually for the operators.

Table 3-39  Breakdown of visitor nights on leases with Diversification Permits

<table>
<thead>
<tr>
<th>Region</th>
<th>Visitor nights</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural</td>
<td>20</td>
<td>0%</td>
</tr>
<tr>
<td>Gascoyne</td>
<td>4,951</td>
<td>20%</td>
</tr>
<tr>
<td>Goldfields</td>
<td>280</td>
<td>1%</td>
</tr>
<tr>
<td>Kimberley</td>
<td>8,797</td>
<td>35%</td>
</tr>
<tr>
<td>Meekatharra</td>
<td>730</td>
<td>3%</td>
</tr>
<tr>
<td>Murchison</td>
<td>1,213</td>
<td>5%</td>
</tr>
<tr>
<td>Nullarbor</td>
<td>400</td>
<td>2%</td>
</tr>
<tr>
<td>Pilbara</td>
<td>8,860</td>
<td>35%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>25,251</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Source: Data collected via the DRDL’s Annual Return of Livestock and Improvements.

The quality of the data presented in Table 3-38 and Table 3-39 are questionable. The Pastoral Lands Board advise the data are presented from an unaudited source and are (anecdotally) known to be based upon a range of assumptions and estimates of production. They can be further rendered inaccurate when production is a non-cash consumable for another activity of a Pastoral Business (as in the case of fodder production) or income becomes distributed across a business (as in the case of station stay accommodation). They should not be inferred as being anything more than indicative of the level of activity and income derived through pastoral Diversification Permits (PLB pers. comm.)

The issue associated with the availability and quality of the data to inform this study has been referred to in Section 1.3.8, and is considered more generally in Section 6.3.3 and in the recommendations in Sections 7.3.10 and 7.4.10.
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3.3 Non-grazing enterprises in the rangelands

3.3.1 Irrigated agriculture activities and potential

Horticulture developments on Kimberley Pastoral Leases
Across the Kimberley, production from horticulture projects operated by the pastoral landholding business community is worth about $36 million per year. There are also applications for further excisions which, if approved and if the projects are implemented, may increase the value of horticultural production in the Kimberley to some $60 million per year (DAFWA pers com.). ABS data provided by DAFWA suggests a total production value from horticulture in the rangelands of $89 million for 2010-11.

These activities occur mainly on permits on Pastoral Leases and land excised under Section 79 General Leases (under the Land Administration Act 1997).

In the West Kimberley, the La Grange Precinct has an annual water allocation plan of 50 GL/ year, with about 6 GL/ year currently used in horticulture production worth $10 million being carried out on pastoral leasehold land. On one Pastoral Lease, 70 hectares are irrigated, with plans to expand to 320 hectares of mixed horticultural crops. The Western Australian Government has committed $5 million over the next three years to investigate further irrigation opportunities south of Broome in the La Grange area (advice from DAFWA and DOW 2012).

Irrigation developments in the Pilbara
Rio Tinto Iron Ore (RTIO) is developing an irrigation project under a Diversification Permit associated with its cattle grazing operations in the Pilbara. RTIO holds 6 Pastoral Leases in the Pilbara, covering 1.5 million hectares. The company directly manages 1.2 million hectares, with one lease managed by a sub-lessee. It is worth noting that RTIO therefore holds the largest area of pastoral leasehold land held by one entity in the Pilbara. The existing production system is typical of that occurring in the Pilbara as discussed in Section 3.2.14.

Mining developments below the water table that occur on the RTIO Pastoral Leases require dewatering of very large volumes of fresh water, with an estimated 120 GL/ year being generated now. To enable environmentally sound management of this water, and to generate an economic benefit, RTIO will use the water to irrigate an estimated 2,300 ha of summer active perennial grasses. The forage will be used partly as ‘stand and graze’, and also conserved as high quality hay. The project will employ an extra eight people.

The irrigation project will be integrated with the cattle enterprise, by developing a ‘backgrounding facility’ where the hay will be used to grow out female weaners which will be mated in the facility before being turned back into the herd. The backgrounding facility will also be used to hold and feed all sale cattle prior to sending to market. In the ‘stand and graze’ operation, breeders will calve on the irrigated pastures. The project will generate excess hay which will be sold into the market. Approximately 10,000 tonnes of hay is imported to the Pilbara annually and the RTIO project will easily be able to satisfy this demand, but the company does not wish to compete unfairly with existing suppliers.

The outcome of the development will enable tighter control of the total herd with improved genetics and production metrics, a reduction in overall numbers (because of higher production per cow) and an
ability to destock a significant area of land of relatively low productivity. Improvement in rangeland condition on this land may be able to contribute to biodiversity offsets for RTIO.

It is worth noting that the Royalties for Regions Program has invested in an irrigation project on a private Pastoral Station in the Pilbara, with water being abstracted from the Canning Basin Aquifer and used to grow forage sorghum (Pilbara Development Commission e-Newsletter, Sept-Oct 2012).

Experiences in the Gascoyne and Murchison

There are small scale irrigation areas operated by pastoral leaseholders (mostly licensed through Diversification Permits) in the Gascoyne and Murchison areas. The largest involves a 46 ha horticulture precinct on a freehold area held in conjunction with a Pastoral Lease.

Through the Gascoyne Murchison Strategy, which commenced in the 1990s, capping of the free-flowing bores was accompanied by a range of research and development activities into diversification options on Pastoral Leases with access to the artesian flows, as follows.

- Trials undertaken by the DAFWA (with support from Rio Tinto Iron Ore) have proved that the utilisation of artesian water for fodder crops is likely to have the most potential, with a 69 ha centre pivot currently operating and irrigating Rhodes Grass for hay production. The artesian water conservatively saves some $10,000 per year in fertiliser under the current regime due to the available minerals that are already present in the water. The trial work is being continued, with testing of a mixture of lucerne and maize in the next phase of the work.
- A 35 hectare crop of sweet corn irrigated with artesian water was a successful venture, but logistics and market access prevented full development.
- Some other projects growing fodder crops have been unsuccessful.
- The Gascoyne Inland Aquaculture Group Inc., comprising a number of leaseholders near Carnarvon undertook extensive business and marketing planning on the ornamental fish market with assistance from the Department of Fisheries (GIAG 2000). One commercial venture was set up, but has since been discontinued. The intellectual capital has remained with the Group.

3.3.2 Tourism

Tourism activity in the rangelands

As was shown in Table 2-2, tourism is an important economic contributor in rangelands regions, easily exceeding the contribution from the grazing industry. Tourism WA reports intrastate, interstate and international visitor data at regional and in some cases local government scale. The data available in the public domain do not specify the tourist activities, with Tourism WA staff reporting that in the rangelands, the coasts are the main attraction. Smaller levels of visitation occur at high profile inland areas such as the Gibb River Road, Purnululu National Park, the Kununurra area, Karijini National Park, and the Goldfields.

Available data are summarised for the North West (Pilbara and Kimberley), the Coral Coast (Shark Bay to Exmouth) and the Golden Outback (Goldfields and Murchison) regions in Table 3-40. These show visitor nights spent holidaying in each of the regions, and the number of nights spent in the region. Some points worth noting are that:

- although international visitor numbers are relatively low, the number of days spent holidaying is greater than for domestic visitors, especially in the North West;
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- the Coral Coast (Shark Bay to Exmouth) is obviously favoured by WA tourists, which supports Tourism WA staff observations that the main attraction for most tourists is the coast; and
- tourist activity by interstate visitors is moderate in the North West, but relatively low in the other two regions. This perhaps represents an opportunity for marketing the attractions in that area.

Table 3-40  Tourism activity in the rangeland regions (year ending 2011)

<table>
<thead>
<tr>
<th>Source of visitors</th>
<th>Item</th>
<th>North West</th>
<th>Coral Coast</th>
<th>Golden Outback</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrastate visitors</td>
<td>Number of visitor nights* ('000s)</td>
<td>669</td>
<td>1,362</td>
<td>581</td>
</tr>
<tr>
<td></td>
<td>Average length of stay (days)</td>
<td>6.5</td>
<td>5.8</td>
<td>3.7</td>
</tr>
<tr>
<td>Interstate visitors</td>
<td>Number of visitor nights* ('000s)</td>
<td>821</td>
<td>207</td>
<td>132</td>
</tr>
<tr>
<td></td>
<td>Average length of stay (days)</td>
<td>9.9</td>
<td>8.4</td>
<td>6.2</td>
</tr>
<tr>
<td>International visitors</td>
<td>Number of visitor nights* ('000s)</td>
<td>963</td>
<td>658</td>
<td>598</td>
</tr>
<tr>
<td></td>
<td>Average length of stay (days)</td>
<td>24.1</td>
<td>11.8</td>
<td>17.7</td>
</tr>
<tr>
<td>Total visitor nights</td>
<td></td>
<td>2,453</td>
<td>2,227</td>
<td>1,311</td>
</tr>
</tbody>
</table>

Source: (Tourism 2012a, b and c). * corrected for the percentage of total visitor nights spent holidaying.

The aggregate Tourism WA data on visitor numbers for the rangelands is 5.991 million visitor nights, which can be compared to the data presented in Table 3-39 showing 25,000 visitor nights on Pastoral Stations which have a tourism diversification permit. On these figures, 0.42 per cent of tourism visitor nights were spent at station stays.

Tourism on Pastoral Leases

The majority of current tourism in the rangeland areas is in the form of “experience seekers”. Commonly these types of tourists are self-drivers and travel with their own accommodation. They may occasionally demand camping type facilities. Their primary expenditure in rangeland areas is on fuel and basic accommodation, and they restock their on-board supplies in major regional centres. Generally their input into local economies is relatively low. Pastoral Lease Diversification Permit activities that provide accommodation to this market have to date been relatively low key and of small value (as suggested in Section 3.2.16).

As reported previously in this report, of the 29 reported low key tourism ventures only four reported gross income over $100,000, and a further seven between $10,000 and the $35,000. The majority reported gross income of less than $10,000. Only three enterprises reported total visitor nights exceeding 1,000.

Opportunistic accommodation based on support of mining activities may provide good supplementary incomes to grazing enterprises but are likely to be short term. These activities may or may not be reported or undertaken with Diversification Permits. The permit process is seen by some as being time expensive and an unnecessary intervention.

Indigenous tourism

Opportunities and strategy

Indigenous tourism experiences are highly sought after with 66 per cent of overall visitors and 83 per cent of international visitors seeking to participate in these activities in Western Australia (Tourism WA 2010). In 2011-12, just over a quarter of visitors took part in some form of Aboriginal tourism in WA
(26%). International visitors to WA were the most likely to participate in an Aboriginal tourism experience (35%). Overall, 49 per cent of visitors felt their Aboriginal tourism experience was very good or excellent, with overall interest in Aboriginal activities higher than current participation (Tourism WA 2012d).

An Indigenous Tourism Product Seeker participates in at least one of the following during their trip:

- goes on a tour with an Indigenous guide;
- stays in Indigenous accommodation;
- visits an Indigenous cultural centre or location;
- visits an Indigenous gallery;
- attends an Indigenous festival;
- sees Indigenous dance or a theatre performance;
- sees any Indigenous art, craft or cultural display;
- sees an Indigenous site or Indigenous community;
- purchases Indigenous art, craft or souvenirs; or
- some other interaction with Indigenous people (Tourism Research Australia 2010).

Tourism WA has a three year marketing and services agreement with the WA Indigenous Tourism Operators Corporation (WAITOC) between 2010 and 2012. This arrangement was funded by the Royalties for Regions Program and involves DRDL and Tourism Western Australia. This arrangement allows WAITOC to continue to grow its marketing activities and increase promotion of indigenous tourism product whilst working towards a sustainability plan for the organization. The Government and WAITOC are working within an Indigenous tourism strategy, which will operate up to 2015 (Tourism WA and WAITOC 2011).

**Current activities**

With Indigenous tourism there is a direct correlation between business opportunities and land tenure. Given the level of Indigenous ownership of Pastoral Leases in WA and the Northern Territory (NT), some 60 per cent of Indigenous tourism businesses are in WA and the NT. Nearly half of those are in the Kimberley. There are about 60 indigenous tourism businesses in WA, with 10 in rangeland areas. Again these businesses link in or use the market that is present around key infrastructure or attractions. There are no data available on the economic return from this sector of the industry.

### 3.3.3 Native products harvesting

**Sandalwood**

The harvesting of *Santalum spicatum* is undertaken under the State’s *Sandalwood Act 1929*, the *Wildlife Conservation Act 1950* (WCA), the Wildlife Management Program No. 8 ‘The Management of Sandalwood 1991-2001’ (undergoing review), and the *Forest Products Act 2000*.

The *Sandalwood Act 1929* states that a person must hold a licence under this Act to harvest (‘pull the wood’ of) wild stands of *S. spicatum* from both Crown Land and private property. In 2000 the *Forest Products Act 2000* was passed and harvest of all forest products on Crown Land became the responsibility of the Forest Products Commission (FPC). Crown Land harvesting is undertaken under production contracts with the FPC, with the permissible harvest limits set by DEC.

The permissible annual level of harvest of green sandalwood is 1,500 tonnes, with the FPC allocation being 1,350 tonnes, and 150 tonnes allocated by DEC to other authorities. Identical tonnages of dead
timber can be harvested. In total, FPC issues contracts for up to 2,700 tonnes from Crown Land (which includes Pastoral Leases) and DEC manages the harvesting of 300 tonnes from freehold land (advice received from DEC 2012).

The FPC lets contracts through the WA Government tender process for harvesting and delivery of specified quantities of sandalwood. There are 20 contract operators currently licensed to harvest green and dead sandalwood from Crown Land, with 9 of these contracts held by pastoral lessees. Another 14 contracts are in place for delivery of dead sandalwood only, with most of these held by pastoral lessees. Recent harvest amounts from Crown Land (mostly pastoral leasehold land) are shown in Table 3-41. The contract holders receive between $2,000 and $2,500 per tonne for harvested, debarked and stacked sandalwood available to FPC on site, who then arrange transport to Perth. Technologies to encourage sandalwood recruitment are implemented by contractors.

**Table 3-41  Sandalwood production from Crown Land (tonnes)**

<table>
<thead>
<tr>
<th>Product type</th>
<th>2008-09</th>
<th>2009-10</th>
<th>2010-11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green (excl roots and 3rd grade)</td>
<td>1,261</td>
<td>1,239</td>
<td>1,139</td>
</tr>
<tr>
<td>Roots</td>
<td>232</td>
<td>242</td>
<td>207</td>
</tr>
<tr>
<td>3rd grade green</td>
<td>249</td>
<td>304</td>
<td>320</td>
</tr>
<tr>
<td>Dead</td>
<td>599</td>
<td>786</td>
<td>867</td>
</tr>
<tr>
<td>Bark</td>
<td>-</td>
<td>-</td>
<td>50</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2,341</strong></td>
<td><strong>2,571</strong></td>
<td><strong>2,583</strong></td>
</tr>
</tbody>
</table>


Processing is done by Wescorp who act as an agent to FPC, with marketing arranged by FPC. Marketing is quite complex, with care taken to ensure the best possible average price across the range from best quality wood with high oil content, through to the lower value material. Green sandalwood (with and without bark) averages at about $13,000 per tonne, with dead sandalwood selling for as low as $3,000 per tonne (advice received from DEC and FPC 2012). In 2010-11, the gross income to FPC from the product was $15.80 million, with total costs (harvest, cartage, processing, marketing and administration) of $11.96 million. The stumpage revenue collected by the FPC is about $4 million per year.

The current high price for sandalwood is encouraging illegal harvest of this small resource, which is of serious concern to DEC (as the regulator), particularly given that the permissible annual harvest is at the maximum sustainable limit. Based on knowledge of the sandalwood products reaching overseas markets, the illegal harvest is estimated to be as large as the legal harvest. FPC is working on a Chain of Custody methodology to ensure that only legal sandalwood can be harvested and processed (advice received from FPC 2012).

The native sandalwood industry employs about 200 people in total, with 120 people employed in the harvesting, and the remainder in transport and processing. The industry is an important employer of Indigenous people in the regions (advice received from FPC 2012).

In recognition of the limited and finite nature of the wild sandalwood resource, the FPC supported the establishment of 9,000 hectares of *Santalum spicatum* in the agricultural areas, through the Strategic Tree Farming Project. FPC, who have purchased this estate, will over time rely increasingly on this resource for income from sandalwood (advice received from FPC 2012).
The world’s largest individual sandalwood plantation was established by WA Sandalwood Plantations east of Perth in the state’s Central Wheatbelt. With site preparation work completed in April 2011, more than 5 million trees (S. spicatum) were planted on some 2,200 hectares (WA Sandalwood Plantations, 2011). The project generated significant regional employment for both contractors and casual employees who carried out the planting. In addition, a number of local businesses in the Corrigin, Quairading and Beverley areas are benefitting from the supply of goods and services (WA Sandalwood Plantations, 2011).

Kangaroo harvesting
Kangaroo harvesting for the pet food industry and domestic consumption occurs throughout the pastoral leasehold areas south of the Kimberley. In 2009, 432 licences to take kangaroos and 23 licences to process kangaroos were issued, 574 chiller units were registered and 13 licences to deal in skins were issued. The harvest in 2010 was 53,818 red kangaroos and 92,923 western grey kangaroos which was less that the allowable quota for both species (DEC 2011b). Most of the western grey kangaroos are harvested in the agricultural areas. Assuming an average 20 kg carcass worth about $0.85/kg to the operator, and a skin value of $2.50 per large male red kangaroo (advice received from DEC 2012), the total ‘on-farm’ value of the harvest from the rangelands is about $2 million.

Harvest numbers for red kangaroos have been declining steadily over recent years, as a result of declining kangaroo numbers in the rangelands. For example, in 2003, 224,616 red kangaroos and 99,027 western grey kangaroos were harvested (DEC 2007). While the western grey kangaroo harvest was similar in 2010, the red kangaroo harvest had declined by 77 per cent below the 2007 figure. Anecdotal advice is that the decline in kangaroo numbers is a result of the increase in wild dog predation across the species’ range, and reduced numbers of operating artificial watering points in the traditional sheep grazing areas in the Southern Rangelands (advice received from DEC 2012). As a consequence the allowable quotas have been adjusted with the estimated numbers of the three species and the quota for the 2012 harvest shown in Table 3-42.

The number of kangaroos taken continues to be well below allowable levels, which is likely to be a reflection on the low prices for kangaroo products (meat and skins) which is said to be putting the industry at risk (see http://www.abc.net.au/news/2012-05-18/kangaroo-industry-declining/4019568 18 May 2012). About 20 operators are full time kangaroo shooters, with other operators including kangaroo shooting in a wide range of occupations (advice received from DEC 2012).
3 Profile of the Pastoral Landholding Business Community

Table 3-42  State regional quotas for kangaroo and euro harvest in 2012

<table>
<thead>
<tr>
<th>Species</th>
<th>Zone</th>
<th>Population estimate (N)</th>
<th>Harvest rate (H) (%)</th>
<th>Quota (N x H)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red kangaroo</td>
<td>Northern*</td>
<td>141,768</td>
<td>14.5</td>
<td>20,600</td>
</tr>
<tr>
<td></td>
<td>Central**</td>
<td>337,715</td>
<td>15.0</td>
<td>50,600</td>
</tr>
<tr>
<td></td>
<td>South-Eastern**</td>
<td>158,702 +/- 31,205</td>
<td>15.0</td>
<td>23,800</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>638,185</td>
<td>14.9</td>
<td>95,000</td>
</tr>
<tr>
<td>Western Grey kangaroo</td>
<td>Northern*</td>
<td>137,827</td>
<td>10.9</td>
<td>15,000</td>
</tr>
<tr>
<td></td>
<td>Central**</td>
<td>510,606 +/- 148,352</td>
<td>13.7</td>
<td>70,000</td>
</tr>
<tr>
<td></td>
<td>South-Eastern**</td>
<td>529,101 +/- 113,704</td>
<td>10.4</td>
<td>55,000</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>1,177,534</td>
<td>11.9</td>
<td>140,000</td>
</tr>
<tr>
<td>Euro (south eastern only)</td>
<td>South-Eastern**</td>
<td>31,050 +/- 10,350</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Grand total</strong></td>
<td></td>
<td>1,846,769</td>
<td>12.7</td>
<td>235,000</td>
</tr>
</tbody>
</table>

Source: DEC (2011a).

* includes Pilbara and Gascoyne. ** includes Shark Bay, Murchison, Yalgoo, Wiluna. *** includes north eastern Goldfields, eastern Goldfields, Nullarbor.

3.3.4 Conservation management

The former Pastoral Leases acquired by DEC

Some eight per cent of the pastoral leasehold area (6.8 million ha) has been acquired over time to add to the Western Australia’s Conservation Estate. Currently these areas are held as Unallocated Crown Land (UCL) with the intention eventually to gazette them as tenure for conservation purposes and vest them with the Conservation Commission of WA. Because this will represent a ‘future act’ according to the Native Title Act 1993, negotiations leading to an Indigenous Land Use Agreement will need to occur. Also, in line with the reservation procedures adopted by the DRDL, support for the reservation proposals is required from a range of stakeholders including the DMP, local government authorities and water management authorities (Conservation Commission of WA 2011).

Management of the Pastoral Leases acquired by DEC through the Gascoyne Murchison Strategy was the subject of a Parliamentary Inquiry in 2010 (see Economics and Industry Standing Committee 2010). In particular, the Committee investigated DEC’s:

- management of pest animals and weeds;
- preservation of pastoral heritage;
- opportunities for improved management; and
- consideration of the economic potential of non-pastoral uses for this land.

The Committee presented 19 recommendations, and Government accepted most of these (see Government of WA, 2010). In response to concerns about the resources allocated to management of the former pastoral leases, DEC advised that it had allocated an additional $1 million per annum to management of these areas, plus the WA Government committed a further $3.65 million for strategic wild dog control. Given that these additional resources were required mainly to address concerns from neighbouring pastoral lessees, this additional funding has been included in the direct costs of supporting the pastoral leasehold estate shown in Table 2-10.
DEC has assessed the suitability of the former Pastoral Leases acquired by DEC and being added to the Conservation Estate for potential tourism development. There are natural, built and cultural heritage assets that could add to the tourism attractions in the rangelands, including:

- land adjacent to Mt Augustus;
- land adjacent to the Kennedy Ranges;
- Muggon (Lower Murchison);
- Doolgunna, Mooloogool (north of Meekatharra); and
- Karara, Lochada, Warriedar and Kadji Kadji (Yalgoo-Paynes Find).

Existing drive trails (e.g. The Wool Wagon Way) provide a conduit for encouraging visitation to these properties.

Private conservation activities

The data in Table 3-10 and Table 3-11 show that 1.2 million hectares or one per cent of the Pastoral Leasehold Estate is now held by private conservation organisations, with the Australian Wildlife Conservancy (AWC) sub-leasing a Pastoral Lease owned by an Aboriginal Corporation. The principal organisations involved are the AWC and the Bush Heritage Australia (BHA). The Pastoral Leases held by these not-for-profit organisations are concentrated in the area north east of Dalwallinu (Mt Gibson and White Wells Pastoral Leases), in remote areas of the north Kimberley and with smaller holdings elsewhere (e.g. Faure Island and Eurardy Pastoral Leases in the Shark Bay area). The pastoral leaseholdings of these organisations are shown in Table 3-43.

Although they are both involved in private sector or ‘philanthropic conservation’, the objectives and _modus operandi_ of the two organisations are quite different, and to a degree, they are competing for support within the same market. Further information about these organisations is presented below the table.

**Table 3-43 Pastoral Leases and other land held by BHA and AWC**

<table>
<thead>
<tr>
<th>Lessee</th>
<th>Pastoral lease</th>
<th>Area (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bush Heritage Australia</td>
<td>White Wells</td>
<td>68,410</td>
</tr>
<tr>
<td></td>
<td>Eurardy</td>
<td>27,856</td>
</tr>
<tr>
<td></td>
<td><strong>Total area</strong></td>
<td><strong>96,266</strong></td>
</tr>
<tr>
<td>Australian Wildlife</td>
<td>Marion Downs</td>
<td>289,000</td>
</tr>
<tr>
<td>Conservancy</td>
<td>Mornington</td>
<td>320,668</td>
</tr>
<tr>
<td></td>
<td>Mt Gibson</td>
<td>130,500</td>
</tr>
<tr>
<td></td>
<td>Faure Island</td>
<td>6,000</td>
</tr>
<tr>
<td></td>
<td>Artesian Range**</td>
<td>139,000</td>
</tr>
<tr>
<td></td>
<td>Tableland*</td>
<td>311,243</td>
</tr>
<tr>
<td></td>
<td><strong>Total Area</strong></td>
<td><strong>1,326,411</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Grand total area</strong></td>
<td><strong>1,422,677</strong></td>
</tr>
</tbody>
</table>

* sub-leased by AWC from Yulmbu Aboriginal Corporation. ** not PL.

**Bush Heritage Australia**

Bush Heritage Australia is a national non-profit organisation that aims to protect Australia’s unique animals, plants and their habitats, by acquiring and managing land of outstanding conservation value,
or by working in partnership with other landowners. BHA’s vision for 2025 is to protect one per cent of Australia, as described below.

“by protecting 1% of Australia (more than 7 million hectares) and demonstrating excellence in conservation management, Bush Heritage Australia conserves significant parts of Australia’s most important high conservation value land and water” Bush Heritage 2011.

BHA has a turnover of about $12 million per year, and manages 38 reserves across Australia, many of which are Pastoral Leases. In WA, it holds White Wells and Eurady pastoral leases, which have an area of 96,000 ha.

Ultimately, BHA may return properties to the open market, but only if the conservation objectives can be secured by covenanting, or a similar tenure-based mechanism. BHA is offered properties for purchase on a regular basis. URS was advised that securing funds for capital purchases (i.e. properties to add to the portfolio) is easier to raise than funds for operating expenditure. Achieving the vision of a one per cent holding of the WA Pastoral Lease estate could see BHA with up to 900,000 ha either held or otherwise managed principally for conservation outcomes.

Where a family is located on the property to meet normal managerial responsibilities, the annual cost is about $175,000. Although this does not include specific project expenses, it does suggest a figure for both stewardship payments on a Pastoral Lease and the income required by a lessee to occupy such a lease. BHA adopts a pragmatic approach to management, and may continue with a grazing operation on parts of an area, while managing particular conservation values (e.g. a wetland) elsewhere on the lease. Collaboration with like-minded landholders and neighbours is an important operating principle (source: advice received from BHA 2012).

Australian Wildlife Conservancy (AWC)
The AWC acquires land, and works with other landholders, to establish sanctuaries for the conservation of threatened wildlife and ecosystems. AWC now owns 22 sanctuaries covering over 2.6 million ha (6.5 million acres) in places such as north Queensland, the Kimberley, western New South Wales, Northern Territory and the forests of south western Australia.

AWC aims to ensure that its sanctuaries act as ‘catalysts’ for broader landscape scale conservation efforts. Accordingly, AWC works closely with its neighbours to also promote conservation beyond the borders of each AWC sanctuary. The AWC has a scientific research program, with the data and information generated used in managing habitats and species (AWC website: www.australianwildlife.org/About-AWC/What-We-Do.aspx accessed 6 August 2012.).

The AWC turns over about $12.7 million each year, and is spending $3.2 million in conservation programs on its WA holdings. Given the areas involved, most of this investment will occur in the rangelands, and equates to about $3 per ha.

In the Kimberley region, the AWC is in partnership with the WA Government, Indigenous landholders and private pastoral leaseholders in landscape scale conservation management in the Kimberley. Through the Ecofire Project, AWC is working with DEC in implementing best practice fire management on 4 million hectares in the Kimberley, which includes the AWC leased and sub-leased land, and land held by 10 other pastoral leaseholders. More recent initiatives include the Yulmbu partnership and the conservation of the Artesian Range.
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In the Yulmbu partnership, AWC has sub-leased Tableland Pastoral Lease from the Yulmbu Aboriginal Corporation for 45 years. During this period, collaborative management aims to deliver economic and social benefits to the Indigenous people living at Yulmbu through sub-lease payments and employment opportunities in improving the ecological health of the natural resources, and through maintenance of a contained sustainable small cattle herd. The WA Government is an investor and stakeholder in the overall project, which is being managed by the AWC. The Artesian Range partnership between AWC and DEC will provide integrated management of the area (176,000 ha) with AWC contracted to deliver land management and science programs over the area (AWC 2012).

The Government’s view of these private-public partnership arrangements is contained in the quote below.

‘The Yulmbu partnership is a ground-breaking model for conservation on indigenous land. It is important because it brings together practical land management, good science and employment and income for a remote indigenous community. Our work with AWC in the Artesian Range also involves establishing an innovative new model – a private-public partnership under which AWC is engaged by Government to deliver fire management, feral animal control and biological surveys on the public land section of the Artesian Range’ Hon Colin Barnett MLA, in AWC (2012).

In a Report completed for the Rural Industries Research and Development Corporation (RIRDC) the value of the contribution being made by private sector conservation enterprises (PSCEs) was recognised, with recommendations for government action to facilitate their contribution to conservation outcomes (Bennett and Usher 2005).

3.3.5 Mining on rangeland

Pastoral leases

Mining is an allowable use on all Pastoral Leases, with most of the area currently leased covered by mining tenements issued under the Mining Act 1978. The proposed conversion of Pastoral Leases to Rangeland Leases will not alter present access to land and water supplies for mining exploration and development. Section 16(3) of the Mining Act 1978 states:

No Crown land that is in a mineral field shall be leased, transferred in fee simple, or otherwise disposed of under the provisions of the Land Administration Act 1997, without the approval of the Minister [for Mines and Petroleum].

Notwithstanding the legislative power referred to above, the mining industry has expressed some concern that the processes of approving exploration and/or mining on a Rangeland Lease held for the purpose of conservation may become more difficult.

13 Advice provided by DRDL is that the AWC sub-lease of Tableland Station can only be for the remainder of the lease term, which expires in 2015. While the parties are in agreement for a 45 year sub-lease, this is dependent on Pastoral Lease renewal by the WA Government.
Conservation Reserves

The **Mining Act 1978** and the **Petroleum and Geothermal Energy Resources Act 1967** both have specific provisions regarding consultation and approvals required for mining and petroleum activities within conservation reserves as summarised in Table 3-44.

<table>
<thead>
<tr>
<th>Tenure category</th>
<th>Consent to Mining</th>
<th>Grant of Mining Lease or General Purpose Lease</th>
<th>Consent to Petroleum and Geothermal Energy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Concurrence of Minister for Environment</td>
<td>Recommendation of Minister for Environment</td>
<td>Parliamentary Approval required</td>
</tr>
<tr>
<td>National Park</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Nature Reserve – Class A</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Nature Reserve – not Class A</td>
<td></td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Conservation Park – Class A*</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Conservation Park – not Class A (&amp; Class A)</td>
<td></td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Miscellaneous Under s5(1)(g) or (h) – Class A*</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Miscellaneous Under s5(1)(g) or (h) – not Class A (&amp; Class A)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Source: Information provided by the Department of Mines and Petroleum 2012.

* only in the SW Land Division or in Ravensthorpe or Esperance Shires.

Under the Mount Manning Agreement in 2010, an arrangement for achieving mining and conservation objectives was established based on known economic and conservation values and involving the use of ‘Section 5(1) (h) Reserves’ as provided under the **Conservation and Land Management Act 1984**. Under this arrangement, areas identified with mineral prospectivity were excised for ‘conservation and mining purposes’ in ‘special circumstances’. The Agreement was welcomed by miners, and the Departments of Mines and Petroleum and Environment and Conservation.

**Former Pastoral Leases purchased by Government for conservation purposes**

The mining industry has expressed concern that arrangements for access to these former Pastoral Leases has become more difficult, although the tenure status for these areas is yet to be resolved.

### 3.3.6 Other uses

**Square Kilometre Array**

The Square Kilometre Array (SKA) is being developed in the Murchison by the Australian Government, with activity focused on the Boolardy Pastoral Lease, which has been acquired by the Australian Government through the Commonwealth Scientific and Industrial Research Organisation (CSIRO). An Indigenous Land Use Agreement has been established over 130 km² between the Wajarri Yamatji registered native title claimants and the WA Government.
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To ensure the radio silence required for this international research project, the WA Government has quarantined a large area of land in the Murchison from any mining exploration and development activities. It has also resulted in the proposed Oakajee Rail development being routed well to the south of the area. Although the SKA project will act as a constraint to any intensification of land use in the area, this needs to be considered in the context of the value of the SKA, estimated at $1.5 billion.

Defence activities
The Department of Defence (DOD) and the Australian Defence Force (ADF) are frequent users of rangelands for exercise and training purposes. As well as the DOD’s own land holdings (principally at Learmonth and Curtin Air Base), activities occur on Pastoral Leases. For example, the DOD is currently planning an exercise on the north-west coast that will operate from within a Pastoral Lease, with lessee consent. The pastoral infrastructure (roads, fences, water supply) provides support for the exercise (see comments in Section 3.3.7).

3.3.7 Intangible benefits of Pastoral Lease occupancy
Many of the non-grazing land uses discussed in Section 3.3 rely to a degree on the occupancy of Pastoral Leases, in terms of communications, emergency assistance, land access, and availability of water supplies.

The nature of intangible benefits
The intangible benefits of the pastoral industry listed in the 2003 Pastoralism for Sustainability Report (Anon 2003) included regional population and development, flow-on employment in small centres, biosecurity protection and the effect of occupancy in enhancing Australian security.

The social benefits of occupancy of Pastoral Leases are recognised in the EPA’s Position Statement 5 in the following statement.

The network of pastoral leases and their occupants play a strategic role in the Western Australian community, and this will expand on the basis of an implied social contract between them and the wider community. Examples of these contractual arrangements are:

- While acquisition of a conservation reserve estate is a critical requirement, sound grazing management can meet a range of the State’s conservation requirements without further intervention. However, it is likely that meeting all of the conservation needs in the rangelands will require significant ‘off-reserve’ activities to be conducted on pastoral land. Where this involves pastoral leaseholders managing part of their leases for conservation purposes, the community should acknowledge their contribution.

- The rangeland community carries out a range of activities in addition to pastoral activities, from which the community as a whole benefits. The presence of people experienced in bushcraft who are living in remote areas provides a resource which can be of assistance to government agencies as they carry out their functions (e.g. general environmental management) and in providing a network of habitation to support travellers and emergency services. The benefit to the community of these services is difficult to estimate but is significant (EPA 2004, p. 26)

Organisations holding Pastoral Leases primarily for non-grazing purposes recognise the value of the intangible contribution made by residency on the leases. For example, Bush Heritage Fund has a
policy of locating families on its leases acquired for conservation purposes so as to contribute to the social fabric and local services in the area.

Rio Tinto Iron Ore, which holds six Pastoral Leases in the Pilbara undertook an internal sustainability assessment to determine the management option that delivered the best net social, environmental and economic benefits. The options considered were operating the leases to maximise cattle production, relinquish grazing to achieve social and environmental benefit only, or to consolidate them with a balance of these goals. After detailed consultation with stakeholders, and development of actions to maximise benefits, the consolidated option was shown to deliver benefit in all three areas (Government of WA 2003, p. 39). More recent information available from Rio Tinto (Source: www.riotintoironore.com/ENG/operations/497_pastoral_stations.asp, accessed 21 August 2012) states:

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Rio Tinto’s Iron Ore group holds six pastoral stations in the Pilbara - Karratha, Hamersley, Rocklea, Juna, Yalleen and Yarraloola. Property management strategies for each station encompass all company policies with emphasis on safety, local heritage values, and natural resource conservation.

We hold pastoral leases not only for grazing purposes, but also strategic access for exploration, infrastructure development, water management and future mining and production.

The stations are managed as operational pastoral properties under the Land Administration Act, Western Australia. The stations run about 26,000 head of cattle.

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The presence of occupied Pastoral Leases provides a resource in the event of emergencies occurring in remote areas. For example, the Royal Flying Doctor Service (RFDS) locates comprehensive medical chests at remote Pastoral Stations, with the cost met by the Commonwealth Government where the homestead is located more than 80 km from a resident General Practitioner. The cost to equip a chest is about $2,000, with a lesser amount required annually to maintain the currency of the medicines. RFDS records show that there are medical chests in 514 remote locations with 314 of these being Pastoral Stations. The other medical chests are located Aboriginal communities and mining camps etc. The RFDS audit the condition of the medical chests and the station airstrips as opportunities arise (RFDS (pers. comm)).

There are no data available on how often people at remote homesteads are called upon to provide emergency support for business travellers and tourists. Anecdotal reports suggest that people living in homesteads close to well-travelled routes are frequently called upon for assistance. During the course of the consultation, URS was informed of a case where a Pastoral Station employee saved two people (prospectors) from almost certain death through finding them as part of routine activities on the Station. In another example, a pastoral lessee was requested by the WA Police to assist a stranded person, resulting in a quick rescue and a considerable saving in Police Service time and expense.

RFDS records show that in 2011-2012, 45 landings were made at Pastoral Stations to remove a person or persons requiring medical attention (RFDS pers. comm). It is not known how many of these were non-Station residents, but a review of the properties involved suggests that there could have been about 10 to 15 landings in that category (e.g. landings at Stations located close to major roads).

**Putting a value on occupancy in remote areas**

Pastoral leaseholders, particularly those in more remote areas are frequently involved in providing assistance to travellers (vehicle repairs, emergency accommodation, recovery from vehicle bogging),
3.3.8 Interactions between land uses and users

In this section, the interactions between land uses and land users on Pastoral Leases, that occur apart from and in addition to the rights of a pastoral lessee, are considered. These include mining, natural products harvesting, conservation activities, and other uses.

Types of interactions

The interactions between land uses in the rangelands have received little serious scrutiny, and similarly the relationship between the rangelands socio-economy and the wider community is not well known. Several examples are presented below, based on consultation with stakeholders in the Project.

- As discussed in Section 3.2.13, most pastoral leaseholders in the Southern Rangelands combine pastoral activities with off-station work (such as contract work, and working for local governments and consulting) in the one business.
- The logistics of past and current mineral and petroleum exploration throughout the WA rangelands would be much more difficult and expensive without the network of station tracks, watering points and homesteads that have assisted access and provided local knowledge (this interaction is addressed separately below).
- Prior to commencement of nickel mining in the Goldfields and iron ore mining in the Pilbara in the 1960s, there were few sealed roads in these areas. Mining activity accelerated sealed road construction, some of which was paid for in part by mining companies. There is now sealed road access between most population centres, providing easier access to markets and services for Pastoral Stations in these areas, and better access to the ‘outback’ for tourists, and tourism businesses.
- The considerable area of pastoral leasehold land now held by mining companies, while being held primarily for resource security objectives, is used for a diversity of reasons, with an opportunity for wider uses (as in Rio Tinto’s plans for irrigated fodder production in the Pilbara, see also Section 3.3.7).
- There are also many synergies between the tourism industry and pastoral leaseholders who provide station stays and outback experiences, and are also able to provide an informal support service to travelling tourists in the event of emergency (accident or illness).

14 Calculated as 2 hours per 50 weeks @ $50/ hour.
3 Profile of the Pastoral Landholding Business Community

- Indigenous communities resident on Pastoral Leases held by Aboriginal Corporations can obtain meat from the herds grazing on the leases. Cessation of grazing completely would remove this source of food, while the level of harvest probably has little impact on overall productivity in commercial herds.
- People experienced in bushcraft are able to take on the management of land acquired by public and private sector conservation agencies. In some cases, when leases are acquired for conservation, the vendor is asked to stay on as a manager of the conservation project. This represents a significant saving to these agencies.
- Bush Heritage Australia is demonstrating in other jurisdictions that managing grazing enterprises and achieving specific conservation objectives can be achieved on the one lease, with the grazing enterprise able to offset some of the costs of conservation management.

Estimated value of the relationship between activities on pastoral leases and mining exploration

As discussed above, the presence and maintenance of pastoral infrastructure (tracks, artificial watering points, communications facilities) and direct assistance from pastoral lessees (advice about locations, access, terrain, occasional emergency support) makes a very useful contribution to mineral exploration across remote areas of Western Australia. Without this support, access would be more difficult, water less available, and emergency facilities less available (airstrips, RFDS medical chests etc).

The contribution made by pastoral infrastructure and pastoral lessees can be estimated roughly through reference to the investment in mineral exploration across the state. As shown in DMP (2011), companies invested $1.59 billion in mineral exploration in 2010-2011. Of this $1.024 billion was spent on existing deposits, which will be well serviced to enable exploration, with the remaining $566.4 million spent on greenfield exploration, much of this occurring on Pastoral Leases. If the assistance provided by Pastoral Lease infrastructure and residents saved 5 per cent of these exploration costs, this represents a saving to proponents of about $28 million per year.

3.4 Economic value of rangeland based enterprises

3.4.1 The Pastoral Landholding Business Community in summary

Selected information from the results of the analyses presented in Section 3.2 is shown in Table 3-45. The information shows that of 333 Pastoral Businesses, most remain in private/family ownership. Only 27 per cent of businesses rely on grazing enterprises alone for income, with close to half (41%) relying to a greater or lesser degree on non-grazing income. However, this level of dependence on non-grazing income is not reflected in the percentage holding Diversification Permits, suggesting that at least some activities are occurring without formal approval.

The increasing diversity of uses and greater reliance on non-grazing income is readily explained given that half of all Pastoral Businesses are not able to support sufficient stock numbers to meet even fixed costs for a grazing enterprise (see McCosker et al. 2010), with 20 per cent having the capacity to maintain large scale commercial enterprises. As shown in Section 3.2, the patterns of ownership, activity and grazing capability vary greatly between regions.

The information summarised here suggests that in continuing to administer a ‘Pastoral Leasehold Estate’, government is not in step with these substantial shifts in activity and capability. While the
3 Profile of the Pastoral Landholding Business Community

Rangelands Reform Program is addressing aspects of the issues, government needs additional administrative tools to anticipate and lead land use change. Suggested mechanisms are considered in the recommendations in Sections 7.3 and 7.4.

**Table 3-45  The Pastoral Landholding Business Community in summary**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pastoral Businesses*</td>
<td>333</td>
<td>100%</td>
</tr>
<tr>
<td>Ownership</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private/ family</td>
<td>239</td>
<td>71%</td>
</tr>
<tr>
<td>Indigenous</td>
<td>45</td>
<td>14%</td>
</tr>
<tr>
<td>Corporate mining/ corporate other</td>
<td>28</td>
<td>8%</td>
</tr>
<tr>
<td>Corporate pastoral</td>
<td>14</td>
<td>4%</td>
</tr>
<tr>
<td>Private conservation</td>
<td>7</td>
<td>2%</td>
</tr>
<tr>
<td>Business Activity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Businesses with Diversification Permits</td>
<td>67</td>
<td>20%</td>
</tr>
<tr>
<td>Businesses ‘pastoral only’</td>
<td>90</td>
<td>27%</td>
</tr>
<tr>
<td>Businesses with non-grazing income</td>
<td>136</td>
<td>41%</td>
</tr>
<tr>
<td>Grazing capability</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Businesses with PCC &gt;4,000 LSU/ 30,000 DSEs</td>
<td>67</td>
<td>20%</td>
</tr>
<tr>
<td>Number of Businesses with PCC &lt; 1,300 LSU/ 10,000 DSEs</td>
<td>176</td>
<td>53%</td>
</tr>
<tr>
<td>Businesses carrying less than 50% of PCC</td>
<td>146</td>
<td>43%</td>
</tr>
</tbody>
</table>

* as defined in Section 1.3.1.

### 3.4.2  Gross returns from activities on Pastoral Leases

Determining the gross value of money earned by the pastoral landholding business community, or by people who are legitimately working on Pastoral Leases is difficult. An estimate based on some published data and calculations made within this report are shown in Table 3-46. The aggregate value is indicated to be some $484 million per annum\(^{15}\). The value of horticulture produced via Diversification Permits and on S-79 excisions from Pastoral Leases is not easily quantified. Advice from DAFWA staff suggested $36 million for Pilbara and Kimberley production. ABS data provided by DAFWA suggest a total value of $89 million for 2010-11. The larger number is reported.

---

\(^{15}\) Note – this excludes mining, petroleum extraction, prospecting, and transfer payments
### Table 3-46  Gross value of income earned on Pastoral Leases ($m/year)

<table>
<thead>
<tr>
<th>Activity</th>
<th>Accrues to PL holder</th>
<th>Consumptive use</th>
<th>Value ($m/yr)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sale of livestock and wool</td>
<td>yes</td>
<td>yes</td>
<td>$350.5 m</td>
<td>Mainly in the Kimberley, Pilbara, Gascoyne and Nullarbor Return on assets managed (ROAM) is low (&lt;2%)</td>
</tr>
<tr>
<td>Tourism on diversification permits</td>
<td>yes</td>
<td>no</td>
<td>$2.5 m</td>
<td>Based on 25,000 visitor nights per annum @ $100/visitor night. Mostly earned in the Kimberley and Pilbara</td>
</tr>
<tr>
<td>Tourism on excisions held by PL</td>
<td>yes</td>
<td>no</td>
<td>$11 m</td>
<td>Dominated by a few enterprises                                                                 -------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Horticulture, mostly on excisions held by PL</td>
<td>yes</td>
<td>yes</td>
<td>$89 m</td>
<td>ABS estimate. Pilbara and Kimberley production valued at $36 million. Permits applied for could increase total value by $24 million</td>
</tr>
<tr>
<td>Sandalwood harvesting</td>
<td>no</td>
<td>yes</td>
<td>$16 m</td>
<td>Includes live and dead wood. Up to 20 pastoralists have contracts to deliver wood to FPC</td>
</tr>
<tr>
<td>Kangaroo harvesting</td>
<td>no</td>
<td>yes</td>
<td>$2 m</td>
<td>Declining kangaroo numbers and low prices limit harvest levels</td>
</tr>
<tr>
<td>Philanthropic conservation</td>
<td>yes</td>
<td>no</td>
<td>$1 m</td>
<td>Two organisations currently active. Amount shown is the management cost, which is contributed by donors</td>
</tr>
<tr>
<td>Work off lease</td>
<td>yes</td>
<td>no</td>
<td>$12 m</td>
<td>Based on 120 businesses (33% of total) earning an average of $100,000 pa</td>
</tr>
<tr>
<td>Transfer payments (Centrelink)</td>
<td>yes</td>
<td>no</td>
<td>unknown</td>
<td>Known to be significant in parts of the leasehold estate (between 1 and 20 recipients in each of Carnarvon, Upper Gascoyne, Meekatharra, Wiluna and Murchison Shires)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>$484 m</strong></td>
<td></td>
</tr>
</tbody>
</table>

The values in Table 3-46 are all private benefits. As shown in Section 2.4.3, the cost of administering the Pastoral Leasehold Estate exceeds the rental return four-fold. In its review of Australia-wide Pastoral Leasehold tenure arrangements, and non-pastoral activities on Pastoral Leases, the Productivity Commission recommended that State Governments review the flow of public benefits from the pastoral leasehold tenure system (Productivity Commission 2002). The issue is addressed in the recommendations in Section 7.4.10.

#### 3.4.3 The context for the Pastoral Lease related activities

Some key economic indicators for the WA regions that include the rangelands are presented in Section 2.2.2. Some of these indicators are presented in Table 3-47, and compared to indicators of the ‘pastoral landholding business community economy’. The comparison is not straightforward because two of the regions (Mid West and Goldfields-Esperance) include significant areas and activities outside the boundaries of the Pastoral Leasehold Estate and the wider rangelands. Accepting this qualification, some points of clarification are presented below.
3 Profile of the Pastoral Landholding Business Community

The comparison, although imperfect, shows that the ‘Pastoral Lease-related economy’ is a small section of the economy in the Rangelands Regions. Mining activity is the highest generator of value in all of the rangeland regions except in the Gascoyne, where it is replaced by tourism. Overall, the Pastoral Lease-related economy generates an estimated 0.59 per cent of total activity in the rangeland regions.

As shown in the table, the direct and indirect labour force involved in activities associated with pastoral leasehold lands represents about three per cent of the total. The employment of casual labour for the mustering season on cattle enterprises could at least double this percentage for the cooler months of the year, although many of these casual employees will live outside the rangelands.

Tourism expenditure on pastoral leases, through diversification permits or excisions represents a small percentage (1.1%) of total tourism expenditure in the rangeland regions. This confirms the observation by Tourism WA that most people visiting the rangeland regions either spend the majority of their time at coastal locations, or visit key attractions such as Purnululu and Karijini National Parks, Kalgoorlie, and Lake Argyle etc).

Table 3-47 The rangeland economy in summary

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Pastoral lease-related economy</th>
<th>The rangeland regions*</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>3,500**</td>
<td>206,104</td>
<td>Population for the Pastoral Leasehold Estate is an estimate of the people living on the leases only.</td>
</tr>
<tr>
<td>Gross value of industry activities</td>
<td>$470.5***</td>
<td>$82,390 m</td>
<td>Total for the regions heavily influenced by $63 bn from mining and oil and gas in the Pilbara</td>
</tr>
<tr>
<td>Value of tourism</td>
<td>$13.5 m</td>
<td>$1,172 m</td>
<td>Pastoral Lease value includes direct benefits only, does not include value of assets on pastoral leases viewed by tourists</td>
</tr>
<tr>
<td>Value of agriculture</td>
<td>$439.5 m****</td>
<td>$1,774 m</td>
<td>Pastoral leasehold income includes livestock sales, horticulture, sandalwood and kangaroo harvest Rangeland regions’ income includes some agricultural area production for Mid West and Goldfields-Esperance</td>
</tr>
<tr>
<td>Labour force</td>
<td>3,564*****</td>
<td>108,963</td>
<td>Pastoral leasehold labour force includes agricultural workforce (1,000) and an estimate of people employed in other activities on the rangeland (sandalwood, kangaroo harvest (200), plus 1.97 workers indirectly employed for every direct employee.</td>
</tr>
</tbody>
</table>

* taken from Regional Profiles published by DRDL in 2011, and DMP (2011).
** residency on pastoral lease. Estimated at 3.5 people per employee.
*** excludes tourism. **** ABS Data supplied by DAFWA 2012.
***** Direct employment of 1,200 with Type 2A multiplier of 1.97. Note, not all indirect jobs will be located in the rangeland regions (see Islam 2010).
Perspectives and Objectives of Stakeholders

The list of organisations consulted is shown in Appendix B. Because of the diversity of interests in the rangelands, the information provided to URS has been arranged by theme in the following sections. The information provided to URS is presented as it was received and without attribution. Further, URS has not attempted to verify the views expressed.

4.1 The need for Government leadership and a vision

There is a wide range of opinions about the issues in the rangelands, and how they should be managed and for what purpose. Variation in opinions occurs between rangeland users and between rangeland businesses and government agencies, and in some cases within agencies. A shared vision is needed.

Within government, objectives in the rangelands continue to be pursued at a portfolio scale, with limited interaction across portfolios. For example, assessments of viability at leasehold scale prepared by one WA Government Department would seem to be at odds with research and extension projects being carried out by the same Department and development investment being supported by the Commonwealth Government. Stakeholders are looking for coordinated and collaborative action in the rangelands that works towards a shared vision for the future use of WA’s rangeland areas.

Some stakeholders argued that in continuing to support a grazing industry across large areas of the rangeland, particularly in the Southern Rangelands, the WA Government through its relevant agencies is ‘living a lie’ and that fundamental change that goes well beyond the current provisions of the Rangelands Reform Program is required.

At the same time, there is general support for ‘sustainable occupancy’ of the rangelands, and general goodwill towards the people who choose to live and work in the rangelands. Wholesale abandonment and emptying the land of people was not advocated by anyone. However, stakeholders suggested that government was changing the nature of service provision to pastoral lessees and other remotely located people without due consideration of the social and economic impacts. All of those consulted without exception recognised and welcomed the increased diversity of activities being undertaken in the rangelands, although requirements for management by government to ensure optimum capture of the opportunities were less easily identified.

Following from the above, URS was advised that there is a lack of coordination between government agencies in delivering services in the rangelands, or in their approach to the Rangelands Reform Program and the possible new tenures. One of the consequences of the lack of coordination is generally poor quality hard data and information about rangeland activities, in particular the cumulative effects of government activities in the rangelands. For example, in considering the worth of ‘sustainable occupation’ in the rangelands, while government values the intangible benefits provided by rangeland residents, it is not able to make an economic assessment of the benefits delivered, or determine an ‘all up cost’ for the services provided by government. Several stakeholders expressed concern that there is not more publicly available information on the state and trends in the Pastoral Lease Estate.

Although pastoral lessees are required to implement ‘ecologically sustainable management’, concern is expressed by some stakeholders that this requirement has not been interpreted down to lease-by-lease specific requirements and accountabilities. Further, some stakeholders expressed concern that Government is not enforcing the requirements of the Land Administration Act 1997 adequately, with evidence of over-grazing and land deterioration not being addressed with sufficient vigour, nor is there
4 Perspectives and Objectives of Stakeholders

a stated commitment to rangeland recovery. It was suggested that a wider array of instruments (rather than rarely applied financial penalties or lease forfeiture) is required to ensure appropriate land use and management, with incentives likely to produce a better outcome than penalties.

There is no clarity yet about how carbon will be managed in the rangelands. URS was advised that the Commonwealth’s Carbon Farming Initiative removes the State’s rights of consent to activities on Crown Land, and a mechanism is yet to be developed for how the Crown’s rights to carbon on pastoral leasehold land can be allocated or managed. This issue is addressed in Section 6.2.3.

4.2 The search for solutions

In the Kimberley and to a lesser degree the Pilbara, those consulted recognise that the cattle industry is based on a better pastoral resource, and they see:

- agricultural opportunities based on available water supplies;
- new crops (gubinge, more Indian Sandalwood etc);
- intensification of cattle production using irrigated fodder production;
- potential for more nature-based and cultural tourism, and
- opportunities for partnerships across land holdings and activities.

In general, those consulted presented positive scenarios, and confirm the evidence of a more robust operating environment, especially in the Kimberley. However, there are marketing and productivity challenges facing the cattle industry that are limiting profitability. In other domains, such as irrigated agriculture and silviculture, economic development opportunities were reported to be present, although inability to secure land and water resources in a timely manner was seen as a barrier to investment. Further, developing viable tourism businesses and supporting Indigenous rangeland businesses through to resilience is also a challenge. These matters are addressed in later sections.

In contrast, those consulted in the Southern Rangelands were able to highlight a range of problems including: decline of small stock enterprises; poor condition and declining condition of the land resource; wild dog predation of domestic livestock; low sales of Pastoral Leases; declining infrastructure; declining services to the grazing industry; impact of climate change; lack of capital and labour; and dependence on Centrelink etc.

Pastoral Leases with opportunities for non-grazing income (i.e. off-station work, tourism, niche horticulture or accommodating mine workers in surplus accommodation) now have diversified businesses, as shown in Section 3.2.13. Some of these are managing adjustment well, although they are not always operating in accordance with their rights and obligations as pastoral leaseholders. For some of these, ‘pastoral viability’ as a concept is irrelevant, and they will not respond to traditional adjustment incentives.

Others attempting to rely on grazing alone, especially those with small enterprises are struggling to see their future with clarity and feel abandoned and ‘unloved’ by government and the wider community, and are frustrated. They are looking for government to support traditional grazing activities with subsidies. In short, they are not able define solutions beyond support for grazing activities as a means to sustainable occupancy.

Looking to the future, many of those consulted suggested that a return to ‘mainstream grazing’ on much of the land, particularly in the Southern Rangelands, is neither economically feasible nor environmentally desirable, but some had difficulty identifying alternative means of economic activity.
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Where opportunities were identified, they reflect a general shift from reliance on grazing to non-consumptive uses and management, with little future seen in grazing on lands of low productivity. The options most frequently referred to are carbon farming, Indigenous ownership and management, conservation management, stewardship payments, new agricultural products (gubinge, tropical timber species, algae), landscape restoration, ‘footloose industries’ (e.g., IT services), and tourism developments, although few are able to specify how these might be initiated or operate in practice.

4.3 The need to accommodate diversity

Following from the previous section, those consulted see and welcome a more diverse set of uses and users in the rangelands.

Some of this commentary is not new. For example, stakeholders noted that the concept of stewardship payments for conservation outcomes on Pastoral Leases was first envisaged in the 1990s and has been operating in Western NSW since 2001. Other stakeholders noted that many pastoral leaseholders are already achieving diversity in relying on off-station income, as discussed above. Indigenous people who already hold and manage a significant portion of the rangelands are looking to expand their holdings and build management capacity, and most stakeholders accepted that an increased Indigenous involvement in rangeland businesses and rangeland management will occur.

A theme running through the input from stakeholders is that major industry development will occur at nodes, which will be linked through corridors.

- Nodal development will occur where there are particular resources such as abundant water (e.g., La Grange, Western Canning Basin, Central Pilbara Mines) or major tourist attractions (Mount Augustus and the Kennedy Range, Purnululu National Park, the Carnarvon Ranges, the North Kimberley rock art and gorges). Some developments have already occurred (El Questro) and others are planned (La Grange and Mt Augustus). These developments will require major investment and new skills and experience, but they will also provide opportunities for service businesses nearby.
- A reasonable network of sealed roads exists now across the rangelands linking what were formerly localities isolated from good roads. The road network improves the chances that businesses may establish adjacent to these links to either service traveller needs, or as a conduit to send produce to market.

4.4 The potential for partnerships

Several stakeholders see the future involving partnerships between people and organisations interested in different, but complementary outcomes on a leased area. The WA Government’s Kimberley Science and Conservation Strategy makes explicit the Government’s desire to forge partnerships with traditional owners and other land managers in identifying and managing high value natural assets and establishing conservation linkages between National Parks. Changes to the Conservation and Land Management Act 1984 passed in 2011 make it easier for the State Government to enter into agreements with Pastoral Leaseholders for long-term off-reserve conservation.

The landscape scale fire management program, Ecofire was conducted jointly by the Australian Wildlife Conservancy, DEC, DFES, the Kimberley Land Council, DAFWA and the Pastoralists and Graziers Association (Government of Western Australia 2011). A more recent example is the Yulmbu
Agreement brokered by the Australian Wildlife Conservancy, which involves AWC sub-leasing Tableland Pastoral Lease from the Yulmbu Aboriginal Corporation for 45 years and delivering economic and social benefits to the Indigenous people living at Yulmbu through sub-lease payments and employment opportunities. In another example, a corporate cattle business, the Australian Agricultural Company (AACo) and the Bunuba people are negotiating for AACo to take over the control and marketing of its herd of nearly 17,000 head on two Pastoral Leases in the Kimberley.

Where mining companies are holding Pastoral Leases to obtain a measure of resource security and are running grazing enterprises for little or no financial reward, non-mining stakeholders suggest the opportunity for third party involvement should be explored. For example, Indigenous people are keen to enter into partnerships with mining companies holding Pastoral Leases in managing cultural heritage and carrying out natural resource management works. However, mining companies that have purchased Pastoral Leases to manage land access in these areas are less enthusiastic about options for third party involvement (see also comment in Section 4.7).

**4.5 Matching opportunities with mechanisms**

As noted in Section 4.2, those consulted were able to identify several approaches to achieving the goal of sustainable occupancy in the rangelands.

Some stakeholders referred to the limited impact of sequential reports and inquiries into the Pastoral Leasehold Estate (see Section 5.1) and previous government interventions (see Section 5.2) in addressing fundamental problems with the sector of the Pastoral Businesses reliant on grazing income that are unable to meet their management commitments. These stakeholders see the need for government to start actively encouraging and where required, resourcing non-consumptive uses.

Sections of the pastoral community suggest that increasing pastoral leaseholder rights (in areas such as carbon and sandalwood), combined with increased direct support for the grazing industries (subsidised abattoirs etc.) will build resilience. However, a desire for increased participation in the sandalwood industry is at odds with WA Government plans to shift reliance for supply to plantation sandalwood in the agricultural areas (held by FPC) and private sector plans for increased supply of Indian sandalwood from the Kimberley.

There is concern, confusion and mis-information within the Pastoral Landholding Business Community and WA Government agencies about the legal requirements around opportunities to establish new enterprises on pastoral leasehold land, bring in third party operators, address native title, manage cultural heritage, become involved in carbon farming and secure licenses to abstract groundwater.

URS heard some varying views about what is and is not possible under existing regulations, and the relative ease of achieving new enterprise aspirations. The view was expressed that while the State Government has focused on how to make the process for issuing Diversification Permits more efficient between agencies, there is insufficient advice and support for proponents in taking their ideas through to applications for approval.

Varied views were expressed about how non-native plant species can be managed in irrigation developments. Other suggestions included increased use of public-private partnerships, as referred to above, as a means of encouraging development, but reducing the risk to the proponent and the financial burden on government.
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4.6 The need for new money and new people

A theme running through many of the contributions made by stakeholders was a perceived need for 'new people and new money' if WA Government objectives for sustainable land use and economic development opportunities are to be realised. People suggested that many current pastoral leaseholders are not able to access capital (and in some cases are supporting excessive debt levels), and/or may not be able to obtain or develop the knowledge and skills for new ventures. There was a common view that capturing the opportunities that exist will need an injection of capital and skills from outside the current Pastoral Landholding Business Community.

Some of those consulted noted this is already occurring, as in Aurora’s plans for algae development in the Pilbara, and the developing Indian Sandalwood industry in the Kimberley. The philanthropic contributions flowing into the private conservation organisations can be considered as new money. It was noted that the Royalties for Regions Program is investing in proving concepts for tourism expansion (at Mt Augustus, Gascoyne Junction) and in potential horticulture precincts (La Grange), and in private horticulture ventures (as in the Pilbara).

At the same time URS was told of ‘investor reluctance’ to become involved in substantial horticultural and silvicultural projects in the Kimberley without sufficient security, with an acknowledgement that being able to obtain a Rangeland Lease may assist in overcoming the reluctance. The impact of National Competition Policy (NCP) was also seen as a barrier to investing in an idea on a Pastoral Lease, which may in the end be open for tender. While the WA Government is working to improve the assessment process for new land uses (via Diversification Permits and excisions), URS was told of situations where applicants have given up trying to obtain approval for their plans. The view expressed was that if the State Government’s objective is multiple use and increased economic activity in the rangelands, more support and advice needs to be given to proponents of projects, and there needs to be more commitment to changes in land use within State Government agencies.

Finally, although changed tenure will be considered as a future act under the Native Title Act 1993, URS was told that some people with good relationships with NT claimant groups were able to negotiate mutually acceptable ILUAs with ease, whereas others experience difficulties and conflict. Again, new ways, and new relationships will be beneficial.

4.7 Impact of the Rangeland Reform Program

Few of the stakeholders consulted by URS have developed a coherent view about the impact of the Rangelands Reform Program on the environmental, economic and social state of the rangelands. In the absence of the draft legislation, and despite the available information in the public domain, many stakeholders were unsure what the new arrangements will offer and whether it would deliver benefits in excess of what can be delivered now via Diversification Permits and S-79 General Leases.

URS has been advised by DRDL that conversion of Pastoral Leases to Rangeland Leases or Perpetual Leases will be regarded as a ‘future act’ under the Native Title Act 1993, requiring negotiation of an ILUA with the registered of determined native title claimant. Some stakeholders see this as a barrier to land use change, while others see it as an opportunity for partnerships between leaseholders and native title claimants. Indigenous stakeholders, representing determined or registered native title claims see opportunities for NT claimant groups to acquire and convert their own Pastoral Leases located on their claim areas. However, where third parties seek to convert Pastoral Leases on their own claims, negotiations towards an ILUA could be lengthy.
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It is suggested by some, but not by the mining industry itself, that conversion of Pastoral Leases held by the mining industry would open up opportunities for more multiple uses on these leases that deliver a wider range of public benefits. However, given that the main reason mining companies hold Pastoral Leases is for ‘resource access security’, it was suggested to URS that there is little advantage to be gained by an individual company delivering more public benefits, which may occur at the cost of increasing the risk to its own interests in holding the land.

The private conservation organisations see value in being able to convert Pastoral Leases to Rangeland Leases with the specified use being conservation management. Bush Heritage Australia supports the Rangeland Reform Agenda stating that:

‘The Land Tenure Reform proposed by the Rangeland Reform Program offers the opportunity for BHA to formerly apply for and engage with the RDL, PLB and Traditional Owners to convert BHA’s current pastoral leases into “Rangeland Leases (for conservation leases)” in a collaborative and transparent manner to better reflect BHA’s intended land use and the Constitutional objectives of BHA as a not for profit organisation’ (BHA 2011).

The grazing industry is concerned about conversion of land with sound grazing potential to non-grazing uses via the Rangeland Lease mechanism, which could reduce the critical mass for the grazing industry at regional scale. They also suggest it could limit the opportunity for existing grazing businesses to expand by purchasing either neighbouring Pastoral Leases, or others located some distance away (as a risk management measure). However, the grazing industry welcomes the planned provisions which will remove the right of government to resume areas of a Pastoral Lease without compensation, and that will also allow for automatic roll-over of leases. These stakeholders suggested that issues (and likely cost) with negotiating ILUAs for conversion of a Pastoral Lease to either a Rangeland Lease or a Perpetual Pastoral Lease for grazing alone (in effect ‘business as usual’) would prevent many conversions. Conversely, there was recognition by some that in areas where the grazing industry is failing and where other options are being pursued, there could be interest in taking up a Rangeland Lease. Corporate pastoral companies may have the incentive and resources to convert Pastoral Leases to Perpetual Leases if this is seen as a means of reducing the cost of debt financing resulting from the additional security obtained by the conversion.

There is some nervousness within government about the possible implications of the Rangelands Reform Program for their own strategies and plans. For example, although it is clear that Section 16(3) in the Mining Act 1978 requires the approval of the Minister for Mines and Petroleum before any Crown Land [including a Pastoral Lease] can be transferred to another tenure, there is some concern that mineral exploration may be hampered on a Rangeland Lease that is being leased for conservation outcomes. This concern is shared by the mining industry.
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5.1 The effectiveness of current governance

Beginning in 1940, there have been numerous inquiries and investigations into the situation of the Pastoral Leasehold Estate and the grazing industry. Some of these are listed below (see Southern Rangelands Pastoral Advisory Group 2009).

1940: The Effect of the 1930s Drought on the Pastoral Industry in WA.
1979: The Present and Future Pastoral Industry of Western Australia.
1992: An inventory and condition survey of the Roebourne Plains and surrounds, WA.
2009: A Review of the Economic and Ecological Sustainability of Pastoralism in the Southern Rangelands of Western Australia.

All of these inquiries, reports and reviews (and several others not shown here) have been occasioned by concern about the economic condition of the pastoral industry and/or the environmental condition of the leases. This work continues. For example, DAFWA recently published the findings from an inspection of the rangelands in the Gascoyne Catchment in the aftermath of the floods which affected the horticultural industry and public infrastructure in Carnarvon in 2010-11 (Waddell et al. 2012). The findings from this recent work reinforced those of earlier investigations about the poor condition of areas of the Southern Rangelands, as described in Section 3.1.

All the past and recent inquiries have recommended reforms to put the grazing industry on a sustainable economic and ecologically sustainable footing. Implementation of the recommendations has not always been complete. The frequency and repetitiveness of these reports suggests that governance of the Pastoral Leasehold Estate has not been able to address some fundamental problems. This observation is supported by the evidence presented in this report that the Pastoral Leasehold Estate is not supporting (or is not able to support) viable grazing enterprises over two thirds of its area, and that trends in the condition of the rangeland resource (soils and vegetation) are not reflecting appropriate management.

5.2 Previous experiences with government intervention

There has long been a recognition that some Pastoral Businesses are too small to generate adequate returns to management from grazing livestock. This led to recommendations for the WA Government to fund exit provisions and property build-ups after the release of The Present and Future Pastoral Industry of Western Australia Report in 1979 and as part of the Gascoyne Murchison Strategy (GMS), which was funded by the Commonwealth through the period 1998-2004 as part of the Regional Partnerships Program (RPP). Similar provisions were included in the WEST 2000 and WEST 2000 Plus RPPs which operated through the same period in western NSW. The GMS and WEST 2000/ WEST 2000 Plus Programs invested about $30 million each in a range of adjustment and industry development measures. Further, both programs contained measures aimed at generating new
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activities for the rangelands. URS conducted final evaluations of these programs (see URS 2001, 2004 and 2005). A brief review of government intervention occurring through those programs is presented below.

5.2.1 Structural adjustment

Gascoyne Murchison Strategy (GMS)

The GMS committed funds to support ‘voluntary lease adjustment’, but these funds had virtually no impact on structural adjustment of the Pastoral Leases in the rangelands. An estimated 26 per cent of Pastoral Leases changed hands over the five years of the GMS. Approximately 60 per cent of these transfers involved properties where sustaining a stand-alone grazing enterprise would be difficult. Thus unless purchasers had capability for significant off-station earnings, the existing problems may have just been transferred on to the next lessee.

Significant progress was made in removing problem leases from the grazing industry through the purchase of properties for the State’s Conservation Estate (3.9 million hectares), with a suggested 78 per cent of leases purchased being in that category. The purchases made for this purpose through the GMS were either intentionally or unintentionally biased towards those with low prospects for sustaining a grazing enterprise. However, overall the GMS was not able to meet its full objectives in structural adjustment (URS 2004).

WEST 2000 Plus

The WEST 2000 Plus Rural Partnership Program in western NSW committed substantial funds to property build-up, debt restructuring, and re-establishment assistance. Thirty six (36) landholders left the region as a result of the property build-up support that enabled other landholders to take over their property, and 12 landholders received re-establishment training. Twenty six (26) people had their immediate future improved through re-structuring of their financial commitments, but there was no information about whether fundamental issues in their farm business enterprises were addressed for the long term. The observation at the time was that for some, it delayed but not removed the threat of eventual financial difficulties. Further, the assistance was provided to just four per cent of about 1,500 grazing businesses in the Western Division of NSW.

Overall, URS’ conclusion was that this assistance provided important benefits for a few (with some quite large subsidies involved), but limited regional benefit for the Western Division agricultural industries in terms addressing those industries and businesses in need (URS 2001 and 2005).

The effectiveness of traditional structural adjustment mechanisms

The re-establishment assistance (exit provisions) in the GMS and WEST 2000 RPPs, which were designed to encourage and support people to leave difficult situations were undersubscribed. However, when the chance to sell to DEC was presented, up to 70 per cent of leaseholders in the Gascoyne-Murchison Region offered their properties (advice from DEC 2012), and the purchase of leases by the State Government for conservation outcomes included mainly those with poor prospects in supporting grazing businesses.

The most obvious conclusion is that insufficient incentives were provided through exit provisions in both programs, which compared poorly to the inherent perceived advantages of staying on the
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Property or selling to the government or to the private market. Further, people in very difficult circumstances may lack the ability or confidence to extricate themselves from their situation in return for limited incentives.

In summary traditional structural adjustment measures have not been effective.

5.2.2 Other government interventions

Developing new economic opportunities

The track record of government programs in identifying, researching, developing and then implementing new economic activities in the rangelands is not encouraging. It is generally recognised that a new land use in agriculture (e.g. new crop type, new farming system) takes at least 20 years to develop from idea to general adoption. It is worth noting there has been no new widespread consumptive land use developed in the WA rangelands since the grazing, sandalwood and mining industries prompted European settlement in the 19th century. While there have been many ideas, and some research and development promoted by the WA Government through the GMS (e.g. wildflower cultivation, aquaculture), these have not led to established industries. Changing the species grazed (e.g. merinos replaced by meat sheep or goats) has worked for some businesses, but these enterprises still operate within the same climate risk environment.

Better success has been had with new non-consummptive uses including management for conservation by private philanthropic not-for-profit organisations, and through stewardship payments (as in Western NSW); and in the development of ‘pastoral tourism’, which involves a number of properties in WA. Government has supported pastoral tourism through development of specific routes through the rangelands, with accompanying interpretation (as in the Golden Quest Discovery Trail, and the Wool Wagon Trail). However, as noted in Section 3.3.2, the income from pastoral tourism (homestead stays) is a very small percentage of the total tourism spend.

Stewardship payments

An example of environmental stewardship is the ‘The Environmental Stewardship Program’ that is part of the Caring for our Country (CfoC) Program. This program offers funding for land managers to provide a range of agreed management activities to protect, rehabilitate and improve particular ecological communities. Eligible land managers include Indigenous communities, and managers of leasehold land. Under this approach land managers are contracted to manage targeted matters of national environmental significance on their land and can receive funding for activities that are additional to their normal statutory responsibilities, for up to 15 years. Relevant management activities include reducing stocking and grazing intensity, and rehabilitation work. A critical requirement for a stewardship scheme is that landholders commit to going beyond their required responsibilities of management in return for payment for the services delivered.

This ‘conservation economy’ as termed by Greiner (2010) is already significant in the WA rangelands. In 2009-2010, Commonwealth Government investment through the CfoC and Indigenous Protected Areas Programs totalled $4.96 million in the Kimberley alone, with most of these funds directed at ‘working on country’ projects (Greiner 2010).

Another example of a stewardship payment scheme is in Western NSW where a pilot project termed ‘Enterprise Based Conservation’ was introduced through the WEST 2000 Plus RPP in 2001. The
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Background to the project was research showing the ‘gap’ in environmental outcomes between what is required and what can be attained with best practice grazing management. WEST 2000 Plus tested a project that would pay landholders for managing to achieve required environmental outcomes.

The Enterprise Based Conservation (EBC) Pilot Project implemented by WEST 2000 Plus is an example of a new land use and new type of income stream that is not reliant on climatic and commodity price conditions. Under this land use, landholders are paid by the general community (via government) to deliver a range of environmental services – in practice, to maintain a certain level of ground cover. The advantage for landholders is that they can obtain a diversified income. The advantage for the community is that they obtain a wider range of environmental benefits than can be obtained through the Conservation Estate alone.

A recent review showed the ‘social cost’ (to the public) of achieving a one per cent increase in ground cover varied between $133.63 and $9.03 per hectare across participating properties (Moss et al. 2012). The analysis also showed that while 70 per cent of participants were better off through their involvement in the scheme, the average net present value (NPV) for the remaining 30 per cent was - $6.08 per hectare. However, 80 per cent of participants felt they had received non-monetary benefits through participation. Overall, the scheme was seen as being sufficiently beneficial that a subsequent scheme, the Western Catchment Management Authority EBC Program was based on it (see Biobrokers 2009).

Business planning and training

Governments have seen support for business planning and management training as a means to encourage resilient businesses in agricultural and rangeland environments. The GMS and WEST 2000/ WEST 2000 Plus RPPs had programs in this area. The evaluations of all programs suggested that investments in business planning and management training were generally more worthwhile and affected more businesses and people than more expensive and less effective programs of funding for on-ground works or property structural adjustment (URS 2001, 2004, and 2005).

More recently, a partnership between the Australian and Western Australian Governments has implemented a ‘Drought Pilot’ program of business planning and financial support for agricultural businesses as an alternative to Exceptional Circumstances funding. The review of the first round of workshops, which included some in the WA rangelands suggested that the approach was beneficial (Keogh et al. 2011).

The Drought Pilot Review Panel concluded that the following measures would represent a robust future policy platform (Keogh et al. 2011, p. 4):

- an income support safety net for farm families in hardship that is available based on demonstrated individual need;
- the permanent presence of social support services delivered via outreach to people in rural communities;
- continuing opportunities to engage in and implement strategic farm business planning; and
- ongoing access to the Farm Management Deposits scheme and existing tax incentives for primary producers.
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Direct ‘on-ground’ grants
The GMS and WEST 2000/ WEST 2000 Plus RPPs invested funds into ‘on-ground’ works including grazing infrastructure (e.g. self-mustering yards, fencing to land type, new watering points etc.) and woody weed control and rabbit control (see URS 2001, 2004 and 2005). The evaluations suggested that where these were introducing new technology into the grazing industry, there was some merit. For example, the GMS funded the development and promotion of total grazing management using walk-in-walk-out self-mustering systems – termed Total Grazing Management yards (‘TGM yards’). This technology provided Pastoral Businesses with the opportunity to take full control of the grazing behaviour of their stock and exercise cost effective strategic and tactical management. The GMS funded TGM yard installation on an estimated 10 per cent of all artificial watering points (URS 2004). While this will have been beneficial to those businesses taking up this opportunity, the investment will have had only marginal benefit across the whole region unless all businesses have taken up the technology. The poor economic performance in recent years across the Southern Rangelands, and the collapse of small stock numbers (sheep and goats) suggests that this investment by businesses will not have occurred.

The WEST 2000 and WEST 2000 Plus programs invested significant funds into graziers’ programs for woody weed control and rabbit control. The conclusion from the evaluations was that this investment did not generate public benefits in the case of woody weed control, and was of marginal benefit in the case of rabbit control. The evaluations recommended against further investment in these areas (URS 2001 and 2005).

Overall, direct on-ground grants can have some benefit for the immediate recipients, but are of limited value in addressing industry or region-wide systemic problems.

Addressing off-site problems
Government has a better track record in intervening to address off-site problems resulting from issues in the rangelands that in turn have resulted in benefits for the rangelands themselves. In WA, the stand-out examples are the Brucellosis and Tuberculosis Eradication Campaign (BTEC) and the regeneration of the Ord River Catchment. In both cases an external threat (loss of overseas beef markets, siltation of Lake Argyle) was the spur for determined, uncompromising, and well-resourced action by government, with support from industry in the case of the BTEC.

The benefits from the BTEC included reduction in the feral cattle herd in the rangelands and improved infrastructure which collectively allowed the industry to gain proper control of the commercial herds for the first time in the industry’s history.

The Ord River Regeneration Program involved compulsory resumption of Pastoral Leases in the Ord River Catchment, removal of cattle and donkeys and a long-term and expensive commitment to landscape rehabilitation on 10,000 km². The results have justified the investment, resulting in perhaps the most successful large scale land rehabilitation project in the Australian rangelands (see Payne et al. 2004).
5.3 A new approach to structural adjustment

5.3.1 Suggested new mechanisms to achieve change
Overall, experiences in WA and elsewhere indicate a need for a much greater range of options for structural adjustment than those currently on offer. Increased flexibility will be required in providing adjustment opportunities that are individually tailored to achieve specific outcomes defined in clearly identified programs. Under the general banner of ‘transitional or change management planning’, these options may include:

- providing the means for a family with off-station income to remain on a property while the grazing rights to the land are transferred through sale or lease to a neighbour, or are leased back to the government for a definite period;
- government to be more prepared to accept a significant capital loss associated with taking a piece of unsuitable or badly degraded land out of production, instead of encouraging another business to incur debt through its purchase (although care will need to be taken to avoid corrupting the market);
- making it easier for one family to leave without the need to sell the business where there are multiple families on the one property; and
- developing the stewardship conservation approach discussed above that can reward businesses for managing for specified conservation outcomes.

5.3.2 Resourcing new approaches to adjustment
Driving real change in the land use and management in the rangelands will require investment and may have resourcing implications for the WA Government. Previous sections have suggested that much of the Pastoral Landholding Business Community does not have the financial or human resources to achieve desired outcomes without assistance.

The Royalties for Regions Program supports the Regional Development – Water and NRM initiative, which includes four main themes as follows (DRDL 2012):

- Regional water availability, planning and investigation;
- Regional Economic Development – Water Opportunities;
- Gascoyne Food Bowl and Flood Mitigation strategy; and
- Regional Natural Resource Management;

In 2011-12, the Royalties for Regions Program invested a total of $1,205.1 million across regional WA. In the same year, the Program invested $25.5 million in five projects, with two of the projects – Carbon Farming ($3.195 m) and Regional Economic Water Development Water Opportunities ($6.385 m) – targeted at the rangelands.

Further investment through this initiative could provide the resources to allow the options presented above to be realised. The point is considered in developing the recommendations (see Section 7.2).

5.4 Suggested strategies for rangeland businesses
Remote businesses are exposed to sources of unpredictability including climate variability, timely access to suppliers, attraction and retention of staff, or access to support services (financial, labour hire, government advisors, etc.). They have limited choice and limited business opportunities. The remoteness of some can also make communications and transport difficult. However, as Stafford
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Smith and Cribb (2009) note, business opportunities for remote rangeland businesses do exist and can be seized if the right strategy is adopted. They describe five potential strategies that businesses can adopt at different times to suit different purposes.

The persistent strategy
Businesses adopting this strategy are servicing a demand for low volume but reasonably steady services that are too small for others to provide, e.g. mechanical, maintenance, plumbing. The opportunities in the WA rangelands include people providing routine services to local governments or to remote Aboriginal communities.

The refuge strategy
These tend to be niche based services based on a fixed opportunity such as tourism around Uluru. These businesses need to protect their resource to ensure their on-going sustainability. The internationally recognised El Questro Resort, and the dolphins at Monkey Mia are examples of existing developments in WA. Mount Augustus and Purnululu National Parks are examples of ‘fixed opportunities’ around which tourism businesses could develop. Further, the horticultural precinct at La Grange is an example of a niche or nodal opportunity, and others can be identified through investigation. Ready access to the network of sealed roads that now traverse the rangelands provides another fixed opportunity for business development close to a location for market access.

The dependent strategy
Businesses that are reliant on a larger player such as a mining company and are then subject to the vagaries of the mineral resource market. Providing services to mining operations (and obtaining resources from them) has been a strategy employed in the pastoral industry since the early days of the 20th century. These opportunities for remotely located businesses have expanded since the 1980s, which has coincided with the decline in incomes from grazing. As noted throughout Section 3, income from non-grazing activities, much of which is provided by the mining industry, is important for half the rangeland businesses. These opportunities will continue. For example, the construction of the Square Kilometre Array (SKA) in the Murchison, and the Oakajee Port and Rail (OPR) Project will undoubtedly provide contracting work to local people.

The ephemeral strategy
This refers to businesses that switch between diverse enterprises as opportunities arise. The example given by Stafford Smith and Cribb are bush food consolidators who buy from bush harvesters in good years but switch to other jobs in bad years. The main examples of these in the WA rangelands will be those people who collect seed for mine site rehabilitation projects following favourable seasons, but then need to find other means of support between those times.

The nomadic strategy
As the name suggests, this is an approach based on moving to where the opportunities are located. It requires an understanding of where the potential sources for business might exist often developed through building networks throughout a region. Sandalwood harvesting, and kangaroo harvesting are examples of semi-nomadic businesses where operators may work in a general area, but will move to...
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where the resource is most easily obtained (as in kangaroos) or to where they are directed by regulators (as in sandalwood harvesting).

The ‘exploitative’ strategy

This strategy is often pursued by teachers, nurses, government workers or mine site employees who move to remote locations for two or three years to gain experience and skills before moving on, often back to more urban areas. High population turnover characterises the demographics of the rangelands towns in WA. For example, in the Pilbara towns, only about 29 per cent of the population resident at the 2006 census were also resident at the time of the 2001 census. Many employees in Pastoral Businesses work in the grazing industry during their youth, before moving to other careers. The noted exception to this transient behaviour are Indigenous people who although they move between towns in an area, are much more likely to remain in the locality where they grew up.

Stafford Smith and Cribb (2009) note that all of the strategies in their ‘rangeland business typology’ have their challenges and weaknesses. Decisions in a persistent rangeland business may be influenced by a government policy that discourages investment as subsidies sometimes do. A refuge can be damaged so that its business potential becomes diminished as tourist locations might be if they are over-exploited. What the authors argue is that remote businesses should integrate all of the strategies or, at least components of them so that the unpredictability of the region is lessened. This diversified approach, they argue, must also be supported through government policy that does not expose the weaknesses of each of the strategies.

5.4.1 What is happening in other rangeland jurisdictions

The rangelands in all developed countries are experiencing shifts from a dominance of grazing to multiple uses, and all governments are endeavouring to recognise and manage the change. Further, governments are responding to community requests for greater access to rangelands, more information on what is happening in the rangelands, and a greater say in governance. Some examples of developments are presented below.

- In respect of wider uses, rangeland areas in North America and Africa now support mature game hunting industries, with management directed as maintaining sustainable populations of trophy species. Wilderness tourism is an increasing use in all rangeland areas.
- In the USA, urban encroachment on rangelands is an issue for existing uses and local planners.
- In Queensland, the Delbessie Agreement (also known as the State Rural Leasehold Land Strategy) is a framework of legislation, policies and guidelines supporting the environmentally sustainable, productive use of rural leasehold land for agribusiness. The Agreement was finalised in December 2007 by the Queensland Government, AgForce Queensland and the Australian Rainforest Conservation Society at Delbessie, a property near Hughenden. In collaboration with key stakeholders, the (then) Department of Natural Resources and Water developed a suite of practical measures to achieve sustainable land management, including guidelines for assessing rural leasehold land condition to ensure compliance with the statutory duty of care and provisions relating to land degradation. One objective is to improve business ‘certainty’—by establishing land management agreements clearly outlining leaseholders’ natural resource management obligations.
5 Response to pastoral viability and sustainability challenges

(DNR 2007). The Delbessie Agreement was followed by legislative amendments to the Queensland Land Act 1994 to allow the transfer of carbon and forestry rights from the State to the leaseholders. This action was taken so Queensland leaseholders could participate in the CFI when it was introduced in January 2012 (Outback Ecology 2012).

- The growth in the demand for ‘natural products’ has resulted in a group of producers in Queensland marketing organic beef (see http://www.obeorganic.com), and promotes the values of beef cattle raised in the rangelands as described in the following statement on their website.

The OBE Organic group was founded in the early 1990s by a far-sighted group of Australian pastoral families which are continuing century-old family traditions. Today, OBE Organic is the world’s oldest, largest and most trustworthy producer of healthy and great-tasting organic beef.

The scale of OBE Organic’s free-range production operation is staggering: together, the families own over seven million hectares of Australia’s best cattle grazing land (that’s 70,000 square kilometres or 27,000 square miles!).

Guided by heritage and driven by purity, OBE Organic delivers old-world quality with perfect health and safety standards. Pure and simple: OBE Organic produces the world’s safest and best-tasting organic beef.

- In South Australia, there has been a program of establishing lease-by-lease Indigenous Land Use Agreements as part a state-wide ILUA process involving the State Government, pastoral lessees and native title Claimants. A search of the NNTT list of registered ILUAs shows 41 have been completed. In the WA, the equivalent number is 25 Agreements.

- In recognition of the problems caused by public access across pastoral land (and resulting erosion issues etc.), the Department of Environment and Natural Resources in South Australia has a Public Access Routes Policy on Pastoral Lands which states “Public Access Routes (PARS) are established under the Pastoral Land Management and Conservation Act 1989 to provide public access over pastoral land without the need for travellers to ask permission from the lessee. A network of 24 PARs has been established. The SA scope helps to keep caravan and campers on designated roads, thus ensuring access to key areas/sites and conversely manages traffic movement which assists to stop landscape degradation. This has relevance to the WA situation where access across coastal sand dunes on coastal Pastoral Leases is causing significant erosion problems (Tourism WA pers. comm.).
Opportunities and constraints for sustainable development

6.1 Principles
The evaluation of opportunities in the rangelands (and in particular the Pastoral Leasehold Estate), and the development of recommendations has been guided by the following set of principles developed by the consultant team. These are all equally important.

- Encouragement and support for sustainable occupation of the rangelands.
- Improvement of natural resources.
- Optimisation of economic opportunities across all uses and users.
- Attraction of new skills and experience and new capital into the rangelands.
- Recognition of biodiversity and landscape values and their preservation.
- Preservation of heritage, cultural values and practices.
- Provision of rational, effective and collaborative services.

6.2 Economic, social and environmental opportunities
The opportunities for economic, social and environmental development in the rangelands that have been identified by the organisations and individuals consulted for the Project are presented in the following sub-sections. In keeping with the intent of the Statement of Requirements, the discussions focus more on new land uses (new crops, new irrigation nodes/precincts, carbon farming, stewardship etc.) rather than improvements and expansion in existing established uses (e.g. grazing, tourism).

6.2.1 Grazing industry
Most of the cattle herd in the rangelands is in the Kimberley and the Pilbara, and improving productivity and market opportunities in these areas should continue to be the principal focus for public investment in grazing industry development.

Improving market options
As shown in Section 3.2.14, the current economics of the cattle industry are not sound. Further, the analyses cited are based on data collected prior to the disruption of the live export trade in 2011. In respect of markets, it is predicted that the criteria for live export animals delivered into Indonesia will be further restricted as Indonesia develops its domestic cattle breeding industry. With the absence of abattoir facilities anywhere in north Western Australia, this highlights the limited market options for cattle in that area. The pre-feasibility study into a northern WA abattoir completed in 2011 (Hyder Consulting et al. 2011) concluded:

*Live exports will continue but previous [to the disruption in 2011] growth forecasts will not be met and volatility will increase.*

*The Kimberley region in particular will suffer from any reduction in demand from Indonesia and other sources. The development of greater sophistication in the northern pastoral industry is of paramount importance (p 1).*

The recent ABARES report (Gleeson et al. 2012) referred to the need for more abattoir facilities in northern Australia, and recognises that for an abattoir to succeed, grazing businesses need to be able to supply cattle for slaughter year-round. Both reports cited noted that it will require irrigation developments to enable fodder production to hold cattle in sufficient condition for slaughter during the
late dry season and during the wet season. Hyder Consulting et al. (2011) also noted that
development of irrigated pastures in the area would also lead to improvements in herd genetics.

The initiatives being pursued by Rio Tinto (see Section 3.3.1) and through DAFWA’s Growing the
North project, the investigation of the potential for ‘mosaic land use’ (a network of irrigated feed-on
facilities located within pastoral areas) by CSIRO and the R&D being undertaken by CSIRO and the
Queensland Government into logistics infrastructure are aligned with this requirement which can be
enabled in part by tenure reforms through the Rangelands Reform Program. Some of the
opportunities in terms of water resources are discussed in Section 6.2.2.

Government and industry need to work together in developing an integrated approach to the
development of a mosaic land use with efficient transport links for cattle movements, via a Strategic
Plan as recommended by Hyder Consulting et al. (2011). There is a need for a careful and
considered approach to these developments, especially in respect of an abattoir in northern WA. SdD
Consult and Meateng (2010) in a previous study noted that for a northern WA abattoir to be
successful, it would need to capable of processing 400 head per day, and would require government
support and significant producer commitment. Finally, government needs to assess the impact of the
planned Australian Agricultural Company (AACo) abattoir in Darwin before proceeding further with an
abattoir located in the Kimberley (Hyder Consulting et al. 2011).

Expansion of the current investment in improved road linkages across northern Australia is advocated.
In support of the recommendation for making it easier for cattle to be moved, a recent study has noted
increased mobility of livestock in the rangelands and that the institutional framework supporting this
approach to managing risk may not have caught up with the increasing use of this practice (McAlister.
2012).

**Improving the productivity of rangeland herds**

Beyond market, processing and supply chain logistics, the investigations by McCosker et al. (2010),
Holmes et al. (2010) and to a lesser extent Gleeson et al. (2012) reveal a northern cattle industry
performing well below its potential on KPIs for herd productivity, return per breeder, cost per breeder,
and return on assets managed, and burdened with high debt levels.

The technologies to improve productivity are well known and able to be applied, such as improved
water distribution, conservative stocking rates, improved heifer management, consistent weaning,
supplementary feeding, increasing female sales, reducing cow deaths and remote monitoring
technology (e.g. water monitoring, animal weighing) (see publications on www.mla.com.au). For an
example of the potential offered by remote monitoring technology, a recently completed Producer
 Demonstration Site study showed a return on investment of over 50 per cent from the application of
remote water point monitoring telemetry in western Queensland (QDPIF 2011). There are other
economic development possibilities through business technology, gamification, the use of mobile
devices (e.g. drones), cloud computing and data analysis (Murphy 2012).

The degree to which northern cattle businesses can address low productivity and high indebtedness
will occur independently of the WA Rangelands Reform Program and needs to occur across the
ownership categories. Failing to address these issues is likely to result in a further reduction in the
number of Pastoral Businesses able to generate adequate returns from their grazing enterprises, and
for those struggling, increase the risk that the base resource will not be well managed. Continuation of
R,D&E programs that encourage improved management, such as benchmarking performance and
supporting Indigenous Pastoral Businesses through the Indigenous Landholder Service (ILS) is required (see also recommendations in North Australia Beef Industry Working Group 2012).

6.2.2 Irrigated agriculture and silviculture

Water resources within the Pastoral Leasehold Estate are already highly valued, mainly for mining use and town water supplies. For example, several Pastoral Leases in the northern Goldfields held by mining companies ‘host’ extensive groundwater borefields that deliver water to mineral processing plants. The increasing demand for domestic and industrial water supplies in the Pilbara is leading to wider exploration across Pastoral Leases in the area.

Water quality and quantity are the primary limiting factors for agricultural diversification in the rangelands. Increased knowledge about available groundwater reserves in WA’s rangelands, and improved agricultural technologies are opening up opportunities for targeted developments in horticulture, intensification of grazing and silviculture. Commercial water availability may be a driver of the price of Pastoral Leases where they link with other resources. Current information about water use for irrigation in the rangelands, and available divertible supplies in those general areas is presented in Table 6-1.

<table>
<thead>
<tr>
<th>Region</th>
<th>Water source</th>
<th>Current use (GL/yr)</th>
<th>Potential use (GL/yr)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kimberley</td>
<td>Ord River</td>
<td>350</td>
<td>515</td>
<td>Includes water available in the Weaber Plain and Mantinea areas</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Allocated to Ord Stage 2</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Not on PL</td>
</tr>
<tr>
<td></td>
<td>La Grange N</td>
<td>4.09</td>
<td>35</td>
<td>Already supporting irrigated agriculture</td>
</tr>
<tr>
<td></td>
<td>La Grange S</td>
<td>2.62</td>
<td>15</td>
<td>Already supporting irrigated agriculture</td>
</tr>
<tr>
<td>Pilbara</td>
<td>Mine dewater</td>
<td>40</td>
<td>200</td>
<td>Large scale (845 ha) irrigation commencing on PL</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Assumes development of further below water-table mines</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Development of irrigation enterprises needs to recognise typical 30 year mine life</td>
</tr>
<tr>
<td></td>
<td>Western Canning Basin</td>
<td>30</td>
<td>100</td>
<td>Small scale use in agriculture already occurring, with support from the WA Government</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Will support expansion of Port Hedland, but can also supply irrigated agriculture</td>
</tr>
<tr>
<td>Gascoyne</td>
<td>Carnarvon Artesian Basin</td>
<td>10</td>
<td>30</td>
<td>Low quality water, trial work done, production risks involved. Better water on Meedo PL</td>
</tr>
<tr>
<td></td>
<td>Mt Augustus</td>
<td>minimal</td>
<td>1</td>
<td>Some exploratory work done. Remote from markets</td>
</tr>
<tr>
<td></td>
<td>Wooramel River</td>
<td>1.4</td>
<td>4</td>
<td>Currently used to support 46 ha of horticultural production</td>
</tr>
</tbody>
</table>

Sources: DOW (2007); DOW (2010a, b and c); Dust Up Projects (undated), advice from DOW 2012.

Kimberley

In the view of CSIRO (2009), further major surface storage and associated irrigation projects are unlikely to be economically feasible in the Kimberley.
6 Opportunities and constraints for sustainable development

The Western Australian Government has committed $5 million over the next three years to investigate further irrigation opportunities south of Broome in the La Grange area, with other projects commissioned on the Dampier Peninsula and the Cockatoo Sands near Kununurra. With 50 GL/annum already allocated at La Grange, there is potential for further horticulture development in that area. However, recent groundwater investigations have ruled out development potential on the Cockatoo Sands near Kununurra (advice from DOW 2012).

In the north Kimberley, the groundwater is stored in localised fractured rock aquifers which could potentially only support smaller scale developments. Prospects are better along the Fitzroy River valley, although the costs to proponents in identifying and providing a sufficient resource will be significant.

Pilbara
The Western Canning Artesian Basin extends from the De Grey River to Anna Plains Station. Advice from the Department of Water is that sustainable yield could be 100 GL/year, with 30 GL already allocated. This includes a small allocation for an irrigation project on a Pastoral Lease in the area, which has attracted support through the Royalties for Regions Program.

Many of the new iron ore mines being considered and/or developed in the Central Pilbara require dewatering, involving removal of large volumes of water over multi-decadal timeframes (usually up to 30 years). In 2009, 81 GL per year were being discharged from mines at Yandicoogina and Woodie Woodie (MHW 2009). It has been suggested that ultimately up to 200 GL/year may need to be managed by the mining companies involved (DOW 2010b; advice from DOW 2012), which could support major irrigation developments. Although some mines have current approval to dispose groundwater into ephemeral creeks, companies believe that given the large volumes of water to be abstracted, this practice will not be either acceptable or allowable on environmental grounds into the long-term, and they are exploring alternatives for water use.

As described in Section 3.3.1, Rio Tinto Iron Ore has commenced a fodder production project using mine dewater at Marandoo and Nammauldi Mines, which will be expanded as more water is required to be managed. Although the sole purpose of the project, which has received approval through an environmental impact assessment process, is to dispose of large quantities of groundwater, being able to generate an economic product (i.e. fodder) benefits the company’s cattle enterprise.

Prompted in part by this anticipated increase in mine dewatering, the WA Government and BHP Billiton have commissioned a major study into developing a better understanding of the quality and quantity of groundwater in the Pilbara (West Australian 10 August 2012, p. 94). Further, a change to the regulations allowing third party use of the mine dewater resource is currently being approved by Government. This could provide the opportunity for partnering between mining companies as suppliers of water, and agricultural interests as users of the water in long-term irrigated agriculture projects.

Northern Goldfields
The groundwater resources in the northern Goldfields have previously been used for experimental and commercial horticulture developments, although these have not become sustainable ventures, largely

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16 This compares with Perth Metropolitan Area’s annual water use of 270 GL/year, and the current water use in the Ord River Irrigation Area which is licensed at 350 GL/year
because of poor market access (distance, poor quality roads). The recent construction of sealed roads between this area and population centres to the north, west and south should result in a reconsideration of the potential for horticulture in the area.

The opportunities and constraints for irrigated agriculture and silviculture

Opportunities for irrigated agriculture or horticulture will not be simply based on the availability of water. Water is a critical factor of production but it is not the only one, and it is a relatively inexpensive factor of production when compared to capital, labour, fuel, electricity, fertiliser, chemicals and transport. The financial success of any irrigated agriculture or horticulture development requires a competitive advantage. For example, this may be in the form of cost of production, or the timing that products may be brought onto the market. In isolated rangeland areas especially, any development will require a competitive advantage in order to overcome the disadvantage of isolation that brings high transport costs and operating costs, as well as potential product spoiling.

Consultations suggested that any successful future developments will be expansions around existing nodes of agricultural development or transport, or will need to be of significant scale to allow for efficiencies in the cost of production, or will be associated with another industry. As noted in Section 6.2.1, government and the cattle industry need to work together in developing an integrated approach to development of a mosaic land use (irrigated areas linked with native pastures) with efficient transport links for cattle movements.

In areas where adequate water is available, there is the opportunity to develop irrigated agricultural precincts (based around horticulture as well as fodder production). The availability of ground water resources in the La Grange Area, the West Canning Basin, in the mining areas in the Pilbara and to a lesser extent in the West Gascoyne suggest these areas should continue to be the target for active State Government intervention in securing land and providing infrastructure so that the opportunities are attractive and ready for investment. Further, if existing irrigation areas are to be further developed, or even for their future sustainability, then steps need to be taken to protect their existing water resources.

Resources should be focussed around these opportunities and existing irrigation precincts such as Carnarvon rather than distributing government resources on small developments with, at best, niche markets. Isolated lease-by-lease propositions might only be successful if operators farm niche products that are non-perishable.

Securing the land for new or expanded nodal developments can occur in the same manner that Government obtains land for major industrial developments and public works, as in the Ashburton North Strategic Industrial Area, which formerly was pastoral leasehold land (see www.dsd.wa.gov.au/8383.aspx). Continued reliance on the diversification opportunities in Part 7 of the Land Administration Act 1997 will not deliver the desired timeliness or scale of decision-making. An alternative is Sub division 2 of the same Act which allows for the acquisition of land. Conversion of pastoral leasehold land that forms part of a registered or determined native title claim to higher forms of tenure constitutes a future act under the provisions of the Native Title Act 1993 and requires negotiation of an Indigenous Land Use Agreement with the Claimants. This can be a constraint to the change in tenure and hence land use, which requires enabling support by government.
6 Opportunities and constraints for sustainable development

Substantial investigation into ground water availability will be required as a prerequisite step to achieve any further diversification, beyond those areas that are already in development (as described above).

Potential new crops/products and their value

Three new crops/products have been referred to by several stakeholders consulted as having potential to achieve a breakthrough in expanding the economic base in parts of the rangelands. These are profiled in some detail below.

Commercial algae production in the Pilbara

The potential for development of an algae aquaculture industry in the Pilbara has been identified as an opportunity to diversify the economic opportunities for the region and create new jobs outside the resources sector (DRDL et al., 2012, ABC News 24, 2012). The Pilbara Algae Industry Study (DRDL et al. 2012) details the requirements for an algae industry and provides a high level investigation of potential sites, potential synergies with existing economic activities and infrastructure requirements.

The algae industry produces products for three distinctly different markets, namely the biofuels market, the health foods and pharmaceuticals market, and the feedstock market. The biofuels market offers massive potential in terms of ultimate industry size, land use requirements and the ability to ‘sequester’ carbon dioxide, however, the establishment of commercially viable operating facilities is still some time away. Health foods and pharmaceutical markets offer the most by way of immediate opportunities for the development of algae industries in the Pilbara. However, there are existing established market competitors and a large initial investment will be required for entering the pharmaceuticals market. The feedstock market is well established and moderately profitable for existing players. Challenges to expanding this market arise from appropriate product form for use in aquaculture (e.g. pellets for tuna and fish farming), contamination control of algae producing reactors and undertaking major animal feed trials (DRDL et al. 2012).

The Pilbara Algae Industry Study identified the Pilbara region as an ideal location for the establishment of an algae based industry due to ideal weather conditions in terms of light and temperature, close proximity to abundant carbon dioxide source, close proximity to sea water and accessible and low cost land with a low population density.

Ideal weather conditions

Extensive global research has established the ideal light intensity for the growth of algae as >5kWh/m$^2$/day. The average light intensity for the Pilbara region is 6.5 kWh/m$^2$/day. Rainfall is another key determining weather condition in locating the algae industry, namely, avoiding heavy rainfall. Care will need to be taken to avoid locating open ponds where they may be subject to flooding, rainwater overflows or excessive dilution by rainwater and may require engineering solutions to protect from flooding (DRDL et al. 2012).

Proximity to carbon dioxide source

Carbon dioxide is a key input to the production of algae. Natural atmospheric sources are not adequate for the growth rates required in commercial applications and it is necessary to source carbon dioxide in concentrated form, typically from large stationary supplies. The most concentrated forms of carbon dioxide are produced as by-products from the production of ammonia and LNG and the proximity to these industries in the Pilbara offers great potential for the algae industry. Greater than 10 million tonnes per annum of carbon dioxide is produced from stationary sources in and around the
6 Opportunities and constraints for sustainable development

Dampier Peninsula and it is estimated that more than 3 million tonnes per annum is produced in highly concentrated form (DRDL et al. 2012). Future developments such as the Wheatstone LNG plant provide a further opportunity for sourcing carbon dioxide. Aurora Algae are currently operating a demonstration facility in Karratha using carbon dioxide generated by Yara Pilbara Fertilisers Ammonia Plant. While availability of land for the algae industry in cost effective proximity to carbon dioxide sources may be an issue, some studies from the USA suggest that even distances of up to 80 km may be economical if concentrated forms of carbon dioxide are available.

Proximity to seawater

A key input into the production of algae is seawater. To satisfy the requirements of a commercial scale algae production, seawater pipelines will be required for both seawater intake and outfall, with outfall being slightly more saline and at a higher temperature following processing. As a result, outfall water will need to be pumped off shore a sufficient distance to satisfy environmental regulations. The distance to seawater for intake (ideally less than 20 km) is considered more significant than the impact of distance from carbon dioxide. Nonetheless, it is a smaller constraint in terms of site selection due to the essentially limitless sources of seawater compared to concentrated sources of carbon dioxide (DRDL et al. 2012).

Accessibility to low cost land

A key component of algae production facilities are the algae ponds themselves. Land for placement of ponds needs to be flat. Similarly, pipeline routes for carbon dioxide and water to the facility should follow flat land in order to avoid cost for infrastructure and earthworks. The soil conditions are less important as pond liners are generally required for open reactors, however ease of excavation will reduce costs (DRDL et al. 2012).

While these attributes are ideal for the development of algae industries in the Pilbara, it also has a high cost operating environment. There is global competition from areas with similar attributes but cheaper operating environments, which need to be considered in developing the industry. Considering the requirements of the algae industry, the Pilbara Algae Industry Study investigated the potential development sites of Port Hedland, Karratha and Onslow with Onslow identified as the least constrained location of the three from an existing development perspective (DRDL et al. 2012).

If major algae industries were to be developed in the Pilbara, it is likely that they would initially be established based on the production of health food products. However, given the favourable developments in the process of production of biofuels from algae, the Pilbara could become a suitable site for the development of a world scale algae-based biofuels industry. The final scale of an algae-based industry in the Pilbara will hence be affected by the size of the health food market, ability for biofuels and feedstock production from algae to become commercially viable, and the competitiveness of the Pilbara with other sites around the world (DRDL et al. 2012).

Expansion of Indian Sandalwood plantings

Indian Sandalwood (Santalum album) has a higher market value in comparison to S. spicatum due to its higher α-santalol oil content and its global historical and cultural use. Prices for more valuable Sandalwood species with higher oil content have escalated rapidly in response to a steady decline in supply, which owes to a series of cultural and geographic influences in their countries of origin (WA Sandalwood Industry Development Plan 2008-2020). In addition, the pharmaceutical sector will also be an important driver for future demand (TFS 2012). Recent auctions in India recorded sale prices of
6 Opportunities and constraints for sustainable development

up to A$105,000 per tonne for Indian sandalwood. Australian sandalwood (*S. spicatum*) was trading at A$14,000 per metric tonne in January 2012, for good quality uncleaned logs.

Indian Sandalwood has been cultivated in the Ord River Irrigation Area (ORIA) since the 1980s, when trial plots were established by the WA Government’s Forestry Department. The region’s high levels of sunshine, suitable soil/clay properties and average daytime temperatures of between 30 to 40 degrees Celsius provide optimal conditions for the growth of Indian Sandalwood. The TFS Corporation (TFS) operates 6,500 hectares of Indian Sandalwood plantation in the tropical north of Western Australia. TFS aims to reach commercial production of Indian Sandalwood oil in 2012-2013. Production will increase progressively to production of over 100 tonnes of Indian Sandalwood oil by 2020 (TFS, 2009). Despite not commencing harvesting as yet, TFS has already signed forward supply agreements for some of its Indian Sandalwood resources, including a multi-million dollar agreement to supply up to three tonnes of Indian Sandalwood (*Santalum album*) oil to ViroXis Corporation subject to regulatory approval for commercialisation of a product using the oil (TFS 2012).

The main limitation for expanding the Indian Sandalwood industry in Western Australia as identified by Done et al. (2004) is the access to and expense of irrigated land. However, the Ord Irrigation Expansion Project will increase irrigated agricultural land from approximately 12,500 hectares to 22,000ha (DSD 2012), significantly improving prospects for expansion of the industry, subject to opportunities to access the land. Cununurra Clay (a heavy, cracking black clay) is also preferred soil type for cultivation due to its ease of irrigation. In addition, use of the flood irrigation technique on Cununurra clay makes it an unsuitable habitat for the potentially devastating termite *Mastotermes darwinensis* (Done et al. 2004). Other factors for consideration in cultivation of Indian Sandalwood include the selection of host tree species, management of insect pest species and fungal infection.

Gubinge /Kakadu plum

Gubinge (*Terminalia ferdinandiana*) is known by a variety of names depending on location including Kakadu plum, mardorr, kabiny, murunga, bush plum, billyoat plum and salty plum. The semi-deciduous tree grows to heights between 4 to 10 m and produces pale green ovoid fruits. It is found in open woodland across Northern Australia from the Kimberley Region to the Darwin area and in North Queensland.

Traditionally, both the fruit and seed of Gubinge were eaten raw. The sap was roasted and the bark was boiled and used by Indigenous people to treat skin conditions and sores, and drunk as a tea for colds and flu. Gubinge is fibrous and difficult to process but its market is increasing. Commercial harvest commenced in the late 1990s and it has been used as an ingredient in jams, chutneys and other foods as well as sports drinks and as an ingredient in beauty products and dried and ground for use in dietary supplements and health foods. Gubinge contains the highest recorded levels of vitamin C of any plant in the world (over 100 times that of oranges) and nine times the anti-oxidant capacity of blueberry. Importantly, it contains both water and oil soluble antioxidants. In addition, it is high in vitamin E, folate and lutein as well as being a source of minerals including magnesium, zinc and calcium. Its high potassium to sodium ratio may enable the development of foods to reduce hypertension. Research has also established some success of polyphenols extracted from Gubinge inhibiting the growth of cancer cell-lines (RIRDC 2012).

Nearly all Gubinge is wild harvested in the wet season in the Kimberley region and in parts of the Northern Territory, with harvesting being subject to permit. As with many wild-harvested native foods, there is variability in production from year to year depending on environmental factors. In addition, availability of labour for harvesting, difficulty of accessing remote locations and hot conditions can be
6 Opportunities and constraints for sustainable development

issues affect commercialisation. The only large horticultural enterprise established by a private company in the 1990s for commercial (private) research purposes was removed following issues associated with exportation of tissue culture to establish an industry in Brazil (RIRDC, 2012).

The Gubinge industry involves a range of individuals and enterprises across Australia including traditional owners, Land Councils, pickers, aggregators, processors, manufacturers and researchers. Harvesters include many Indigenous Australians. A number of Indigenous communities value add by making food products albeit mostly on a small scale. Indigenous Harvest Australia (IHA) grew out of a local Community Development Employment Project in Broome and purchases 300-400 kg per annum from local Indigenous communities, as well as harvesting several tonnes from Crown Land (see Rola-Rubzen et al. 2011).

Production volume of Gubinge from Western Australia and the Northern Territory was estimated to average between 15-17 tonnes per annum in the 2004-2008 period (RIRDC, 2012). Production has decreased recently due to the expiry of a contract between one of Australia’s main buyers of Gubinge and an international company specialising in dietary supplements. Gubinge can be bought frozen online for between $40 and $70 per kilo. Online retail prices for processed powder vary between $25 to $35 per 50 g sachet. Current industry farm gate value is estimated at $240,000 using an average price of $20/kg and an average annual volume Australia-wide of 12 tonnes (RIRDC, 2012).

Despite the recent loss of the large supply contract, there remains a demand for Gubinge as a food ingredient. RIRDC (2012) acknowledges substantial market potential for Gubinge nationally and internationally for its food as well as functional properties. However, further development in attaining a consistent and stable supply of large quantities of Gubinge would be required to realise this potential. The relatively fast maturing time from seed to fruit (five years), demand from multinationals within the health food, pharmaceuticals and cosmetics industries and the involvement of Indigenous communities in culturally appropriate commercial enterprises, are among the strong positive factors for the industry (Wild Harvest NT, 2012).

One of the key challenges facing the industry is maintaining profitable Indigenous involvement and ownership while also supporting significant growth in supply to take advantage of commercial market opportunities (RIRDC, 2012). Presently low volumes and large costs make wild harvest a marginal activity. There is also a threat to the loss of intellectual property and plant rights to multinationals and market share due to overseas development of orchards and processing markets. By 2008, prior to some recent research into the functional capacities of Gubinge, 17 global companies had identified T. ferdinandiana as an ingredient in new product development.

Other native species to be considered
A review of other native species of interest is presented in Appendix C.

6.2.3 Carbon farming
In their Review of Economic and Ecological Sustainability of Pastoralism in the Southern Rangelands of Western Australia, the Southern Rangelands Pastoral Advisory Group (2009) recommended that [Government] ...

5.4 Work with the Commonwealth Government to ensure that benefits arising from rangelands management for increased carbon sequestration by pastoral lessees returns to those land managers. p. 14
6 Opportunities and constraints for sustainable development

The rights to carbon on pastoral leasehold land

URS is aware that the law relating to access to carbon on land is currently being discussed by the WA and Commonwealth Governments.

In 2009, the State Government advised pastoral leaseholders that:

In WA, voluntary trades using carbon sinks are generally underpinned by carbon rights created under the State’s Carbon Rights Act 2003. This Act allows the creation (and subsequent sale) of the rights to the carbon in the land separate from the land title.

The Carbon Rights Act 2003 requires the owner of the land [the Crown] to consent to the creation of the carbon right if it is to be held by somebody other than the owner. There is also provision for a separate agreement to be entered into (known as a carbon covenant) which sets out what the parties agree to do, or not to do, on the land so as to protect the carbon sink (e.g. the forest stand).

For the rangelands, this means that if you have a Pastoral Lease you will need to seek permission from the State (as the owner of the Crown land) before you can diversify into carbon farming.

To date (2010), no carbon rights have been issued over Crown land, either Pastoral Leases or unallocated Crown Land. The State Government is beginning a work program to investigate the best way for carbon rights to be issued in the rangelands.

In practice, under the WA Carbon Rights Act 2003 a carbon right does not exist over Crown Land (including Pastoral Leases) until a carbon right is registered with the Registrar of Titles in an approved form and including the written consent of all parties that hold a registered interest in the relevant land; including the Minister for Lands. Similarly the written consent of the Minister for Lands is required to transfer a carbon right in Crown Land from one proprietor to another. This situation does not apply on freehold land, exclusive possession native title land or other categories of land as specified in the Carbon Credits (Carbon Farming Initiative) Act 2011 (CFI Act) and related legislation (advice from DAFWA 2012).

The Carbon Credits (Carbon Farming Initiative) Act 2011 in brief

In August 2011, the Federal Parliament passed the CFI Act. The carbon farming initiative (CFI) is a voluntary government offsets scheme that aims to provide financial incentives for farmers, forest growers, landholders, landfill operators and other service providers to develop projects that will reduce or sequester greenhouse gas emissions (GHG) emissions. Scheme participants can be issued with ‘carbon credits’, officially known as Australian Carbon Credit Units (ACCUs) for the resulting emissions reductions, with one tonne of CO₂-e avoided or sequestered equivalent to one ACCU.

The CFI Act is effectively linked to the Clean Energy Act 2011 (Clean Energy Act) because the latter involves a Carbon Pricing Mechanism (CPM) that establishes a compliance market that CFI offset credits can be sold into. Without the Clean Energy Act, the financial opportunities within the CFI are likely to be severely constrained. This is because the Clean Energy Act requires the large emitters in Australia to purchase permits or eligible offsets (including ACCUs) for every tonne of emissions they produce. Without the compliance market in Australia, the sale of ACCUs would be restricted to the voluntary market (Outback Ecology 2012).

To be eligible to earn ACCUs, activities must be on the positive list which identifies activities that are deemed to go beyond common practice in the relevant industry or environment and covered by an approved methodology. Most land management activities that pastoral leaseholders would want to
Opportunities and constraints for sustainable development

Activities that include the management of fire, feral animals and grazing pressure by domestic livestock are all classified as additional activities under the CFI. To pass the additionality test, a project must not be required by law and the activity must be on the Positive List (Outback Ecology 2012).

To qualify as a certified carbon offset, an offset project must meet a number of specific criteria. These criteria are important to maintain a high standard of integrity and provide confidence to investors in the product that they are purchasing. The criteria for a certified CFI offset project are:

- **additionality** – requirement that emissions abatement or sequestration is additional to "business as usual";
- **permanence** – emissions that are taken out of the atmosphere and stored must not be re-released back into the atmosphere for at least 100 years;
- **leakage** – CFI projects must avoid emissions rising outside of their boundary that may be caused by the emissions reduction activity;
- **measurable and verifiable** – measurement and monitoring systems must be able to quantify and verify emissions reductions and be auditable;
- **conservative** – conservative assumptions in estimations and procedures should be used; and
- **internationally consistent** – accounting methods must be consistent with the National Greenhouse Accounts and Australia’s National Inventory Report (Outback Ecology 2012).

Key features of the CFI legislation and regulations relevant to the WA rangelands

The key features of the CFI Act and regulations in relation to the WA rangelands are as follows (Outback Ecology 2012, p. ES-1 to ES-2).

- The CFI is a Federal Government voluntary scheme intended to provide landholders with income for implementing projects that prevent the release of emissions or by sequestering carbon in the soil and the vegetation.
- CFI projects are eligible to be issued with voluntary and compliance ACCUs depending on the type of activity used to sequester carbon or abate emissions.
- The majority of sequestration and abatement activities that would be undertaken in the rangelands would qualify for voluntary ACCUs and a smaller number of activities would qualify for compliance ACCUs.
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- CFI methodologies exist for a number of activities that are likely to occur in the WA rangelands, however, many more need to be developed to cover the broad scope of eligible activities.
- Project owners do not need to pay back the carbon credits to the regulator in the event of a major fire or drought provided they demonstrate that they have taken all reasonable action to restore the carbon that has been removed. Consequently, there is no risk of an ongoing liability to the State Government in the event an offset project fails.
- Carbon sequestered in the soil and vegetation has a carbon maintenance obligation of a 100 year period.

The Department of Agriculture and Food’s assessment of opportunities for carbon farming in the rangelands

In an evaluation of the opportunity and risks of carbon off-set enterprises in the WA rangelands (see Alchin et al. 2010), DAFWA stated:

‘Carbon-based enterprises have the potential to restore large tracts of degraded land in a cost-effective manner and can deliver a number of other socio-benefits to regional WA. The WA rangelands have the potential to play an important role in mitigating the adverse impacts of climate change primarily through bio-sequestration and controlled savannah burning programs.’ (p. 3)

The study identified six major issues to be resolved (pp. 3-4):

- Research base – limited carbon baseline data of most WA rangeland land-systems;
- Measurement and verification – development of robust, transparent and cost-effective methodologies and standards applicable for the various carbon asset classes in the rangelands;
- Land tenure – existing Pastoral Lease conditions in the WA rangelands and the required approval processes discourage diversification;
- Security and liability – consideration of any ongoing liability for the State Government of potential changes in baseline levels carbon levels in the rangelands;
- Information exchange – inadequate sharing and dissemination across State agencies, landholders, traditional owners, service providers and investors; and
- Market uncertainty – the market is not settled as governments negotiate arrangements, and due to the recent (August 2012) changes to the pricing structure for carbon.

The capacity to manage carbon in the rangelands

Three projects exploring the capacity to sequester and manage carbon emissions on rangeland are presented below.

The DAFWA Carbon Capture Project (Alchin et al. 2010)

The Carbon Capture study completed an Ecosystem Management Unit style planning exercise and financially benchmarked three representative Stations in the Kimberley-Pilbara region. Comprehensive carbon accounting survey of the three Stations was then conducted to establish the baseline levels of carbon. The survey directly measured the main carbon sinks (i.e. aboveground woody carbon, coarse woody debris, aboveground non-woody carbon and surface litter and soil carbon). Carbon modelling of different grazing and fire management scenarios was conducted to determine the impact on the carbon balance on the three Stations.
6 Opportunities and constraints for sustainable development

One of the key outcomes of the study was the quantification of the amount of carbon in the different carbon sinks in selected land systems (see Figure 6-1). The value of this dataset is that it shows the proportional contribution that each of the different carbon sinks makes to the total carbon balance and can be used by pastoral leaseholders and investors to guide the development planning of a carbon offset based enterprise.

The study found that carbon offset based enterprises should be located in land systems that have:

- high carbon storage potential (defined by a combination of comparatively deep fertile soils and / or high density of woody or non-woody vegetation);
- low carbon baseline;
- low spatial variation in soils and vegetation; and
- resilience to disturbance and that respond well to management intervention.

The estimated baseline amount of carbon stored in the 12 land systems surveyed by the study ranged from 100 to 374 t CO₂-e per ha (inclusive of carbon stored in the woody vegetation, coarse woody debris, herbaceous standing and surface litter and the soil pools). The coarse woody debris and the soil carbon sinks stored the majority of the carbon on the lease in the Pilbara (74% of the total). In contrast, carbon in the woody vegetation (inclusive of above and belowground material) comprised more than 60 per cent of the total carbon stored on the two Kimberley Stations.

Figure 6-1 Mean levels of carbon in selected land systems in WA rangelands (with standard error bars)

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17 Land systems as defined for the Kimberley (see Payne and Schoknecht 2011) and Pilbara (Van Vreeswyk et al. 2004)
6 Opportunities and constraints for sustainable development

The Carbon Capture study reported that depending on the type of grazing and savanna burning regime that is adopted, at a whole lease scale, the gross income derived from the sale of carbon offsets, based on a carbon price of $10 per t CO$_2$-e, could range from -$1.02 to $27.10 (per ha per year). Higher returns may be achieved if offset projects were conducted at much smaller spatial scales (<10,000 ha) and on areas that are highly degraded with very low baseline carbon levels. This is because the variation in carbon levels (degraded compared to non-degraded areas) can be homogenized at larger scales and therefore the capacity to improve the existing baseline level may diminish accordingly.

In summary, the Carbon Capture study demonstrated that at an individual Pastoral Lease scale there are likely to be opportunities for landholders in the rangelands to engage in the carbon markets. The findings from the Carbon Capture study suggest that the potential economic impact of the CFI on the WA rangelands is likely to be positive for those landholders who choose to participate in the scheme.

The Carbon Capture study did highlight that it is possible for Pastoral Leases to generate a negative financial return if activities not suitable for the landscape are implemented. It is for this reason that service providers assisting leaseholders in preparing carbon offset based enterprises must undertake a high level of due diligence and detailed planning to ensure that any area committed to a CFI Project can sequester carbon and generate an adequate financial return. This includes conducting sensitivity analysis on possible carbon price scenarios and its impact on the viability of a project. The scenarios should range from a strong price (>-$23 per t CO$_2$-e, compliance market remains in place) through to a low price (<$10 per t CO$_2$-e, compliance market repealed and only the voluntary market is available).

**Modelling sequestration in the Murchison River Catchment (Outback Ecology 2012)**

Outback Ecology (2012) completed an assessment of the estimated potential to sequester carbon across the Murchison River Catchment which includes 53 whole Pastoral Leases and parts of 14 others. The findings are summarised in Table 6-2.

The desktop study assumed that sequestration was achievable on 22 per cent of the catchment, with an average of 30 t/ha CO$_2$-e sequestered at equilibrium. Taking the most conservative carbon price of $5/t CO$_2$-e, this translates as an average of $3,282/km$^2$, although the sequestration potential is not distributed evenly across the landscape. Accepting this qualification, a Pastoral Lease of 150,000 ha could earn a gross value of $4.9 million. At the high price of $23/t CO$_2$-e, the equivalent gross value of the carbon for sale would be $22.63 million.

**Table 6-2 Desktop assessment of potential carbon sequestration in the Murchison**

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total area of catchment</td>
<td>88,360 km$^2$</td>
</tr>
<tr>
<td>Area of land in poor range condition (%)</td>
<td>37,111 km$^2$ (42%)</td>
</tr>
<tr>
<td>Area of land suitable for sequestration (%)</td>
<td>19,321 km$^2$ (22%)</td>
</tr>
<tr>
<td>Estimated sequestration potential (30 t/ha CO$_2$-e)</td>
<td>57.96 million tonnes</td>
</tr>
</tbody>
</table>

**Indicative gross revenue**

<table>
<thead>
<tr>
<th>Carbon price ($/t CO$_2$-e)</th>
<th>Gross revenue ($ million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>High ($23)</td>
<td>$1,333</td>
</tr>
<tr>
<td>Medium ($15)</td>
<td>$869</td>
</tr>
<tr>
<td>Low ($5)</td>
<td>$290</td>
</tr>
</tbody>
</table>

6 Opportunities and constraints for sustainable development

However, in both cases this would be the income for a 100 year commitment to maintenance of carbon levels at full level (recognising year to year variations due to season and wildfires), with costs for management (control of feral grazing, wildfire management, verification and monitoring of carbon levels occurring as costs). If the equilibrium level of carbon was reached after a 20 year period and the carbon then sold, with the proceeds invested at 5 per cent per annum, the annual gross return would be between $245,000 and $1.13 million. The value of this return would be eroded by inflation after about 20 to 30 years, or by year 50 in the 100 year period. However, the costs of maintaining the carbon stock would continue, although once carbon levels reach equilibrium it is assumed that some level of carefully managed grazing would be possible.

**Greenhouse gas abatement (the West Arnhem Land Fire Management Agreement)**


An alternative to entering into a long-term arrangement for sequestering carbon is abatement of greenhouse gas emissions through the management of fire in the northern savannah woodlands. This is an allowable activity under the CFI (see comments above) subject to approval of the methodology.

ConocoPhillips, which operates a Liquified Natural Gas (LNG) project, based in Darwin, has entered into the West Arnhem Land Fire Management Agreement (WAFMA) with Traditional Owners in West Arnhem Land (28,282 km²), the Northern Land Council and the Northern Territory Government. The program uses managed burning practices (late wet season/ early dry season burns) to reduce the frequency of extensive destructive late dry season fires, which release considerably more greenhouse active gases. Fire management is undertaken by Aboriginal traditional owners and land managers, with planning done in consultation with the Northern Territory Government, to implement a system of strategic firebreaks along tracks and watercourses. The Traditional Owners receive $1.3 million per year (45c/ha/year) from the Company for the services provided (Jeremy Russell Smith pers. com.).

The project developed one of only four Commonwealth-approved such methodologies, which allows ConocoPhillips to use the reduced greenhouse gas emissions as offsets against emissions from its Darwin operation. One constraint is that these arrangements currently are allowable only in rainfall areas receiving more than 1,000 mm/year (Jeremy Russell-Smith pers comm.), which in WA excludes all areas except the far north Kimberley. Further, this is an abatement and not a sequestration project, given that ownership of the soil and vegetative carbon is yet to be determined in the Northern Territory (Jeremy Russell-Smith pers comm.).

The project is in its eighth year and has consistently achieved its targets, and is abating about 130,000 tonnes CO₂-e per year (compared to baseline emissions under an uncontrolled fire regime). This equates to about 4.6 t CO₂-e/km². Although small in magnitude when compared to ConocoPhillips’ carbon liability, the project provides an example of how corporate requirements (and investment) can be linked with an economic benefit for Traditional Owners, good environmental outcomes (improved biodiversity) and reduced greenhouse emissions (Jeremy Russell-Smith pers comm.).

**Key points regarding sequestration opportunities (Outback Ecology 2012, pp. 28-29)**

In summary, based on the information from previous studies investigating the opportunities for carbon sequestration in the WA rangelands Outback Ecology (2012) reached the following conclusions.

- Landholders in the WA rangelands can sequester carbon by making changes to the grazing and fire management and / or establishing earthworks for control of surface water.
6 Opportunities and constraints for sustainable development

- The volume of carbon sequestered in selected land-systems is adequate to generate an acceptable return (i.e. > 10% ROI).
- There is considerable variation in the amount of carbon stored in the different sinks and it is important to select the areas that have the highest potential to sequester carbon and can be rehabilitated at low cost.
- As an example of the economic potential in the WA rangelands, it was estimated that the Murchison may have approximately 1.9 million hectares suitable for carbon offset based enterprises involving rangeland restoration works. If a conservative sequestration rate of 30 t CO$_2$-e per hectare is used then this suitable area could store approximately 57.9 Mt CO$_2$-e in aboveground carbon stocks which would have potential gross value of $1.3 billion at a carbon price of $23 t CO$_2$-e.
- The cost of verifying the carbon stored by rangeland offset projects is expected to be quite substantial and this will result in high transaction costs in the sale of ACCUs particularly in the early years of the CFI.
- There are a broad range of project activities that are likely to occur under the CFI that could generate a number of co-benefits and other commodities that could diversify and strengthen the economy in the WA rangelands.
- CFI projects could have an adverse economic impact in the WA rangelands due to potential restrictions in quality of land management, future land developments and / or reducing the viability of existing industries by reducing critical mass (e.g. livestock numbers).

Developing a carbon economy in the rangelands

[Note: While this sub-section draws on suggestions contained in Outback Ecology (2012), the views expressed here are those of URS.]

**Carbon sequestration**

Although the returns from sequestering carbon appear attractive, as shown above, the earnings at whole of lease scale will be modest when considered over a 100 year time frame. It is therefore likely that carbon sequestration activities will be targeted at specific land systems where the sequestration rates are highest, there is a comparative advantage over the use of the land for grazing, the stability of the stored carbon over time higher, and the means of measurement and verification most cost-efficient.

These are important points. Recent work completed in the tropical savannas in the Northern Territory has shown that managing for both carbon and grazing returns using fire as a tool may not be possible, in that optimum fire strategies for grazing production to encourage ‘open’ savannah woodlands will limit carbon sequestration, whereas suppressing fire to encourage carbon sequestration through tree growth may reduce the forage resource available for grazing (Hunt *et al.* 2012). Clearly, landholders would need to decide the best use for the land and manage accordingly. The work done by Dean *et al.* (2012) highlight the spatial and temporal variability in carbon fluxes which results in a lack of precision in measurements, that will only be addressed by a lengthy period of research.
6 Opportunities and constraints for sustainable development

After reviewing the opportunities and constraints presented in previous sub-sections, the options for developing a carbon economy based on sequestration considered by URS are as follows.

1. Government retains the rights to the carbon on Pastoral Leases, and enters into agreements with pastoral leaseholders for the management of the ‘Crown’s carbon’, which may also include support for pastoral leaseholders in converting PLs to Rangeland Leases.

2. Government call open tenders for the rights to farm carbon on Pastoral Leases, with tenderers needing to demonstrate that they have the capacity to manage the carbon according to the CFI rules, either through purchase of the Pastoral Lease, or through a management agreement with the pastoral lessee. Conversion to Rangeland Lease (with establishment of an ILUA) would occur, with government purchasing the grazing rights for an agreed value. A variation to this option may occur if a registered or determined native title holder of the land in question was a successful tenderer, in which case, establishing an ILUA would be straightforward.

3. Government to invite pastoral leaseholders to tender for the carbon rights on their own Pastoral Leases, with government negotiating region-wide ILUAs with native title claimants. Conversion to Rangeland Lease or s-79 Excision would occur, with government purchasing the grazing rights for an agreed value.

4. Government legislates to transfer the rights to carbon to all pastoral leaseholders free-of-charge, with government negotiating region-wide ILUAs with native title claimants. (Note - this option has been exercised in Queensland). Those lessees intending to ‘farm carbon’ would be encouraged to convert their leases to Rangeland Leases.

These options are compared in Table 6-3. On the basis of the comparison, and given the considerable technical and legal uncertainties around this issue, the first option, whereby Government retains the carbon rights and enters into management arrangements with pastoral lessees for management of the Crown’s carbon assets would seem to be the best option.

An additional option to be considered, that is recommended by Outback Ecology (2012) is to test Option 3, in supporting ‘pilot’ projects in their application for carbon rights on leasehold land by issuing carbon rights and special leases (e.g. S-79 or other suitable form of tenure) that will allow carbon sequestration projects to occur. This could be in the form of providing in-kind administrative support by relevant Departmental staff and / or resources for external legal counsel that will identify a suitable pathway through the existing legislative framework.

Given the importance of native title in determining rights to carbon, DRDL could contract an independent, non-government organisation that has no financial or political interest in the WA Rangelands to host a forum to define native title implications for carbon trading and other alternative land uses on WA leasehold land. The forum should involve key interest groups, with legal and administrative input from the WA Government, Native Title Representative Bodies, and non-government lawyers who have practiced in the area of native title claims on behalf of landholders and claimants in the rangelands. Given the significance of this issue for economic development in regional WA, it is suggested that the forum would be eligible for funding support from the Royalties for Regions program. The key output from the forum should be a communiqué that outlines what is agreed upon and those items which cannot be agreed upon, including information as to the reasons why agreement was not able to be made. A successful outcome from such a forum will improve the level of clarity and transparency in the way native title is to be dealt with on WA leasehold land intended for participation in the carbon economy and assist in ‘de-risking’ offset projects for pastoral leaseholders, service providers, and purchasers of carbon credits.
Greenhouse gas abatement

Current options for emissions abatement in the WA rangelands will be limited to areas in the far north Kimberley, where active fire management is already occurring (see Section 3.3.4). Major resource projects looking for carbon offsets could emulate the WAFMA arrangement established by ConocoPhillips and its partners (see above), and establish collaborative arrangements with pastoral leaseholders and Traditional Owners (e.g. native title holders, or registered claimants) in that area.

After reviewing the opportunities and constraints presented in previous sub-sections, the options for developing a carbon economy based on abatement considered by URS are as follows:

- Progressing the opportunities for greenhouse gas emissions abatement (note – not sequestration) through active fire management in the north Kimberley is an opportunity that that can be acted upon by Government now through facilitation of partnerships between major resource projects (e.g. Browse, Wheatstone), pastoral leaseholders, Traditional Owners and conservation agencies (e.g. DEC and AWC).

- Fire management is a major issue across the northern Savannas of Queensland, the Northern Territory and Western Australia, and was an important component of the research and development work funded through the Cooperative Research Centre (CRC) for the Tropical Savannas. The WA Government was an important partner in the CRC. URS suggests that the relationships developed through the CRC be re-activated around the management of carbon in the northern Australian savannas, under the leadership of the Northern Australian Ministerial Forum.

- Finally, the technical requirements in measurement and verification of carbon levels (base levels and trends) require considerable further R&D. URS and Outback Ecology support the Royalties for Regions Project being implemented by DAFWA and Rangelands NRM that aims to increase awareness and equip pastoral leaseholders with the technical and financial tools required for them to be actively engaged in the CFI and other carbon offset markets.
### Table 6-3  Comparing options for carbon farming via sequestration

<table>
<thead>
<tr>
<th>Criteria</th>
<th>1. Government retains rights to carbon, negotiates management arrangements with Pastoral Leaseholder.</th>
<th>2. Government calls open tenders for rights to carbon on Pastoral Leases, with successful tenderers to establish management arrangements with PL holder</th>
<th>3. Government to invite pastoral leaseholders to tender for the carbon rights on their own Pastoral Leases, with conversion to Rangeland Lease or S79 excision</th>
<th>4. Government legislates to transfer the rights to carbon to all pastoral leaseholders free-of-charge. Lessees would be encouraged to convert to Rangeland Leases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implications for native title</td>
<td>None if lease retained as PL – rights to carbon stay with the Crown. If transfer to RL, ILUA will be required.</td>
<td>Low if successful tenderer is NT claimant to the land in question. Otherwise, either a state-wide ILUA would be required, or lease-by-lease ILUAs would need to be established.</td>
<td>Either a state-wide ILUA would be required, or lease-by-lease ILUAs would need to be established.</td>
<td>Either a state-wide ILUA would be required, or lease-by-lease ILUAs would need to be established.</td>
</tr>
<tr>
<td>Implications for National Competition Policy</td>
<td>Moderate – only current PL holders can enter into management agreements with Government.</td>
<td>Low – open tender process allows third party access</td>
<td>Moderate – only PL holders can tender for carbon rights, which provides them with an advantage</td>
<td>High – Allocation of a new property right breaches NCP</td>
</tr>
<tr>
<td>Transparency of process and fairness</td>
<td>Moderate – Government as landlord is negotiating a management responsibility with its lessee. Similar to stewardship payment</td>
<td>High – right to tender for carbon is open to all parties, including current leaseholder</td>
<td>Moderate – government can use tender process to recognise quality of previous management in setting the value of the carbon rights</td>
<td>Low – All PL holders would be rewarded with a new property right, regardless of previous management. Would penalise good land managers</td>
</tr>
<tr>
<td>Practicality</td>
<td>High. Government retains ownership of carbon</td>
<td>Difficult - management arrangements may fail, and sale of leases may be complex.</td>
<td>High – all management and market risks are held by the pastoral (or rangeland) lessee</td>
<td>High. Easy to administrate once legislation passed.</td>
</tr>
<tr>
<td>Advantages to rangeland development</td>
<td>Straightforward, and Government holds risk. Could be beneficial on Indigenous land holdings</td>
<td>Third party access to carbon Government receives payment for carbon right</td>
<td>Supports existing lessee’s business Government receives payment for carbon right</td>
<td>Supports existing lessee’s business</td>
</tr>
<tr>
<td>Disadvantages to rangeland development</td>
<td>Transaction costs to government in monitoring compliance with management agreement may be high.</td>
<td>Messy management arrangements may result in litigation and unnecessary costs.</td>
<td>No third party access to carbon</td>
<td>No third party access to carbon Government receives no payment for the carbon right</td>
</tr>
<tr>
<td>Other considerations</td>
<td>ILUA could involve profit sharing in carbon management</td>
<td>Transfer of lease to a new lessee could be difficult Need for a Management Plan before transfer of rights</td>
<td>Need for a Management Plan before transfer of rights ILUA could involve profit sharing in carbon management</td>
<td>ILUA could involve profit sharing in carbon management</td>
</tr>
</tbody>
</table>

PL – Pastoral Lease  RL – Rangeland Lease  NT – native title  NCP – National Competition Policy
6 Opportunities and constraints for sustainable development

6.2.4 Native products harvesting – sandalwood

In their Review of Economic and Ecological Sustainability of Pastoralism in the Southern Rangelands of Western Australia, the Southern Rangelands Pastoral Advisory Group (2009) recommended that [Government] ..

5.3 Remove the Forest Products Commission monopoly on the harvesting and marketing of timber products (particularly sandalwood) to provide the opportunity for pastoral lessees, within existing environmental and regulatory constraints to establish, harvest and market timber products. p. 14

The analysis of the native sandalwood industry presented in Section 3.3.3 shows that of an estimated $15.8 million gross value of product, about $6.5 million is paid to contractors for the harvest, about $4 million returns to FPC as stumpage revenue, with the remainder ($5.5 million) consumed in processing, cartage, marketing and administration. Pastoral lessees hold about half of the harvest contracts. The industry employs about 120 people who undertake the harvest in the Crown Lands, mainly on Pastoral Leases. There is a high level of illegal harvest, believed by FPC to be equivalent to the legal harvest, which is resulting in depletion of the resource. The FPC recognises the need to develop and implement a rigorous ‘chain of custody’ process for the industry.

If pastoral lessees were able to exploit sandalwood reserves on their own leases, with the existing total harvest set at the current limits, based on the above returns, pastoral lessees could potentially earn about $10.5 million, being the aggregate of the payment on contracts, plus the stumpage revenue currently being received by FPC. This would deliver a modest benefit to those pastoral lessees keen to participate in the industry. For example, assuming that 40 lessees would be prepared to participate, they could expect a gross return of about $260,000 each.

The rights to revenue from timber on Crown Land are held by the FPC, as described in the Forest Products Act 2000. Transferring all or part of these rights to be attached to pastoral leases would:

(i) require change to legislation;
(ii) result in existing pastoral lessees receiving a new property right, with the public surrendering a revenue stream;
(iii) could trigger action under the Native Title Act 1993;
(iv) ‘shift’ employment of an estimated 120 people involved in the harvest now to pastoral lessees or their employees.

Further, the native sandalwood harvesting industry on Crown Land is seen as a ‘sunset industry’. The resource is finite, and the FPC is looking to rely in the future on its 9,000 ha estate of plantation sandalwood in the agricultural areas of WA.

Assuming that legislative change can be arranged and native title issues addressed through ILUAs between the claimants and the State, the options for the future of the native sandalwood industry are presented in Table 6-4, based around an assessment of advantages and disadvantages to all parties.
## 6 Opportunities and constraints for sustainable development

### Table 6-4 Comparing options for native sandalwood harvesting

<table>
<thead>
<tr>
<th>Criteria</th>
<th>1. Business as usual</th>
<th>2. Pastoral leaseholders only allowed to harvest sandalwood on their leases. FPC retains ownership of resource</th>
<th>3. Pastoral leaseholders given rights to sandalwood on their leases</th>
<th>4. Pastoral leaseholders pay royalty to FPC for rights to sandalwood on their leases</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Industry management</strong></td>
<td>• FPC issues contracts for harvest (half held by pastoral lessees), for value of about $6.5 million</td>
<td>As for 1 plus • Contracts can only be let by FPC to pastoral leaseholders</td>
<td>• Pastoral leaseholders issued with right to x tonnes of sandalwood per annum from their lease • Pastoral leaseholder responsible for harvest, processing and marketing. • Return to participants likely to be about $10.5 million maximum</td>
<td>• Pastoral leaseholders purchase rights to the sandalwood based on an assessment of the amount, and the planned harvesting regime. • Pastoral leaseholder responsible for harvest, processing and marketing. • Return to participants likely to be about $10.5 million maximum</td>
</tr>
<tr>
<td><strong>Advantages</strong></td>
<td>• Careful management of marketing maximises return • Production and marketing risk mainly borne by FPC • Ability to implement ‘chain of custody’ process • Well-trained contractors • Optimum allocation of contracts across the Crown Land</td>
<td>• Careful management of marketing maximises return • Production and marketing risk mainly borne by FPC • Ability to implement ‘chain of custody’ process • Optimum allocation of contracts across the Crown Land • Likely increased scrutiny of illegal harvesting given greater pastoral leaseholder involvement • Increased return to pastoral leaseholders</td>
<td>• Increased return to pastoral lessees. • Likely increased scrutiny of illegal harvesting given that pastoral leases ‘own’ the resource</td>
<td>As for 3, plus • Purchase of rights to sandalwood may reduce need to negotiate ILUAs</td>
</tr>
<tr>
<td><strong>Disadvantages</strong></td>
<td>• Illegal harvest, without effective policing in the Crown Lands • Profits ($5 million pa) retained by the state</td>
<td>• Restricted market for contracts would increase contract price • Difficulty of ensuring quality control in harvest and processing • Profits ($4 million pa) retained by the state • Loss of employment for contractors</td>
<td>• Sandalwood is not distributed evenly across landscape, meaning unequal distribution of benefits. • Difficulty of ensuring quality control in harvest and processing • Risk of market disruptions without centralised control, resulting in low returns to the producer • Loss of employment for contractors</td>
<td>As for 3, plus • Failure to accurately assess sandalwood resource on a lease may either advantage or disadvantage a participating pastoral leaseholder • Return on the royalty payment is likely to be below bank interest after considering harvest risk • Loss of employment for contractors</td>
</tr>
</tbody>
</table>
6 Opportunities and constraints for sustainable development

It is URS’s view that Options 3 and 4, which involve transfer of the rights to the sandalwood resource from FPC to pastoral leaseholders have relatively few advantages and significant disadvantages. The disadvantages lie mainly in ensuring maximum return from careful centralised marketing of the total sandalwood harvest. Loss of control of marketing is likely to result in the market accepting only high grade (i.e. high oil content) wood, which would result in wasted product, and hence low returns to the producer – in this case the pastoral leaseholders.

Option 2 provides some advantages in that it will increase pastoral leaseholders’ participation in the harvest. Pastoral leaseholders already hold about half of the contracts for delivery of wood to FPC, with all pastoral leaseholders able to tender for contracts. Given that pastoral leaseholders are able to tender for contracts now, the information on contracts suggest that most do not see this as a rewarding prospect, or that their tendered prices are too high.

In summary, URS do not believe there is sufficient potential benefit for pastoral leaseholders or the state from any of the alternative options considered, especially when the costs of legislative change and native title negotiations is included.

6.2.5 Tourism development

Overall development

Discussions with tourism representatives suggest the low-key on-station tourist accommodation business is likely to continue to be of relatively low economic value compared to the total ‘rangeland tourism economy’ (see Table 3-47). It is likely to be able to provide seasonal and supplementary income rather than be a viable stand-alone enterprise for a family business. Although these activities can be done better and businesses may have some room for growth, essentially this type of tourism development is likely to remain modest in scale. There is a need to improve standards and linking approval for a Diversification Permit with tourism accreditation was suggested. There is a need for training programs to assist pastoral leaseholders improve and develop their tourism enterprise management skills.

Any major expansion of tourism in the rangelands is likely to be based on major developments adjacent to key attractions (such as the north Kimberley rock art area, Purnululu National Park, the Coral Coast etc). Greater economies can be generated around a ‘hub and spoke’ concept of development that allows numerous smaller enterprises to grow off key infrastructure and attractions. It is anticipated that the WA market might be able to develop half a dozen of these hubs (with examples given above). Generally they will be associated with coastal attractions and existing transport links, some of which will require investment to bring them to acceptable standards.

There may be opportunity for developments that focus on inland attractions such as Mt Augustus and the Kennedy and Carnarvon Ranges, but to develop these properly they will need to be integrated with transport infrastructure and to be better interconnected and serviced. Taking a regional approach and using a ‘hub and spoke’ concept to link major and minor (e.g. Station Stays) attractions is seen as critical. Developments will need to link along corridors (roads or 4WD routes), and may even take the form of ‘air highways’. It was suggested that rangeland tourism needs to be part of each Regional Development Commission’s Regional Development Plan and be used to focus government agency efforts to a common and agreed strategy.
6 Opportunities and constraints for sustainable development

Indigenous tourism development

Indigenous tourism businesses like the low key tourism enterprises on Pastoral Leases generally complement other income sources for their owners. They are important in providing activities, especially for international visitors. An experience involving Indigenous culture is an important component for these tourists. A key for these businesses is to be adaptable and adjust for the seasonality of tourism in rangeland areas, which is an important factor to be managed. The Indigenous Tourism Development Strategy (Tourism WA and WAITOC 2011) addressed these requirements and others in the Strategic Plan. Of particular relevance to this project are the following strategies.

- Create a compelling point of difference for Aboriginal tourism to attract international visitors.
- Integrate Aboriginal tourism product into mainstream domestic tourism.
- Facilitate and support opportunities for access to land and tenure for the development of tourism.
- Support the development of viable and sustainable Aboriginal tourism businesses.
- Support accreditation of Aboriginal tourism businesses.
- Work collaboratively with others to facilitate tourism development including joint venture opportunities.

Facilitating development

Factors that were suggested by those consulted to be impediments to industry development commonly related to third party access and lack of security limiting investment. Advice suggests that third parties can gain access even if it requires obtaining a Section 79 General Lease. A third party can obtain a S-79 even without the consent of the Pastoral Leaseholder provided merit is seen in the proposal. It is noted that in a practical sense, a third party may still have to negotiate with the pastoral lessee for road access across a Pastoral Lease into the S-79 Lease. Again this can be overcome by government securing access through a Pastoral Lease if the requirement is judged in the public interest. However, URS is advised government uses this mechanism only to secure land for public works, and suggests consideration is given to how it can used more to progress third party development on land currently held as Pastoral Lease. The point is addressed in the recommendations in Section 7.3.5.

Overall, the tourism market does not seem to well understand the available mechanisms to allow third party developments on Pastoral Leases. The reality is that something is creating a perception around the difficulty in gaining third party access. The extent to which this is limiting development is unknown.

Key factors to develop the tourism industry include the following.

- Developing and resourcing regional plans that facilitate the supply of integrated and complementary services targeted towards identified significant regional assets, or state/national ‘icons’.
- Improvement and accreditation of accommodation and service providers.
- Better explaining or presenting the tenure and permit options available to pastoral leaseholders and third parties – if the mechanisms are available then the market needs to know how to access and use them. They also need to understand the reality of likely timelines.
6 Opportunities and constraints for sustainable development

6.2.6 Regional landscape management

The recognised need to manage environmental values at a large landscape scale has led to several such strategic programs across Australia. Examples include the landscape-scale management of the Cape York Peninsula in Queensland, the Lake Eyre Basin in Queensland, Northern Territory, NSW and South Australia, and the Macquarie Marshes in NSW.

In WA, one example – the Great Western Woodlands – has received official recognition, and the Kimberley Science and Conservation Strategy emphasises the potential for partnerships between all landholding interests in implementing landscape-scale management of assets and threats in the Kimberley, and facilitating economic development through nature-based tourism. URS believes there are other opportunities.

Great Western Woodlands

The recognition of the Great Western Woodlands as a distinct environmental precinct in Western Australia has led to a specific government biodiversity and cultural conservation strategy for the area (see DEC 2010 and PLB 2010). The area of 16 million hectares lying across the south west corner of the rangelands includes UCL, Pastoral Leases, native title claims, Conservation Estate, and many mining operations (see Figure 6-2).

The WA Government has committed $3.8 million to the development and initial implementation of the Biological and Cultural Conservation Strategy for the Great Western Woodlands over three years to better manage and protect the area (DEC 2010). A Great Western Woodlands Reference Group has been established to provide advice on the implementation of the strategy and on management issues relevant to the area. The WA Government’s commitments are complemented by the Great Western Woodlands Collaboration which is an alliance of four conservation organisations; The Wilderness Society, Pew Environment group (Australia), The Nature Conservancy and Gondwana Link working together towards a shared vision for this region (www.wilderness.org.au › Campaigns › Great Western Woodlands accessed 14 November 2012).
6 Opportunities and constraints for sustainable development

Figure 6-2 The Great Western Woodlands


The Great Mulga Woodland Precinct

In the area roughly bounded by the agricultural areas to the west, the Mullewa-Mount Magnet Road to the north, and the Great Northern Highway between Wubin and Mt Magnet to the south east is an area which is now largely held for non-grazing purposes.

The land parcels within this area, as shown in Figure 6-3 include Pastoral Leases held by mining companies (MMG Limited and Gindalbie Mines), the Pingiddy Aboriginal Corporation, Mount Gibson (held by the Australian Wildlife Conservancy) and the Charles Darwin/White Wells Reserve (held by Bush Heritage Australia) and several former Pastoral Leases now held as UCL and managed by DEC.

The area also includes the Ninghan Indigenous Protected Area which covers an area of around 48,000 hectares within the lease held by the Pingiddy Aboriginal Corporation. The land holdings are summarised in Table 6-5.

Of a total area of 1.6 million hectares, 56 per cent is already managed specifically for conservation objectives, with a further 15 per cent held by Mining Companies who have identified conservation and heritage objectives for the leases. Only 29 per cent of the land is currently supporting livestock, and with the exception of one Pastoral Lease, few stock are being carried.
6 Opportunities and constraints for sustainable development

Table 6-5   The Great Mulga Woodland

<table>
<thead>
<tr>
<th>Leaseholder type</th>
<th>Area (ha)</th>
<th>%age total area</th>
<th>SR/Rated DSE capacity 2007-2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public conservation land</td>
<td>681,512</td>
<td>42%</td>
<td>Destocked</td>
</tr>
<tr>
<td>Private conservation land</td>
<td>199,008</td>
<td>12%</td>
<td>Destocked</td>
</tr>
<tr>
<td>Ninghan IPA</td>
<td>40,000</td>
<td>2%</td>
<td>Destocked</td>
</tr>
<tr>
<td>Area held by Mining Companies</td>
<td>240,431</td>
<td>15%</td>
<td>Destocked</td>
</tr>
<tr>
<td>Area held by Aboriginal Corporation (ex Ninghan IPA)</td>
<td>166,046</td>
<td>11%</td>
<td>15%</td>
</tr>
<tr>
<td>Area held by private businesses</td>
<td>289,078</td>
<td>18%</td>
<td>34%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,616,075</strong></td>
<td><strong>100%</strong></td>
<td></td>
</tr>
</tbody>
</table>

Following from the example of the Great Western Woodlands described above, URS suggests there is the opportunity for this total area to be designated as a distinct multiple use precinct termed the Great Mulga Woodland, in recognition of the dominance of the tree species mulga (*Acacia aneura*) over most of the area. Recognition of this Precinct should be followed by development of a Strategy for the whole area, with involvement of all parties.

Although the Great Western Woodlands and the suggested Great Mulga Woodland are not contiguous, collectively they represent two large, generally intact sets of natural ecosystems lying adjacent to the State’s agricultural areas, which have been extensively cleared for agricultural production. The woodlands therefore have refugia value for species found in this overall area.

Further development of strategic regional landscape management projects in considered in recommendations in Section 7.4.8.
6 Opportunities and constraints for sustainable development

Figure 6-3  The Great Mulga Woodland Precinct
6 Opportunities and constraints for sustainable development

6.2.7 Biodiversity conservation

Suggested opportunities for improving biodiversity conservation efforts in the rangeland areas include a number of activities that might be undertaken with government support or facilitated by agencies and undertaken by pastoral leaseholders. Fundamental improvement in building conservation values will be achieved in the implementation of better rangeland management and rangeland rehabilitation. This links with a number of other opportunities and policy demands, and is aligned with the intent of the Statement of Requirements for this Project. However, a principle is that one form of land use should not lessen the value of another. Multiple values need to be recognised and maintained.

Specifically there is need for better identification and recognition of key biodiversity assets across regions and for existing knowledge to be shared across agencies. Where high value habitats or ecosystem types are known to occur on Pastoral Leases it was suggested by stakeholders that management plans should be developed to assist the leaseholder to manage, and a reporting process put in place to monitor the management and condition of the area of value. If the asset is of sufficient value then its management should be supported through an environmental stewardship mechanism (see Section 6.2.8 below).

Currently there appears to be some breakdown in communication between agencies. It was reported, for instance, that a Ramsar wetland that had previously had investment in fencing to exclude stock is now subject to damage by cattle as the fence has fallen into disrepair. If a management plan for such a resource is developed then responsibility for overall management would also need to be assigned, and a monitoring procedure put in place to ensure assets continue to be protected.

Some stakeholders suggested that if the statutory requirement of ‘ecologically sustainable management’ is to be achieved18 all Pastoral Leases should have a management plan and an environmental management plan. Whilst this suggestion may have merit it might be costly to implement and supervise. URS does support the suggestion if applied to areas of recognised and important natural values (e.g. Ramsar wetlands, Declared Rare Flora, Threatened Ecological Communities etc.), where the pastoral lessee may be required to implement a specific management regime that is outside the normal responsibilities of a pastoral lessee. Where such ‘additional management’ is required, government can negotiate a stewardship payment for the lessee in return for specified actions (as in the example presented in Section 5.2.2) to ensure sound management of those values. This would add to the concept of maintaining multiple use values across the rangelands. The use of environmental stewardship arrangements is explored more broadly in Section 6.2.8 and in the recommendations in Section 7.4.7.

Consultation with DEC suggested that they achieve significant economies of scale when the areas they manage are contiguous and of a minimum area. The costs associated with managing for non-conservation outcomes can also be reduced by reducing the length of neighbouring boundaries with grazing operations requiring wild dog control. Management agreements may be created to use people currently living in these areas to assist with management of parks and reserves. The Kimberley Ranger Program is an example that might be followed and expanded (see: http://klc.org.au/rangers/).

The use of environmental offsets by mining companies is another option to provide for rangeland rehabilitation and hence biodiversity enhancement. The opportunity for offsets is being actively considered by State and Federal Governments and mining companies (EPA pers. comm). Further, it was suggested that significant monies are required to be spent on mine site rehabilitation, for minimal

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18 See Section 2.3.3
6 Opportunities and constraints for sustainable development

value in some cases. This money might generate greater environmental benefit if applied more broadly to rangeland regeneration across much greater areas. Data describing the money mining companies spend on mine site rehabilitation verses the area rehabilitated, and the area of rangeland that might be rehabilitated may provide good background for development of policy in this area.

An enormous amount of disconnected site-specific and company-specific data are being collected for and by mining companies on land and vegetation mapping and description, species distribution, habitat, etc. The information does not necessarily contribute to shared knowledge of the natural resources in mining areas that could otherwise assist in the development of management strategies. Opportunities exist for collating or at least establishing common standards for data collection and the shared use of these data. These issues are considered in the recommendations in Section 7.4.9.

6.2.8 Environmental stewardship

Environmental stewardship arrangements might be adapted and targeted to regional environmental priorities across the WA rangelands (see suggestions for the tropical savannas presented in Greiner 2010). The stewardship concept might also be expanded and applied to other activities that provide desired public good outcomes. An important principle is that the tasks for which stewardship payments are provided must be additional to those responsibilities of a landholder that are mandated by government.

The merit of the stewardship concept is that it enables agencies to use people currently living and available in isolated areas to undertake required tasks or management cost effectively. The benefit to people currently living on a Pastoral Lease or more generally in the rangeland area is that it can provide a complementary source of income for their support. Stewardship payments can facilitate the multiple-value and multiple-use concept of Rangeland Leases, but can also be applied for existing Pastoral Leases.

URS considers an important element to the application of stewardship payments is the determination of agreed objectives for each region. Given the variability in land uses and economic activity existing now, land use objectives and values will differ significantly across rangeland areas according to grazing values and other opportunities. These variances should be taken into account as part of developing agreed regional plans in consultation with grazing and other stakeholders. When land use objectives are determined then stewardship payments may provide one useful means to achieve the required outcomes.

Recent amendments (2011) to the Conservation and Land Management Act 1984 and the Wildlife Conservation Act 1950 allow for joint management of conservation assets on land not held by the Conservation Commission of Western Australia. The important change is that these joint management arrangements can be enforced, which protects the government’s position. Joint management agreements to manage assets on Pastoral Leases would seem to be ideally suited to environmental stewardship arrangements.

6.2.9 Conserving heritage

As well as Aboriginal cultural heritage, the rangelands are also rich in European heritage dating from earlier times of mining and grazing activities. There are 12 Pastoral Stations on the Heritage Council’s State Register of Heritage Places; seven of which contain buildings built before 1900 (PLB 2007). Shires in the rangelands maintain Municipal Heritage Lists, with pastoral and mining heritage featured.
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However, these same shires have difficulty in resourcing the protection and management of these assets, many of which have value as tourist attractions (e.g. mining and pastoral heritage, cemeteries). In particular, the operational and scientific heritage created by the pastoral industry in the rangelands is significant and is at risk of being lost, especially in the Southern Rangelands where the infrastructure built to support a wool industry is now redundant across many Stations in the Gascoyne, Murchison and Goldfields regions. Government could support care and maintenance of historical research sites (e.g. fenced ‘rangeland benchmarks’, major research sites). The options are considered in Section 7.4.

6.2.10 Services to other industries

As shown in the Profile (Section 3), there are a large number of pastoral lessees working ‘off the station’, in occupations such as services to mining, local councils, or sandalwood harvesting.

DAFWA has researched the advantages and disadvantages of operators of agricultural enterprises working away from the agricultural business to generate additional income. This work, which was done in the North Eastern Agricultural Region commenced with the assumption that off-farm work would be useful in helping struggling farm businesses meet their commitments. The findings challenged this assumption. The main message was that off-farm work during a drought does not pay off farm debt but it can alleviate some of the mental fatigue farmers encounter during seasons with negative production potential. Despite this, most farmers feel off-farm work does not fit their business plan. In response to the findings, the advice being provided by the Department is that farmers considering off-farm work to address financial imperatives need to make a careful and considered decision (NEAR Project 4, Department of Agriculture and Food Geraldton).

Although this work was done in an agricultural and not in a pastoral setting, the findings and advice have relevance, in that pastoral leaseholders who choose to focus on working off-property, or away-from-property may find it difficult to optimise returns from the grazing enterprise or meet their obligations as a pastoral lessee. The implication for this Project is that being able to offer a pastoral lessee who draws nearly all earnings ‘off station’ with a Rangeland Lease unencumbered with the need to look after stock could well be attractive. The options are considered in Section 7.4.

6.3 Current tenure options and their constraints

6.3.1 Improving the match between tenure options and observed change in land use

The profile of the Pastoral Landholding Business Community and the consultation undertaken for this project suggests many people have already ‘voted with their feet’ in terms of the diverse set of activities they undertake in order to continue to live on their Pastoral Leases. Many of these activities are not being undertaken with appropriate permits, and their true financial value is not in the public domain. There are also regional differences in the scale and range of activities undertaken according to the varying state of grazing profitability and the opportunities afforded with off-lease employment, contracting, and other activities.

The key issue regarding the constraints applied by the current tenure options was suggested to be partly related to the tenure options themselves but also the historical mindset being applied in the administration of Pastoral Leases and the rangelands in general. Administration of the Pastoral
6 Opportunities and constraints for sustainable development

Leasehold Estate, and more broadly the Crown Lands in the rangelands needs to recognise the significant changes that have occurred in the economic realities where perhaps only 40 per cent of the Pastoral Leasehold Estate area, and a quarter of the Pastoral Businesses are able to support sustainable stand-alone grazing businesses. Change in both mechanisms and management by government is required that goes beyond the initiatives in the Rangelands Reform Program.

URS suggests decision-makers need to reflect regional differences more in the application of management options, and that a wider array of tools and mechanisms is needed to facilitate and administer the diverse set of enterprises that current pastoral leaseholders are undertaking. The evidence assembled for the profile of the Pastoral Landholding Business Community is that much of what people are doing is outside the permit system. The administration of the Pastoral Leasehold Estate needs to be leading the change that is occurring. Successful implementation of the Rangelands Reform Program will require committed and well-resourced action on the part of government.

6.3.2 Improving administrative effectiveness

Knowledge is not always effectively shared from one agency to the next and consequently government expenditure by one agency can be at odds with the findings of another. Not having a Whole of Government policy and response to changes in the use and values across the rangeland areas can result in ineffective government expenditure. For example, under the Department of Water’s (DOW) Pastoral Water Grants Scheme, applications for assistance from Pastoral Businesses are reviewed and recommendations made by the DAFWA. However, in this process there is no requirement for applicants to demonstrate the financial viability of their Pastoral Business. Therefore the Scheme could be providing grants to Pastoral Businesses that DAFWA has indicated are not viable for grazing on biophysical criteria (as discussed in Section 3.2.4).

Consultation undertaken as part of this Project indicates a level of confusion and frustration over what Diversification Permit options and special leases can deliver. URS was advised of potential investors ‘walking away’ because of the confusion or the complexity of requirements. Even the process of seeking clarification during this Project has let to contradictory advice. It might well be that the current set of options available can deliver required tenure and investment security but the applicants or potential applicants don’t clearly understand the situation. There is a gap between theory and practice that needs to be clarified.

As an example, URS was advised there is no legal requirement for people employed in a diversification activity to be employees of the Pastoral Business, nor are there any restrictions under statute to the manner of their employment. Conversely publications put out by Tourism WA (2012) state ‘tourism permits must be based on pastorally-related tourism activities’ and ‘all persons employed must be employees of the pastoral lease’.

Regardless of the truth there appears to be some confusion in the market place as to the requirements of particular permits, and there is a dissatisfaction that the permit process takes too long. Consultations also suggested more emphasis needs to be placed up-front on a project pre-feasibility assessment on the technical and financial aspects of the proposal rather than the administrative and approval processes.
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6.3.3 The need for ‘evidence-based’ decision-making

Although the state and trends in the condition of the rangeland resource are sufficiently known and reported, equivalent valid and reliable information for social and economic metrics in the fast changing environment are more difficult to obtain, and are sometimes not in existence. Where information is available, it is usually presented at portfolio-scale, and often derived from different geographical boundaries. In a specific example, it is anomalous that the Pastoral Lands Board is not required to account to Parliament via an Annual Report. This is at odds with the requirements placed on other statutory Boards, Authorities and Positions within government.

This lack of sound information limits the ability for government and industries to make ‘evidence-based’ decisions at the right scale, and instead increases the risk that decisions will be made in response to past practice, anecdotal information and/or excessive lobbying. The issue is addressed in recommendations presented in Sections 7.3.4, 7.3.10, and 7.4.10.

6.3.4 The responsibility of government for Pastoral Lease transfers

The State is approving the transfer and renewal of Pastoral Stations with grazing property rights in the knowledge that these leases cannot support a viable grazing business, although this appears to be in conflict with the requirements of the Land Administration Act 1997 (see Section 3.2.4 in this Report). Maybe 70 per cent of Stations are in this category. This proposition might be appropriate if it is clearly recognised that income from grazing might only be sufficient to form part of a viable business’s activities and that in the process the rangeland resource is not to be degraded.

As an alternative approach worthy of consideration, and one that is aligned with the intent of the proposed Rangeland Lease, the State could separate the rights of a Pastoral Lease into grazing rights and the right of access to the land and infrastructure. At present this can only occur for example if a pastoral leaseholder sub-leases the grazing areas of their property to a third party. It is not a mechanism available to government to control where grazing might occur whilst still enabling occupation of a homestead. The approach is explored further in the recommendations in Sections 7.3.7 and 7.4.1.

A key requirement in future will be to implement a process whereby production, value and compliance information is available to all Government agencies and the grazing industry alike. Facts should assist in recognition of the true state of affairs, help agencies implement consistent ‘evidence-based’ policies and programs. As a first step, URS suggests the PLB publish a public Annual Report which reports against the requirements of their Act, and outlines performance and/or any non-compliance on a regional basis.

The State needs a whole of government approach to rangeland management that is consistent across agencies.

The current Diversification Permit options, processes for obtaining them and special leases may not be as limiting as they are perceived to be but they are not as well understood in the market place as they might be. Better advice needs to be more easily available and support services to help proponents develop their ideas as business plans might complement this.

An additional mechanism might be to separate the rights of a Pastoral Lease into grazing rights and the right of access to the land and homestead infrastructure to provide an additional mechanism to control where grazing may or may not occur.
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6.4 The role of the Rangelands Reform Program

The objective of the tenure reform process in the Rangelands Reform Program is to provide forms of tenure that allow for a wider range of nominated uses of rangelands. The cost to a Pastoral Lessee will be associated with negotiating the change with determined native title holders and registered claimants. Currently, it is unclear how many pastoral leaseholders will be prepared to undertake that process, and the level of benefits they perceive it might provide.

6.4.1 Conversion to a Perpetual Lease

Where lessees are operating large, well-resourced and financially robust grazing enterprises, there may be interest in conversion to a Perpetual Lease. In particular this option may be attractive to Corporate Pastoral Businesses, if this is seen as a means of increasing the options for obtaining finance and reducing the cost of debt financing through the additional security provided by the conversion. The lessees will make a commercial decision after weighing the benefits (e.g. increased access to capital, reduced debt servicing,) and the costs (principally the requirement to negotiate a formal ILUA or alternative legal agreement with determined native title holders or registered claimants).

6.4.2 Conversion to a Rangeland Lease

Many leaseholders are now by default undertaking only limited grazing use. The extent to which a Rangeland Lease will facilitate other uses that cannot currently be achieved with Diversification Permits or S-79 General Leases is uncertain. They may be a useful mechanism for integrated tourism ventures that have attractions within the lease.

Consultations suggested that most interest in converting to a Rangeland Lease is likely to come from Indigenous pastoral lessees and private conservation groups, and perhaps by some mining companies. It is not anticipated that this will necessarily result in any increases in economic activity but the conditions on the new leases will better align with the owner’s objectives and values.

The other potential use of a Rangeland Lease might be to secure access to carbon rights over a 100 year time frame, which a Rangeland Lease will allow. However as noted in Section 6.2.3, policy in this area is yet to be determined, with a wide range of research and development needs and legal aspects still to be addressed.

A Rangelands Lease may help clarify the Pastoral Lease property market by providing an alternative perspective on value. Until recently the market in the Southern Rangelands has been slow to reflect the productive value for grazing purposes, although more recent sales data suggests this shift has now occurred. A Rangeland Lease will provide an alternative benchmark of value, and may highlight the true value of a non-stocked lease.

Conversion of a Pastoral Lease to a Rangeland Lease with removal of grazing rights might be a mechanism the State could use to remove stock in degraded areas. This could involve the State paying for grazing rights and thus freeing up capital for the rangeland leaseholder. This opportunity is recommended in Section 7.4.1.
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6.4.3 Supporting the Rangeland Reform Program

The most important benefit of the Rangelands Reform Program might not be in the opportunity for alternative tenure options but in the way it will redefine the possible use of the Pastoral Leasehold Estate. The Estate will no longer be perceived within government and community as being only or even primarily for grazing use but in time will be seen as a State resource with multiple values.

As noted previously, the WA Government will need to provide resources for committed and active support for the implementation of the Rangeland Reform Program following passage of the enabling legislation, which will in effect initiate a transition from administration of a ‘Pastoral Leasehold Estate’ to a ‘Rangeland Estate’. This transition and support for implementation of the Program is the subject of recommendations in Sections 7.3.7, 7.3.8, and 7.3.9.
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7.1 Towards a new era in the WA Rangelands

A new era is commencing in Western Australia’s rangelands, one that involves managing 87 per cent of the State’s land area for multiple values, uses and users. The Pastoral Landholding Business Community and its enterprises, supported by coordinated and determined government action has the opportunity to break from existing economic and regulatory paradigms and develop a future that widens the range of land uses, brings in new people and new money, and provides new solutions to old problems.

Government should use the opportunity presented by the Rangelands Reform Program and the lease roll-over in 2015 to send a clear signal to lessees, businesses and the rangeland community that a new era in rangeland use and development has arrived. While some of this shift can be reflected in statute and regulation, it will also require State Government leadership in clearly articulating a future vision for WA’s rangelands, ‘talking up’ the future, acting decisively to address long-standing land management issues, and investing to develop priority regional opportunities.

The evaluation of opportunities in the rangelands (and in particular the Pastoral Leasehold Estate) has been guided by the following set of principles developed by the consultant team. These are all equally important.

- Encouragement and support for sustainable occupation of the rangelands.
- Improvement of natural resources.
- Optimisation of economic opportunities across all uses and users.
- Attraction of new skills and experience and new capital into the rangelands.
- Recognition of biodiversity and landscape values and their preservation.
- Preservation of heritage, cultural values and practices.
- Provision of rational, effective and collaborative services.

Where are we now?

The WA rangelands are coming to the end of an era dominated by a pastoral leasehold governance system and an economy, outside of mining, dominated by grazing. This system is no longer able to satisfy the aspirations of a more diverse rangeland community, the State Government’s objectives in regional economic development, or the requirements of external parties interested in investing in rangeland development. Finally, the need for landscape rehabilitation across an estimated 19 per cent of the State’s land area is not being achieved under current governance arrangements.

What can be done?

This report shows that opportunities exist in the rangelands to expand the economic activities available to current and future landholders and businesses. Some of these opportunities will flow from improvements to existing land uses, such as the cattle and tourism industries, where these are founded on a solid resource base and can be made more competitive with additional investment in market development, skills and infrastructure.

Other opportunities will involve development of proven water resources located in specific areas in the rangelands for precinct-scale horticultural and agricultural developments. These will require whole-of-government intervention to ensure that land and water resources, and required advice is available to

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19 Determined as the area of land in the Pastoral Leasehold Estate in poor and fair range condition
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attract and support new investment and new operators. New crops and products that show promise in the rangelands need commitment to long-term research and development, and support for implementation.

Indigenous people are building their rightful place in the rangelands through the development of multiple use landholdings and partnerships with government and non-government organisations (NGOs) in managing for environmental and economic outcomes. Their stake will surely increase with growth in Indigenous tourism, fire management in the Kimberley, Pilbara and Unallocated Crown Land (UCL) areas in central WA, multiple enterprises on Indigenous landholdings, and management of cultural heritage throughout the landscape.

Recovering the ecological functioning of large areas of the rangelands will increase their attractiveness for the growing number of people seeking ‘wilderness experiences’ and will ensure that if these areas are needed for food production in future years, they can deliver sustainably. Recovery can be achieved – through marketing products such as carbon – and by providing incentives to rangeland people to deliver the desired outcomes on the community’s behalf through stewardship arrangements for specified management actions beyond normal requirements. This can extend to contracting local people to manage some of the State Government’s commitments on UCL and the Conservation Estate, and developing further the concept of landscape management as illustrated in the Great Western Woodlands and the Kimberley Science and Conservation Strategies.

Philanthropy from those living outside the rangelands will not only support the people committed to rangeland recovery and multiple use on country, but will build a valuable link between the people within and outside the Rangelands.

Delivering on the opportunity

New mechanisms, new thinking, expanded opportunities, and new money are needed to sustain the rangeland community, build resilience and encourage new people into the arena.

The Rangelands Reform Program, supported by investment through the Royalties for Regions Program will assist the development of new opportunities, and will provide existing users more freedom to innovate, expand and consolidate. The legislative and regulatory reforms provide the ‘template’ upon which new opportunities and existing uses will be developed.

The reform process needs to be taken further. To achieve development on the scale desired, means that rangeland governance needs to be embrace the whole of the ‘Rangeland Estate’ – not just the Pastoral Leasehold Estate – and use a wider array of instruments and mechanisms, or to put it simply, ‘a bigger and better toolkit’. The frustration and abandonment felt by many people in the rangeland community to a significant degree results from government not being able to provide realistic and acceptable options and solutions to their difficulties. If government is to build a more diverse and resilient future, it needs a wider array of ‘tools’ to do the job.

However, one size will not fit all. Policy and administration needs to recognise regional differences in environmental and economic opportunities and constraints, and determine priorities for government intervention and support based on an assessment of a region’s potential. For example, the priorities for government action in the Kimberley, with its comparative advantages in grazing, agriculture and tourism require a very different approach to addressing long-standing difficulties across large areas of the Southern Rangelands.
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Finally, the data and information to guide government decision-making needs improving, so that the benefits and costs of current and proposed government service delivery and specific programs can be assessed in a manner that provides confidence that cost-effective outcomes are being delivered.

7.1.1 Transitioning to the future

Figure 7-1 summarises the content and recommendations presented in this report.

**Figure 7-1 Transitioning to the future**

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<th>The Future</th>
</tr>
</thead>
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<td>A vision for the rangelands endorsed by community and governments</td>
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<td>Managing a Pastoral Leasehold Estate</td>
<td>Managing a Rangeland Estate</td>
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<td>Portfolio-specific considerations in decisions</td>
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<td>Major agricultural precincts and tourism nodes based on adequate resources and timely land acquisition by government</td>
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<td>Inefficient service delivery in remote areas</td>
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7.2 Developing Recommendations

7.2.1 Addressing the Statement of Requirements

In developing recommendations for sustainable land use and economic development opportunities in the WA rangelands, URS has focused on the objectives of the WA Government’s Rangelands Reform Program which are contained in the Background to the Statement of Requirements for this Report (see Section 1.2 and Appendix A). These are re-stated below. URS has highlighted sections of the text in bold that contain the essence of the Rangelands Reform Program, and that need to be reflected in the recommendations in this Report.

The Government of Western Australia has initiated a Rangelands Reform Program funded by the Royalties for Regions program to identify and implement measures to address issues raised by previous reviews concerning the pastoral industry and conditions in the State’s rangelands. The Program reflects a shared commitment on the part of the Government, the pastoral industry and other stakeholders to effect fundamental change in the rangelands. The Program also seeks to create an enabling environment for the growth of sustainable, economically diverse rangeland communities through a combination of land tenure reform, encouragement of new investment opportunities and land uses, and the identification of measures to restore the rangeland’s productive capacity and ecological values.

The Rangelands Reform Program, and the Statement of Requirements for this Report make it clear that ‘business as usual’ is not acceptable and that fundamental change is needed to take the rangelands and its communities to a new and sustainable level of environmental, economic and social outcomes.

‘Game changers’ are needed if these better environmental, economic and social outcomes are to be delivered in the rangelands, and the recommendations presented in following sections need to be read in light of the comments above and the information presented in the body of the Report.

7.2.2 The need for more resources

The analysis of the current situation in the rangelands presented in this Report reveals that the rangeland regions, their industries and people are depleted in environmental resources in many areas, with grazing enterprises that, in some areas, are no longer able either to support adequate lifestyles and return on assets managed, or to mobilise the capital and/or the commitment needed to improve land condition or generate new income earning activities. In short, without external commitment, the existing Pastoral Landholding Business Community will not be able to contribute adequately to the achievement of the objectives of the Rangelands Reform Program, as stated above.

While the planned tenure changes will facilitate new opportunities at a lease-by-lease scale, further commitment to planning for land use change in target areas (‘nodes’) with comparative advantages for different uses is needed. These require commitment to policy development and implementation that will require resources additional to existing portfolio allocations.

Above all, if the WA Government and community is serious about addressing long-standing issues with loss of range condition over 19 per cent of the state’s area, and evidence of continuing decline in some areas, a significant injection of support from the public purse is required if this public good is to be restored.
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The Statement of Requirements does not request a detailed analysis of the resourcing implication of recommendations presented. However, some comment is required. It is evident that the cost of administering and supporting the Pastoral Leasehold Estate is about four times more than the return from rentals, with the available evidence suggesting the WA Government’s objectives in the rangelands are not being met. Non-essential items in this expenditure should be re-allocated into supporting recommendations below that are aligned with the WA Government’s objectives.

Secondly, as noted in the body of the Report, the Royalties for Regions Program invests in regional development, and is already active in supporting rangelands projects in water resource development and carbon farming. It is URS’s view that further investment through the Program is a logical means of providing the support for implementing recommendations that have significant resourcing implications.

7.2.3 Key and supporting recommendations

The Statement of Requirements requires analysis and recommendations across a wide range of issues and topics. As a result, in the following sections, 39 recommendations are presented. These have been ranked as 13 key recommendations and 26 supporting recommendations.

The key recommendations describe actions required at whole-of-rangelands scale, such as determining regional priorities, options for further tenure reform (i.e. beyond that envisaged through the Rangelands Reform Program) and improving the transparency of government administration.

The supporting recommendations describe actions that address more specific items in the Statement of Requirements, such as enabling rangeland improvement, widening the economic base in the rangelands, facilitating new land uses and industries, supporting Indigenous land uses, exploring options for carbon farming and developing a better assessment of the benefits and costs of rangeland occupancy.

7.3 Key Recommendations

7.3.1 A charter for Management Action

There is a need for a whole of Government policy for rangeland management and a definition of agency responsibility to act where lease conditions are not being met. The absence of a whole of government policy and adequate responses to the changes in the use and values derived from rangeland areas is contributing to inefficient and wasteful government expenditure, and a failure to better target the allocation of resources. For example, information is not always effectively shared between agencies and responsibilities are not always clearly defined. Consequently government expenditure from one agency sometimes contradicts the judgment of another.

*Recommendation 1 – Government should develop a Charter to agree to develop a Vision for the Rangelands, develop a whole of Government policy for rangeland management, assign responsibilities across agencies, and define a requirement to act where conditions of holding a lease are not met.*

7.3.2 Develop a Vision for the Rangelands

Government needs to support future uses and values for WA’s rangelands. There is value in looking forward and a cost in hoping that ‘business as usual’ will be the future. There is a need to manage the
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transition to a new tradition, new approaches to administration and industry support and future uses of the rangelands.

Government needs to provide consistency with a whole of government policy and state its desired vision for the future use of rangeland areas. That vision should guide development of rangeland policy and its implementation. A vision should provide people living and working in the rangelands with a new sense of direction and some reality for planning their future.

The vision should direct the transition from a role of managing the pastoral estate to managing multiple values defined by regional priorities. It should reflect the value of alternative uses and inspire complementary use not competing use. Above all, the vision should direct the transition from governance of a ‘Pastoral Leasehold Estate’ to a ‘Rangeland Estate’.

**Recommendation 2 – Government should develop a Vision for the future use of Western Australia’s rangeland areas.**

7.3.3 Support for rangeland use, occupancy and recovery

Many stakeholders have advised URS that current pastoral leaseholders feel abandoned by government with no options being offered, and in some situations resources are being withdrawn, and there is confusing information about policy changes. Government needs to reassure leaseholders that they are valued, but at the same time present realistic solutions to address long-standing economic and environmental issues.

**Recommendation 3 – Government needs to make a clear statement that occupancy of the rangelands is valued, provided that the use and management is meeting the occupants’ and the wider community’s objectives.**

About 21 per cent of the Pastoral Leasehold Estate is in poor range condition (195,000 km²), with over 7,000 km² severely degraded and eroded. Since systematic reporting of range trend commenced in the 1990s, there has been no evidence of a sustained improvement in the resource condition across the whole estate, with some indication that downward trends are occurring on many leases. In some areas, under existing management (usually destocking), improvement is occurring, whereas in other areas on-going deterioration is occurring. There should be a focus on areas where trends are ‘downward’. Collectively, the evidence presented in this report is that, generally speaking, current government and lessee actions to improve range condition, or in some cases to prevent further decline have been and continue to be ineffective. In summary, the rangelands are in unacceptable condition, the WA Government needs to commit to rangeland improvement as a policy, and resource it accordingly. A program of landscape-scale rangeland recovery would be an opportunity for investment through the Royalties for Regions Program’s Natural Resource Management Theme.

**Recommendation 4 – Government should commit to prevention of any further degradation and implement a program of range condition recovery. Government should assign lead agency responsibility and allocate additional resources.**

7.3.4 Identify regional opportunities and values

There is a wide difference in the economic opportunities, values and risks across WA’s rangelands. Whereas the Kimberley now generates over half the livestock income, and has opportunities in irrigated agriculture and silviculture, and tourism, parts of the Southern Rangelands are making the
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transition, in some cases unwillingly, from grazing to other uses, or lessees are searching for alternatives. Government should develop regionally focussed plans and priorities that integrate grazing, conservation, tourism, agricultural and cultural values according to the regional strengths and weaknesses in these areas, and use these plans to direct administration of the lands in these regions.

For example, support for the grazing industry should be focussed to those areas with current and future capacity and comparative advantages, with support for conversion to Perpetual Leases as appropriate. In other situations, government can encourage occupancy with/without grazing rights for undertaking public good activities, such as land stewardship, heritage protection, public safety etc. Identification of how these multiple values may co-exist at regional scale, combined with government support will facilitate the value and uptake of Rangeland Leases. In another example, locations (nodes/precincts) with comparative advantages for tourism and agriculture can be identified and pre-feasibility studies completed as a precursor to government action in facilitating tenure change and external investor interest.

Recommendation 5 – Government should develop regionally focussed plans and priorities for the Rangeland Estate that integrate grazing, conservation, tourism agricultural and cultural values according to the regional strengths and weaknesses in these areas, and use these plans to direct administration of the lands in these regions.

7.3.5 Establish priority areas for tenure change and investment

The current approach to managing new uses on Pastoral Leases via Diversification Permits and S-79 Special Leases is satisfactory for small scale developments, although improvements are required. These mechanisms are not suited to progress priority development opportunities such as in the La Grange Horticultural Precinct, Pilbara agricultural precincts (mine dewater areas, West Canning Basin) the Carnarvon Basin artesian water resource, algae development on the Pilbara coast and major ‘nodal’ or ‘hub’ tourism attractions. In other industries, WA Government moves to establish Strategic Industrial Areas, such as at Ashburton North, where pastoral tenure has been resumed and replaced by more robust tenure, or in the case of the SKA, where an area around the site has been quarantined from mining. Areas targeted as potential precincts for horticulture or major tourism ventures should be subject to tenure change prior to arrival of potential investors. The State needs to act on advice from key stakeholders that a two to four year timeline to gain approval and negotiate native title is inhibiting possible investment.

Recommendation 6 – Government needs to identify priority areas for tenure change and investment in the rangelands and secure these areas under appropriate tenure, and at a scale that will attract sufficient investment.

Most of the growth in consumptive activities in the rangelands will rely on access to sufficient water supplies that can be diverted cost-effectively. Knowledge of water availability is improving but more investigation is required. The water resources on Pastoral Leases and elsewhere (surface, underground) are abundant, will increase in value, and will drive land use options.

Successful future developments will be expansions around existing nodes of agricultural development or transport, or will need to be of significant scale to allow for efficiencies in the cost of production. Government and industry need to work together in developing an integrated approach to development of a mosaic land use (irrigated areas linked with native pastures) with efficient transport links for cattle
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movements. This will be a necessary precursor if abattoir developments in northern WA and the Northern Territory are to succeed.

In areas where water is abundant, there is the opportunity to develop irrigated agricultural precincts (based around horticulture as well as fodder production). The availability of ground water resources in the La Grange Area, the West Canning Basin, in the mining areas in the Pilbara and to a lesser extent in the West Gascoyne suggest these should be the target for active Government intervention in securing land and providing infrastructure so that the opportunities are attractive and ready for investment.

Recommendation 7 – Government to increase investment in identifying and developing available water resources for agricultural and horticultural uses.

7.3.6 Improve current tenure options

There is a level of confusion and frustration in the market place over what Diversification Permits and Special Leases can deliver, and a dissatisfaction that the processes take too long. There appears to be some inconsistency in the interpretation of what can or can’t be done. Consultations also suggested more emphasis needs to be placed up-front on a project pre-feasibility assessment of the technical and financial aspects of the proposal rather than the administrative and approval processes. There is an apparent gap between the theory of what the current options can deliver and outcomes being achieved.

Recommendation 8 – Clear advice and support services need to be available to proponents to assist them develop their proposition into a business plan and help them understand the capacity of Diversification Permits, Special Leases and new tenure options, and to determine the best tenure option for each proposal.

7.3.7 Support a shift from ‘pastoral leasehold’ to ‘rangeland’ administration

The state is currently transferring Pastoral Stations with grazing property rights in the knowledge that many of these Stations cannot support a viable grazing business. About 70 per cent of Stations may be in this category. Although information on the condition of the resource and its grazing capacity are freely available, this situation does not reflect good governance, nor does it seem to deter some investors.

In part, this is because the administration of most of the State’s allocated rangeland is managed by the PLB operating through Part 7 of the Land Administration Act 1997. The task in implementing sustainable land use and economic development opportunities in the rangelands – which is the scope of this Project – will need a larger and wider commitment from Government than can be delivered through the provisions of the LAA and its associated regulations alone. As a follow-on for the process commenced by the Rangelands Reform Program, the WA Government should commence the move from management of a ‘Pastoral Leasehold Estate’ to management of a ‘Rangeland Estate’.

As part of a longer-term reform agenda, Part 7 of the LAA can be amended to remove the automatic linkage between leases and grazing, with grazing as an optional right along with other rights of occupancy and uses as envisaged in the Rangeland Reform Agenda. Under this new regime, the PLB could be renamed as the Rangelands Board.

URS appreciates the legal, native title and legislative challenges in embarking on further reform of this type, but recommends consideration by the WA Government.
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**Recommendation 9 – Government to explore the benefits and practicalities of taking the Rangeland Reform Agenda through to separation of the lease occupancy and grazing rights on a Pastoral Lease.**

7.3.8 Changing on-site uses from grazing to multiple uses

In areas with limited options for income to be earned from grazing, the focus needs to be shifted to income earned from a wider range of consumptive and non-consumptive uses. As well as promoting multiple use within leases (to improve single business resilience) there should also be an effort to foster multiple use between leases (to improve local/ regional viability). This is particularly relevant in areas with high climate risk and low grazing capacity.

The concept of exclusive land use (one user and use for each parcel of land) can be challenged, with a suggestion that the future would see inclusive use of the land with multiple users and uses. Conversion to Rangeland Leases will facilitate this, along with the concept of separating grazing and other property rights.

Many Pastoral Leases (more than 50) in the Murchison and Goldfields are used as bases for on- and off-site uses other than grazing, such as support for the mining industry, tourism and services to local government. ‘Pastoral viability’ as a concept is irrelevant to these businesses, and they will not respond to traditional adjustment incentives. This provides an opportunity for land use change such as the purchase of grazing rights by Government or other (see above), and/ or replacement with stewardship arrangements, and/ or authority to manage carbon on behalf of the Crown or a third party (see below).

**Recommendation 10 – Provide an opportunity for lessees to consider a ‘whole of lease uses redesign’. Further, the options for multiple uses need to be made secure and attractive for third party investment and involvement.**

7.3.9 Facilitating adoption of Perpetual Leases and Rangeland Leases

The introduction of Rangeland Leases and Perpetual Leases provides a number of opportunities to current and prospective lessees.

- For lessees with thorough-going and robust grazing enterprises, it may be attractive to convert to a Perpetual Lease as a means of increasing security and improving capacity to obtain finance, and lower-cost debt servicing although the transition will require an ILUA to be established. Lessees will make a commercial decision about this option. It is likely to be an option most attractive to Corporate Pastoral Businesses and others with a sound resource base and profitable enterprises.
- For lessees planning non-grazing uses, the Rangeland Lease offers the chance to develop these uses free of current restrictions on use. This option is attractive to private conservation organisations and Traditional Owners, and mining companies.
- For lessees with unprofitable grazing enterprises, and who are deriving most of their income from non-grazing income, conversion to a Rangeland Lease will be attractive as it allows them to retain occupancy and occupation without having to maintain pastoral infrastructure or an unprofitable grazing enterprise. As noted in the Report, about one third of all Pastoral Businesses are in this category.
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**Recommendation 11** – Government to ensure that Pastoral Lessees have access to qualified, unbiased and supportive advice in determining the advantages and disadvantages of conversion to a Perpetual Lease or a Rangeland Lease.

### 7.3.10 Provide clear and transparent information

Several stakeholders including people within government suggested there needs to be greater transparency about conditions on the Pastoral Leasehold Estate and the State Government’s administrative activities in pursuit of statutory and policy objectives. URS supports this view, which has been reinforced by the difficulty in locating valid and reliable data and information about the rangelands and its economic and social situation as a whole.

As noted earlier, the lack of valid and reliable data and information on economic and social trends in the Pastoral Landholding Business Community may be limiting the capacity for government and industry to make ‘evidence-based’ decisions about rangeland policy and programs.

This should not be so. Examples of public reporting include the Report presented to Parliament by the Commissioner for Soil and Land Conservation, annual reports by Government Departments and Statutory Authorities and reports made public by mining companies that document their environmental and social performance in areas where they operate.

The PLB should present a report to Parliament that is publicly available. The Report should include commentary on conditions in the Pastoral Leasehold Estate, activities being undertaken by the WA Government including new or altered policies, the number of lessees that are non-compliant and the PLB’s response.

**Recommendation 12** – The PLB to present Parliament with a publicly accessible Annual Report on conditions in the rangelands, activities being undertaken by Government including new or altered policies, the number of lessees that are non-compliant and the PLB’s response.

This self-reporting should be matched by occasional reviews of the operations of the Board by the Auditor-General (AG), conducted as part of routine evaluation of the performance of WA Government Departments. An ideal time for the evaluation would be in the lead up to the roll-over of leases in 2015 so that any recommendation in the AG’s Report could be acted upon before the renewed leases are issued.

**Recommendation 13** – The Auditor-General be requested to undertake an evaluation of the operations of the PLB before the roll-over of the Pastoral Leases in 2015.

Finally, URS supports the program that will see lessees responsible for assessing and reporting their own performance. Given that this program is being introduced in 2015, a recommendation is not required.

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20 Information availability from other portfolios is considered in Section 7.4.10.
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7.4 Supporting Recommendations

7.4.1 Encouraging rangeland recovery

As noted in previous sections, existing mechanisms available to government to address unacceptable management have not been effective in either improving range condition, or in preventing further degradation. For example, the PLB has not developed a policy or policies ‘to rehabilitate degraded rangelands and to restore their pastoral potential’. The available evidence suggests that past investment through the Gascoyne Murchison Strategy or the former Natural Heritage Trust has not delivered measurable improvement. Further, the low economic returns from grazing mean that most pastoral leaseholders lack either the financial or managerial resources to deliver improvement in range condition. If the objectives of the Rangelands Reform Program are to be achieved, government needs a better capacity to address rangeland degradation. Approaches that focus on opportunities and incentives for ‘additional management’ that will result in rangeland improvement across large areas of the landscape are required.

The introduction of the Rangeland Lease provides an opportunity to try new these approaches, which can include tradeable rights to graze and perhaps, in time, to farm carbon. In essence, Government needs to develop and resource an incentive scheme to compensate lessees for the temporary removal of grazing rights for a lengthy period in areas where grazing is currently financially unrewarding, and the land would benefit from a period without grazing. However, it is not intended that the land be permanently removed from grazing. There are many areas especially in the Southern Rangelands where this combination of circumstances occurs. Temporary (20 – 30 years) removal of grazing rights can be associated with conversion to a Rangeland Lease. In such a situation, a lessee can receive funds for forgone grazing rights, while holding a Rangeland Lease, and undertaking alternative uses.

The implementation of an incentives scheme may occur in three ways.

- Voluntary involvement initiated by the lessee. Lessees can tender to remove or transfer grazing rights off all or part of individual leases temporarily (20 – 30 years). The compensation for removal of grazing rights would be agreed between Government and lessee. This may be associated with assistance for conversion to a Rangeland Lease, and possibly stewardship payments, subject to lessee interest and regionally determined priority works being undertaken. A tender process will enable Government to do this at least-cost to achieve regional objectives.

- Government to target leases identified as having specific issues, but lessee involvement is voluntary. Government to offer compensation to remove or transfer grazing rights of all or part of individual leases temporarily (20 – 30 years). The compensation for removal of grazing rights would be agreed between government and lessee. This can associated with assistance for conversion to a Rangeland Lease, and possibly stewardship payments, subject to lessee interest and regionally determined priority works being undertaken.

- In situations where land degradation issues are urgent, and the lessee has not responded to the above approaches, government to implement compulsory permanent removal of grazing rights, with compensation to the market value as assessed by the Valuer General. This action can be associated with assistance for conversion to a Rangeland Lease, and possibly stewardship payments, subject to lessee interest.

The implementation of this incentive schemes will require significant resources, at least to the scale of previous investments through the Gascoyne Murchison Strategy, or in the Ord River Catchment.
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Regeneration Program. The Natural Resource Management theme in the Royalties for Regions Program, represents an appropriate vehicle to resource a bold program of landscape scale rangeland recovery.

**Recommendation 14 – Government to develop an incentive scheme for temporary removal of grazing rights for periods of 20 to 30 years, associated with conversion to Rangeland Leases, and possibly stewardship payments, with resourcing through the Royalties for Regions Program.**

7.4.2 Improve grazing industry competitiveness

Commercial scale grazing activities are concentrated in the Kimberley, parts of the Pilbara and West Gascoyne, with isolated enterprises elsewhere. Over half the livestock and production is in the Kimberley. It is also evident that grazing enterprises are struggling to maintain competitiveness as a result of market issues and sub-optimal productivity on-station.

Government’s support for and investment in increased industry performance should focus available resources on areas with comparative advantages and where there are opportunities for productivity growth, and reduce investment in areas with limited prospects. The reports reviewed by URS show improvement in the competitiveness of the northern cattle industry will require a wider range of market options and improved productivity within the herds. The WA Government is already exploring industry development post ‘farm-gate’. This needs to be matched with a mosaic of irrigated agriculture and native pasture production systems that is able to support abattoir facilities within reach of the region.

**Recommendation 15 – Government and industry need to work together in developing an integrated approach to development of a mosaic land use (irrigated areas linked with native pastures) with efficient transport links for cattle movements.**

The review of the Northern cattle industry undertaken by McCosker et al. (2010) noted that higher performing businesses were found to be related to the number of animals/ scale of the operation, individual animal productivity, skills of the manager and associated running costs. The quality of strategic and management decisions around overheads and scale was found to be paramount in determining profitability.

**Recommendation 16 – The Department of Agriculture and Food continue with benchmarking enterprise productivity in the Kimberley and Pilbara as a means for individual enterprises to identify areas for improvement.**

7.4.3 Support Indigenous occupancy

The demography of the rangeland communities show an Indigenous population that is young and growing fast, especially in the Kimberley and less populated areas in the Gascoyne and Murchison. Indigenous people through WA’s rangelands are progressing in different ways through the native title process, and have not yet been able to engage fully with the Rangelands Reform Program. However, aspirations for access to land are high, and native title rights will be defended against any attempt to erode these rights. Indigenous occupancy of rangelands will increase, and multiple uses can be facilitated at the time of acquisition via the Rangeland Reform Program. Aboriginal communities can take responsibility for the management of particular areas within their land holdings for conservation and cultural purposes. These arrangements would see Government contributing dollars into a community for conservation management of some areas of land, while other areas (and sometimes
the same areas) are used for subsistence hunting, ‘light’ pastoralism (subsistence herds) and cultural use.

**Recommendation 17** – Government to work with Native Title Representative Bodies in identifying opportunities for acquisition of Rangeland Leases, or conversion of existing Pastoral Leases to Rangeland Leases via the Rangelands Reform Program.

Where land is already held by Indigenous Corporations or, on their behalf, by government, these assets are not always generating economic and social benefits. In some cases, government may be financing Indigenous people into non-viable grazing operations. At the same time, Indigenous communities can take responsibility for the management of particular areas within their land holdings for conservation purposes.

**Recommendation 18** – Where leases are acquired by government for traditional owners responsible agencies should ensure businesses planned on these leases are able to deliver benefits to Indigenous people.

Alternative approaches, involving partnerships between Indigenous Corporations and other organisations with complementary interests in land offer a better way of generating benefits from land occupancy. Examples include the Yulmbu Agreement in the Kimberley, possible sub-leasing of cattle grazing enterprises by a major corporate pastoral company, and providing natural resource management services on mining company held leases. The Indigenous tourism strategy contains a range of measures to support capacity building for people keen to develop Indigenous tourism ventures. Current government initiatives supporting just grazing enterprise development can be expanded (involving commitment from other agencies) to support business development across a wider range of enterprises.

**Recommendation 19** – Government partners (ILC and DAFWA) in the successful ILS Program expand the agenda from support for grazing enterprise developments to support for multiple use planning and implementation on leases held by Indigenous people.

### 7.4.4 Facilitate tourism development

Low key tourism on individual leases can be done better and businesses may have some room for growth but essentially this type of tourism development is likely to remain modest in scale, and be a supplement to other income rather than a standalone enterprise. A need to improve standards and link approval for a Diversification Permit and tourism accreditation was suggested. There is a need for training programs to assist pastoral leaseholders improve and develop their tourism enterprise management skills.

**Recommendation 20** – Link approval for Diversification Permit for low key tourism and accommodation with a need for tourism accreditation and training programs.

Expansion of tourism in the rangelands is likely to be based on substantial ‘nodal or hub’ developments adjacent to key attractions. Greater economies can be developed around a hub and spoke concept of development that allows numerous smaller enterprises to grow off key infrastructure and attractions. Generally they will be associated with the coast and existing transport links but there may be opportunity for developments that focus on inland attractions such as Mt Augustus, the Kennedy Ranges and the Carnarvon Ranges. To develop these properly they will need to be
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integrated with transport infrastructure and to be better interconnected and serviced. There is a linkage between this requirement and Recommendation 5 that advocates identifying regional opportunities and requirements for conversion of tenure.

Recommendation 21 – Develop and resource regional plans for rangeland tourism that facilitate the supply of integrated and complementary services targeted towards priority regional assets, or icons.

7.4.5 Native products management

Native sandalwood

URS has reviewed the operation of the native sandalwood (Santalum spicatum) industry in Western Australia, and the potential for the FPC rights to the sandalwood to be transferred to pastoral lessees. The advantages of such a change are considered modest. Pastoral lessees already hold over half of the 34 contracts for delivering green and dead wood, and all are able to tender for the harvest contracts. FPC’s profit from sandalwood is about $4 to $5 million per year, which if pastoral lessees held the rights to the sandalwood, would be the maximum additional returns to pastoral lessees. The disadvantages of transferring the rights to sandalwood to pastoral lessees include the need to consider native title, the likely declining availability of the resource (which is exacerbated by illegal harvest), the difficulty in managing quality control through the supply chain, the need for pastoral lessees to arrange markets for their sandalwood, and competition from the FPC plantations in the agricultural areas as they start producing wood. Overall, it is URS’s view that the disadvantages for the industry and participating businesses would outweigh any advantages of a transfer of rights to pastoral lessees.

Recommendation 22 – The current management arrangements for the native sandalwood industry be retained, with FPC encouraged to develop a ‘Chain of Custody’ mechanism to prevent illegal native product entering the market.

Pilbara Algae Project

The Pilbara Algae Project is promising and has strong government support and significant investor interest. If successful, it will develop a new industry into a region that is dominated by iron ore mining and oil and gas extraction. Land, labour, CO₂ and water will be required and locations along the Pilbara identified.

Recommendation 23 – In the event that a Pilbara Algae industry is planned, Government needs to facilitate access to the resources required, which may involve access to pastoral leasehold land.

Other species

The Review undertaken by URS for this Project of the native species with potential for cultivation in the rangelands is based on a very recent review published by the Rural Industries Research and Development Corporation (RIRDC). There are a number of species of interest, with Gubinge/Kakadu pear showing the most promise and already being grown and harvested commercially. In meeting the need to identify a wider range of uses on rangeland, government should support adequately resourced research and development work on promising species. Government and those interested in these
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Alternate crops need to recognize that developing a viable option(s) may be a 20 year journey, and hence a long-term strategy is required.

Recommendaion 24 – Government, in partnership with other parties (universities, landholders) to commit to a long-term strategy of researching alternative species and crops that could add to the range of activities in the WA rangelands.

7.4.6 Developing opportunities for carbon farming

There are opportunities for carbon farming in the WA rangelands, although there are major technical uncertainties about the spatial and temporal variability in carbon measures and an unknown level of transaction costs associated with transferring rights and verification of carbon stores. The possible returns from carbon farming are such that priority should be directed at land systems with the highest capacity to sequester carbon. Areas with low value for grazing but with reasonable ability to sequester carbon may present good opportunities for carbon farming.

Carbon farming is the one potential economic opportunity in the rangelands that can deliver both economic and environmental benefits, and present indications suggest it will have an important place in future rangeland use. However, it is not a ‘silver bullet’ that will address all environmental issues, nor will participation in carbon farming suit all land users. Leaseholders will need to balance losses forgone from grazing with the potential income from carbon farming, which will also require skills in price risk management. Further, the requirement that sequestered carbon be retained for 100 years is an important factor to be considered in strategic planning at both government and lessee levels.

Currently, the rights to carbon on the WA Pastoral Leasehold Estate are held by the State under the provisions of the Carbon Act 2003 (WA). It is assumed by most of those advising URS that transferring these rights would be regarded as a future act under the Native Title Act 1993, although there were contrary views expressed.

The options for carbon farming on the Pastoral Leasehold Estate range from the government contracting pastoral leaseholders to manage carbon on the State’s behalf, through to legislating for the rights to carbon on a Pastoral Lease to be transferred to the pastoral lessee, as was implemented in Queensland in 2010.

It is URS’ view that given the technical, financial and legal uncertainties associated with carbon farming, the WA Government should for now retain its rights to carbon, and instead continue to support research directed at addressing these uncertainties. In particular, URS does not favour transferring carbon rights to pastoral lessees by legislation, which could well be seen as rewarding past bad management, and may limit the return to the economy through continued inadequate management. Further, it is clear from discussion with Native Title Representative Bodies that they would recommend their clients object strongly to such a move, in part because native title claimants themselves are keen to participate in a carbon market.

Recommendation 25 – Government retain the rights to carbon on Pastoral Leases until there is more clarity around the technical, legal and financial uncertainties of carbon farming on these leases.
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**Recommendation 26** – In the event that Government decides to support carbon farming on Pastoral Leases, that the rights to carbon be transferred via commercial contract, and be associated with the removal (with compensation) of grazing rights from a Pastoral Lease for a period of 20 to 30 years, and conversion of the Pastoral Lease to a Rangeland Lease.

**Recommendation 27** – Government to support ‘pilot’ projects in their application for carbon rights on leasehold land by issuing carbon rights and special leases (e.g. S-79 or other suitable form of tenure) with provision of technical and legal support.

**Recommendation 28** – DRDL could contract an independent, non-government organisation that has no financial or political interest in the WA Rangelands to host a forum to define legal implications for carbon trading and other alternative land uses on WA pastoral leasehold land. Such a forum would be eligible for financial support from the Royalties-for-Regions program.

Current options for emissions abatement in the WA rangelands will be limited to areas in the far north Kimberley, where active fire management is already occurring. Major resource projects looking for carbon offsets could emulate the Western Arnhem Land Fire Management Agreement (WAFMA) established by ConocoPhillips and its partners, and establish collaborative arrangements with pastoral leaseholders in that area. Progressing the opportunities for greenhouse gas emissions abatement (note not sequestration) through active fire management in the north Kimberley (i.e. the area receiving more than 1,000 mm annual rainfall) is an opportunity that can be acted upon by the WA Government now through facilitation of partnerships between major resource projects (e.g. Browse, Wheatstone), pastoral leaseholders, Traditional Owners and conservation agencies (e.g. DEC and AWC).

**Recommendation 29** – Government to facilitate a carbon abatement project in the north Kimberley involving the oil and gas industry, traditional owners, landholders and conservation agencies in the north Kimberley area.

Fire management is a major issue across the northern savannas of Queensland, the Northern Territory and Western Australia, and was an important component of the research and development work funded through the Cooperative Research Centre (CRC) for the Tropical Savannas. The WA Government was an important partner in the CRC. URS suggests that the relationships developed through the CRC be re-activated around the management of carbon in the northern Australian savannas, under the leadership of the Northern Australian Ministerial Forum.

**Recommendation 30** – Government to broker collaborative relationships between stakeholders in carbon management in the northern Australia savannas.

7.4.7 Support stewardship options

Environmental stewardship programs can offer funding for land managers to provide a range of agreed management activities to change management or to protect, rehabilitate and improve particular ecological communities and sites, that exist outside the reserve system and that are currently not managed ideally. Examples could include the management of Declared Rare Flora (DRF), Priority Ecological Communities (PECs), and Threatened Ecological Communities (TECs) which are widely distributed outside the conservation reserve system. Current obligations on pastoral lessees do not specify any responsibilities in managing these assets, and hence specific management
activities to protect/conserve them provide a potential opportunity for stewardship payments to pastoral lessees. Under this approach lessees can be contracted to manage targeted matters on their land and can receive funding for activities for an agreed time period. The important principle is that the activities for which stewardship arrangements are made are additional to a pastoral lessee’s normal obligations under the Land Administration Act 1997, the Agricultural and Related Resources Protection Act 1976 and the Biosecurity and Agriculture Management Act 2007.

Government is also responsible for Unallocated Crown Land and Un-managed Reserves which are located throughout the Pastoral Leasehold Estate. Neighbouring Pastoral Businesses could be engaged by contract to contribute to the management of weeds, feral animals, fire and risks to the public on these areas.

The value of the concept is that it may assist agencies to use people currently living and available in isolated areas to undertake required tasks or management cost-effectively. The benefit to people currently living on a Pastoral Lease or more generally in the rangeland area is that it might provide a complementary source of income. Stewardship payments can facilitate the multiple-value and multiple-use concept of Rangeland Leases, but can also be applied for existing Pastoral Leases.

An important element to the application of stewardship payments is the determination of agreed objectives for each region. When land use objectives are determined then stewardship payments may provide one useful means to achieve the required outcomes.

**Recommendation 31 – Investigate the cost effectiveness of using stewardship to deliver priority environmental outcomes and management of UCL/UMR lands.**

As well as Aboriginal cultural heritage, the rangelands are also rich in European heritage dating from earlier times of mining and grazing activities. Shires in the rangelands maintain Municipal Heritage Lists, with pastoral and mining heritage featuring. However, these same shires have difficulty in resourcing the protection and management of these assets, some of which have value as tourism attractions. There are opportunities for leaseholders to prepare inventories of historical sites (homesteads, woolsheds, steam train dams, barrier fences, woodlines, and lonely graves/cemeteries) and arrangements for protection of these. In particular, the operational and scientific heritage created by the pastoral industry in the rangelands is significant and is at risk of being lost, especially in the Southern Rangelands where the infrastructure built to support a wool industry is now redundant across many Stations in the Gascoyne, Murchison and Goldfields regions.

Another aspect of rangeland heritage are the sites of previous major rangeland research projects which should be maintained in the event that future researchers are interested in revisiting these areas which have a known management history.

**Recommendation 32 – Government to support stewardship arrangements for the conservation of the operational and scientific heritage created by the mining industry and the pastoral industry in the rangelands.**

7.4.8 **Progress strategic landscape management**

The benefits from managing environmental values at a landscape scale has led to several strategic programs across Australia. The Great Western Woodlands is an example in WA, which has been recognised by the WA Government through the release of a biodiversity and conservation strategy in 2010, with funding of $3.8 million for implementation. Following from the example of the Great
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Western Woodlands, URS suggests that a large proportion of the area south west of Mount Magnet be designated as a distinct multiple use precinct termed the Great Mulga Woodland, in recognition of the dominance of the tree species mulga (*Acacia aneura*) over most of the area. Nearly all of this area is now held by private and public conservation interests and mining companies for non-pastoral purposes.

*Recommendation 33 – Government to recognise the Great Mulga Woodland as a multiple use precinct and with collaboration of all parties, develop and resource a Strategy for the whole area.*

Another example of strategic landscape management occurs in the Kimberley where a partnership between the Australian Wildlife Conservancy, the WA Government, Indigenous landholders and private pastoral leaseholders is implementing landscape scale conservation management. Through the Ecofire Project, AWC is working with DEC in best practice fire management on 4 million ha in the Kimberley, which includes the AWC leased and sub-leased land, and land held by 10 other Pastoral Businesses.

*Recommendation 34 – Government to engage other parties in identifying further opportunities for partnerships in landscape scale management on the Pastoral Leasehold and Conservation Estates.*

7.4.9 Enhance biodiversity conservation

Fundamental improvement in building conservation values will be achieved in the implementation of better rangeland management and rangeland rehabilitation. This is addressed by other recommendations. A key principle is that one form of land use should not lessen the value of another. Multiple values need to be recognised and maintained.

There is need for better identification and recognition of key biodiversity assets across regions and for existing knowledge to be shared across agencies. Where high value habitats or ecosystem types are known to occur on Pastoral Leases, management plans should be developed to assist the leaseholder to manage the assets, and a reporting process put in place to monitor the management and condition of the area of value. If the asset is of sufficient value then the planning and management should be supported through an environmental stewardship mechanism (see above).

*Recommendation 35 – Investigate the merit of using environmental management plans linked to stewardship payments to encourage pastoral leaseholders to care for and manage priority value biodiversity assets.*

The State and Commonwealth Governments are developing an interest in environmental offsets and in the assessment of cumulative impacts in major mining provinces (such as the Central Pilbara and the Goldfields). Mining companies operating Pastoral Leases in these areas hold them principally for resource security. In some cases the leases are grazed for little or negative returns, or they are destocked with the approval of the PLB. It would seem a good match for biodiversity assets on these leases to be used as offsets against mining activity.

This approach could be extended to encouraging mining companies without Pastoral Leases that are seeking biodiversity offsets to link with Pastoral Leaseholders who may be able to provide the offsets required. This will provide a landscape-scale benefit in terms of environmental outcomes and an alternative source of income for pastoral lessees.
7 Conclusions and Recommendations

Investment by mining companies in the rehabilitation of closed mines and related disturbed lands runs into millions of dollars annually – and it is spent on small areas of land. Government could also direct some of the mining industry’s expensive mining rehabilitation investment into landscape-scale rehabilitation on these leases. Data describing the money mining companies spend on mine site rehabilitation versus the area rehabilitated, and the area of rangeland that might be rehabilitated may provide good background for this policy.

**Recommendation 36 – Government should negotiate biodiversity offsets where feasible on Pastoral Leases held by mining companies and other parties.**

There is a large amount of disconnected data being collected for separate mining companies on land and vegetation types, species distribution, habitat, and land units being collected using varying methodologies, which are not contributing to the public knowledge base. Opportunities for establishing common standards for data collection should be encouraged by Government. Collation of the large data sets on environmental resources held by individual mining companies would also be useful in adding to the publicly available knowledge base about the rangelands.

**Recommendation 37 – Government to work with mining companies in developing common methodologies for environmental data acquisition and storage, and develop a publicly accessible portal for non-commercially sensitive data.**

7.4.10 Improve the efficiency in supporting people living in the rangelands

This study has recognised the intangible benefits provided by people living in rangelands, which provide needed services that would be expensive to provide otherwise. However, the total cost of supporting families on remote Pastoral Leases and isolated small settlements compared with supporting urban families (i.e., services in health, education, policing, transport, communications, power etc) has not been considered. This would be a worthwhile study in that it would provide a better baseline for determining how best sustainable occupation can be supported in the rangelands. There will almost certainly be opportunities for efficiency gains in service provision if all costs and benefits are considered collectively.

**Recommendation 38 - Extend work to investigate the total costs and benefits of maintaining people on Pastoral Leases in the rangelands.**

This has been the first study of which URS is aware that has tried to consider all uses and all users of the rangelands. The assessment is incomplete, in part because of incomplete data. However, there are many sector specific strategies, plans, and programs for developments and service delivery in the rangelands. They are not coordinated and are sometimes in conflict. This can lead to inefficiencies in service delivery, and in URS’s case to difficulties in portraying the whole picture.

**Recommendation 39 - Review relevant national (and state) strategies – planning, conservation, tourism, transport, Indigenous peoples, defence, and look for synergies and conflicted objectives, and efficiencies in service delivery.**
Acknowledgements and References

8.1 Acknowledgements

URS acknowledges with gratitude the assistance and advice provided by many people from the organisations listed in Appendix B.

8.2 References and further reading


Australian Bureau of Statistics (2006). *Community Profiles for a number of WA local governments.* Canberra ACT.

Australian Bureau of Statistics (2011). *Community Profiles for a number of WA local governments.* Canberra ACT.


Department of Agriculture and Food (2009). *A review of the Process to Permit Diversification on Pastoral Leasehold Land in Western Australia.* A Report to the Minister for Agriculture and Food. Government of Western Australia.

Department of Agriculture and Food (2011). *Annual Report 2011.* Government of Western Australia
8 Acknowledgements and References


Department of Regional Development and Lands (Pilbara Cities Office) (DRDL), Department of Fisheries and Department of State Development (2012), *Pilbara Algae Industry Study*, prepared by Worley Parsons, Evans & Peck and Pan Pacific Technologies, June 2012.


Acknowledgements and References


Environmental Protection Authority (2004). *Environmental Protection and Ecological Sustainability of the rangelands in Western Australia*. Position Statement No. 5, Government of Western Australia, Perth.


Government of Western Australia (undated). *Non indigenous plant species lists for Western Australia’s rangelands*.
8 Acknowledgements and References


Islam, N. (2010). Multipliers: Western Australian Agriculture and Food Industries. Department of Agriculture and Food, WA.


8 Acknowledgements and References


8 Acknowledgements and References


8 Acknowledgements and References


Waddell, P.J., Gardner, A.K. and Hennig, P. (2010). *An inventory and condition survey of the Western Australian part of the Nullarbor Plain*. Technical Bulletin No. 97, Department of Agriculture and Food, WA.


Limitations

URS Australia Pty Ltd (URS) has prepared this Report in accordance with the usual care and thoroughness of the consulting profession for the Department of Agriculture and Food.

It is based on generally accepted practices and standards at the time it was prepared. No other warranty, expressed or implied, is made as to the professional advice included in this Report.

It is prepared in accordance with the scope of work and for the purpose outlined in the contract dated 11 April 2012.

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Any estimates of potential costs which have been provided are presented as estimates only as at the date of the Report. Any cost estimates that have been provided may therefore vary from actual costs at the time of expenditure.
Appendix A  Statement of Requirements

DAFWA requires an experienced consultant to investigate and report on sustainable land use and economic development opportunities in the Western Australian rangelands. The findings and recommendations of this consultancy will contribute to the articulation of a Government vision for the rangelands which is shared by rangeland communities.

SPECIFICATION

Background

The Government of Western Australia has initiated a Rangelands Reform Program funded by the Royalties for Regions program to identify and implement measures to address issues raised by previous reviews concerning the pastoral industry and conditions in the State’s rangelands. The Program reflects a shared commitment on the part of the Government, the pastoral industry and other stakeholders to effect fundamental change in the rangelands. The Program also seeks to create an enabling environment for the growth of sustainable, economically diverse rangeland communities through a combination of land tenure reform, encouragement of new investment opportunities and land uses, and the identification of measures to restore the rangeland’s productive capacity and ecological values.

Specific objectives of the Rangelands Reform Program include to:

- develop proposals for new forms of land tenure, including the options of perpetual pastoral leasehold and ‘rangeland leases’ to supplement existing pastoral leasehold tenure and to provide current and future landholders with greater flexibility, security and incentive to invest;
- facilitate use of the rangelands for conservation purposes, including the management of current and future leases for conservation or mixed land uses consistent with positive conservation outcomes;
- streamline government processes and procedures that affect new business development in the rangelands, including the development of a ‘one stop shop’ facility for pastoral lease diversification applications and approvals;
- identify region-specific economic development opportunities or adjustment responses to arrest the losses associated with the degradation of formerly productive land and water assets and/or the failure of businesses that are not well adapted to contemporary market conditions;
- reduce regulatory impediments to rangelands economic development initiatives.

It is expected draft legislation to deliver new and amended forms of land tenure will be released for public comment in early 2012.

A small team, located within the Department of Regional Development and Lands (RDL) and DAFWA, has been created to support the implementation of the Rangelands Reform Program.

There is an extensive body of knowledge and data pertaining to the Western Australian pastoral industry and the condition of the pastoral rangelands. In identifying the economic development opportunities, and in formulating recommendations and policy options, this consultancy is to be informed by and build upon this existing body of knowledge. The consultancy is also to be informed by direct consultation with stakeholders.

Consultancy Outcome

The outcome of this consultancy is the identification of sustainable economic development opportunities in the rangelands, and recommendation of policy options that will complement and reinforce the objectives of the Rangelands Reform Program. The consultant’s recommendations will inform the development of a comprehensive vision statement which will articulate the Government’s commitment to sustainable social and economic development outcomes.
Appendix A - Statement of Requirements

Analysis, commentary and any recommendations produced as part of this consultancy should reflect any substantial differences that are identified between particular sub-regions or economically significant localities within the rangelands.

The consultancy should specifically address any changes to economic prospects that might flow from the proposed land tenure changes and associated regulatory arrangements.

This consultancy is also intended to consider inherent limitations affecting the sustainability of pastoralism in parts of the rangelands, and to assist the development of appropriate responses to the challenges faced by the Government and the rangelands community.

Consultancy Output

The successful Respondent will provide a comprehensive report that discusses and elaborates upon identified economic development opportunities and provides recommendations and policy options in terms of the objectives of the Rangelands Reform Program. In preparing this report and in formulating the recommendations and policy options, the consultant must give particular consideration to:

- **Major trends and drivers of economic activity in Western Australia’s rangelands:**
  - an analysis of the current situation and trends in economic activity including synergies and dependencies between industry sectors;
  - a profile of the rangelands land holding community that identifies characteristics and trends in income of the pastoral land-holding business community, including income derived from market-oriented livestock production activities and the relationship between income from livestock production activities and income from all other sources;
  - perspectives and priorities of stakeholders including the pastoral, tourism and mining sectors, in regard to sustainable development of the rangelands.

- **Response to pastoral viability and sustainability challenges.**
  - advice on appropriate responses to the current state of pastoral landholdings in the rangelands. This should include analysis of the opportunities and risks associated with conventional structural adjustment responses such as lease amalgamations and alternative approaches based on new economic opportunities and/or government-supported measures to replace or supplement pastoral incomes. Such government supported measures may include, but not necessarily be limited to payments or concessions in return for stewardship and resource management services;
  - recommendations should be framed by the land-holder profile and analysis of current situation and trends.

- **Opportunities and constraints for sustainable development.** Within the framework provided by the analysis of the current situation and trends, the consultant should provide comment and recommendations that specifically relate to:
  - the outcomes of consultation with stakeholders (including pastoral, conservation, tourism, traditional owners and mining sectors) on a rangelands vision, including sectoral perspective and priorities;
  - the future economic development and diversity outcomes that could flow from the current land tenure and land administration reforms;
  - the principal opportunities and constraints associated with infrastructure, market access, regulation and government policy;
  - the impact, opportunities and risks associated with the Australian Government’s Carbon Farming Initiative as currently assessed by DAFWA; and
  - opportunities for the exploitation of native vegetation, especially sandalwood.
## Appendix B  Organisations consulted

The organisations, companies, groups and individuals shown in Table Appendix B-1 were consulted as part of the methodology for this Report. Their interest in the rangelands is also shown.

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Principal interest in the Rangelands</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australian Wildlife Conservancy</td>
<td>Conservation of Australian animal species and habitats through establishment and management of sanctuaries.</td>
</tr>
<tr>
<td>Bush Heritage Australia (BHA)</td>
<td>Conservation of rangelands through acquisition and management of land.</td>
</tr>
<tr>
<td>Chamber of Minerals and Energy (CME)</td>
<td>Representing interests involved in exploration and mining development in the rangelands. Representing companies that hold Pastoral Leases.</td>
</tr>
<tr>
<td>Consultants</td>
<td>Involved in delivering grazing management, fire management, and environmental management services to clients with interests in the rangelands.</td>
</tr>
<tr>
<td>Department of Agriculture and Food (DAFWA)</td>
<td>Research, Development, Extension and Regulation for the pastoral and horticultural industries in the rangelands.</td>
</tr>
<tr>
<td>Department of Indigenous Affairs (DIA)</td>
<td>Management of 29 mha of land on behalf of the Aboriginal Lands Trust including 6 PLs. Aboriginal heritage management on Pastoral Leasehold land.</td>
</tr>
<tr>
<td>Department of Mines and Petroleum (DMP)</td>
<td>Regulation of mineral and petroleum exploration and development in the rangelands. Encouragement of exploration and discovery of mineral and energy resources through the provision of geo-scientific information and informed land use planning.</td>
</tr>
<tr>
<td>Department of Water (DOW)</td>
<td>Water availability and licensing for irrigation projects on Pastoral Leases.</td>
</tr>
<tr>
<td>Environos Kimberley</td>
<td>Conduct of environmental management projects in the rangelands.</td>
</tr>
<tr>
<td>Environmental Protection Authority</td>
<td>Assessment of major projects in the rangelands, and development of environmental policies for rangelands.</td>
</tr>
<tr>
<td>Gascoyne Development Commission (GDC)</td>
<td>Economic and social development in the Gascoyne Region.</td>
</tr>
<tr>
<td>Goldfields Esperance Development Commission (GEDC)</td>
<td>Economic and social development in the Goldfields and Nullarbor Regions.</td>
</tr>
<tr>
<td>Goldfields Land and Sea Corporation</td>
<td>Assisting native title claimant with registration and determination of claims. Negotiation of future acts with other landholders. Support for Indigenous access to land.</td>
</tr>
<tr>
<td>Hon Wendy Duncan MLC</td>
<td>Parliamentary leadership of the Rangelands Reform Program.</td>
</tr>
<tr>
<td>Indigenous Land Corporation (ILC)</td>
<td>Management of Pastoral Leases held by ILC. Investment in training and employment of Indigenous people in the pastoral industry. Investment in Indigenous-held Pastoral Leases.</td>
</tr>
<tr>
<td>Kimberley Development Commission (KDC)</td>
<td>Economic and social development in the Kimberley Region.</td>
</tr>
</tbody>
</table>
### Appendix B - Organisations consulted

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kimberley Land Council (KLC)</td>
<td>Assisting native title claimant with registration and determination of claims. Negotiation of future acts with other landholders. Land use and management on Indigenous land in the Kimberley.</td>
</tr>
<tr>
<td>Pastoral Lands Board</td>
<td>The Pastoral Lands Board is a statutory authority established under Section 94 of the <em>Land Administration Act 1997</em> (WA), charged with administering Western Australian Pastoral Leases in accordance with Part 7 of this Act.</td>
</tr>
<tr>
<td>Pastoral leaseholders</td>
<td>Holders and managers of Pastoral Leasehold land for private gain. Compliance with requirements in the <em>Land Administration Act 1997</em>.</td>
</tr>
<tr>
<td>Pastoralists and Graziers Association (PGA)</td>
<td>Representing Pastoral Businesses and the pastoral industry to government and other stakeholders. Support for individual pastoralists in negotiations with third parties.</td>
</tr>
<tr>
<td>Rangelands NRM</td>
<td>Community-based environmental management throughout the rangelands.</td>
</tr>
<tr>
<td>Royal Flying Doctor Service (RFDS)</td>
<td>Medical services to remote centres and households on Pastoral Leases in WA.</td>
</tr>
<tr>
<td>Regional Development Trust</td>
<td>Advises the Minister for Regional Development and Lands on the Royalties for Regions Program.</td>
</tr>
<tr>
<td>The Concerned Rangeland Group</td>
<td>Rangeland condition and trend on Pastoral Leases, especially in the Southern Pastoral Region.</td>
</tr>
<tr>
<td>Tourism WA</td>
<td>Supporting development of tourism industry and opportunities in the rangelands.</td>
</tr>
<tr>
<td>Valuer-General’s Office (VGO)</td>
<td>Collation of Permit data, establishment of Permit rents.</td>
</tr>
<tr>
<td>Western Australian Indigenous Tourism Operators Council (WAITOC)</td>
<td>Represents Indigenous tourism operators in WA and encourages industry development.</td>
</tr>
<tr>
<td>Yamatji Marlipa Aboriginal Corporation (YMAC)</td>
<td>Assisting native title claimant with registration and determination of claims. Negotiation of future acts with other landholders.</td>
</tr>
</tbody>
</table>
## Appendix C  Native species with potential for cultivation

<table>
<thead>
<tr>
<th>Species</th>
<th>Product forms and uses</th>
<th>Production volume and market price</th>
<th>Supply status and trends</th>
<th>Markets and market trends</th>
<th>Production locations and constraints</th>
<th>Strengths/ opportunities</th>
<th>Weaknesses/ Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lemon Myrtle</td>
<td>- Dried and milled for use as a tea or spice, steam distilled for lemon myrtle essential oil.</td>
<td>1.4 million lemon myrtle trees</td>
<td>Oversupplied in 2004 and some growers ceased commercial operations due to lack of a market.</td>
<td>Almost 90% exported in dried form. US in major market for lemon myrtle, also EU. The Global Financial Crisis has had a dampening effect on lemon myrtle export demand.</td>
<td>Small scale in VIC, SA and WA. Most crops located in northern NSW and QLD. Moisture stress can affect production. Generally grown in wetter areas that have fewer droughts.</td>
<td>Commercial scale plantations</td>
<td>No internationally harmonised commodity description or coding system</td>
</tr>
<tr>
<td>Backhousia citriodora</td>
<td>- Used in place of lemongrass in cooking.</td>
<td>reportedly planted commercially in Australia with capacity to produce 2.100 tonnes per annum of fresh leaf, however, smaller growers report a significant gap between capacity and production.</td>
<td>- Price dependent on sale volume (Price /kilo of dried leaf)</td>
<td>- Recent international and national demand and new uses has resulted in greater demand and lack of commercial quantities to fill large orders. Smaller growers still report difficulty in selling at a profitable price.</td>
<td>- Most retail sales are for value added products of small volumes. Total farm gate value estimated between $6.95 million and $22.9 million and includes both dried leaf and essential oil.</td>
<td>Ease of growing</td>
<td>Myrtle rust is a major threat to supply</td>
</tr>
<tr>
<td></td>
<td>- Soaps, creams toothpaste, shampoos and conditioners.</td>
<td></td>
<td>- Wholesale $35-$50</td>
<td>- Market for anise myrtle less developed than for lemon myrtle.</td>
<td></td>
<td>Anti-fungal and anti-microbial properties</td>
<td>Lower cost overseas supply</td>
</tr>
<tr>
<td></td>
<td>- Health properties mean that it has potential as a functional food</td>
<td></td>
<td>- Medium scale $17-$30</td>
<td>- Larger grower outlook more</td>
<td></td>
<td>Market recognition of product and its health benefits</td>
<td>Synthetic and citral resources</td>
</tr>
<tr>
<td></td>
<td>- Potential as a natural food preservative</td>
<td></td>
<td>- Small scale $35-45</td>
<td>- Promotion of lemon myrtle’s functional food properties</td>
<td></td>
<td>Promotion of health benefits</td>
<td>Ongoing economic downturn in major markets</td>
</tr>
<tr>
<td></td>
<td>- Price dependent on sale volume (Price /kilo of dried leaf)</td>
<td></td>
<td>- Most retail sales are for value added products of small volumes. Total farm gate value estimated between $6.95 million and $22.9 million and includes both dried leaf and essential oil.</td>
<td>- Market for anise myrtle less developed than for lemon myrtle.</td>
<td></td>
<td>Promotion of health benefits</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Most retail sales are for value added products of small volumes. Total farm gate value estimated between $6.95 million and $22.9 million and includes both dried leaf and essential oil.</td>
<td></td>
<td></td>
<td>- Larger grower outlook more</td>
<td></td>
<td>Promotion of health benefits</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Market for anise myrtle less developed than for lemon myrtle.</td>
<td></td>
<td></td>
<td>- Promotion of lemon myrtle’s functional food properties</td>
<td></td>
<td>Promotion of health benefits</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Promotion of lemon myrtle’s functional food properties</td>
<td></td>
<td></td>
<td>- Potential for use as a natural preservative and use as a cleaning agent</td>
<td></td>
<td>Promotion of health benefits</td>
<td></td>
</tr>
<tr>
<td>Anise Myrtle</td>
<td>- Most growers also growing lemon myrtle. Most commercial plantings in northern NSW</td>
<td>most growers also growing lemon myrtle. Most commercial plantings in northern NSW</td>
<td>- Market for anise myrtle less developed than for lemon myrtle.</td>
<td>- Promotion of health benefits</td>
<td></td>
<td>Promotion of health benefits</td>
<td></td>
</tr>
<tr>
<td>Syzygium anisatum</td>
<td>- Strong and unique flavour profile</td>
<td>Most growers also growing lemon myrtle. Most commercial plantings in northern NSW</td>
<td>- Most growers also growing lemon myrtle. Most commercial plantings in northern NSW</td>
<td></td>
<td></td>
<td>Promotion of health benefits</td>
<td></td>
</tr>
<tr>
<td>(also known as aniseed</td>
<td>- Very limited consumer awareness</td>
<td>Most growers also growing lemon</td>
<td>- Most growers also growing lemon myrtle. Most commercial plantings in northern NSW</td>
<td></td>
<td></td>
<td>Promotion of health benefits</td>
<td></td>
</tr>
<tr>
<td>and Ringwood)</td>
<td>- Leaves may be used fresh but usually dried and ground for use as a spice or tea. Distilled as an essential oil for use</td>
<td>myrtle. Most commercial plantings in northern NSW</td>
<td>- Most growers also growing lemon myrtle. Most commercial plantings in northern NSW</td>
<td></td>
<td></td>
<td>Promotion of health benefits</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- In 2010, total annual anise myrtle production was between 6 and 10 tonnes of dried leaf and 0.7-1 tonne of oil.</td>
<td>most growers also growing lemon myrtle. Most commercial plantings in northern NSW</td>
<td>- Market for anise myrtle less developed than for lemon myrtle.</td>
<td>- Promotion of health benefits</td>
<td></td>
<td>Promotion of health benefits</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- In 2011, oversupplied for existing markets.</td>
<td>most growers also growing lemon</td>
<td>- Most growers also growing lemon myrtle. Most commercial plantings in northern NSW</td>
<td></td>
<td></td>
<td>Promotion of health benefits</td>
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<td>myrtle. Most commercial plantings in northern NSW</td>
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<td></td>
<td></td>
<td>Promotion of health benefits</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Benefit of consumer awareness</td>
<td>Most growers also growing lemon</td>
<td>- Most growers also growing lemon myrtle. Most commercial plantings in northern NSW</td>
<td></td>
<td></td>
<td>Promotion of health benefits</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Lack of market development</td>
<td>myrtle. Most commercial plantings in northern NSW</td>
<td>- Most growers also growing lemon myrtle. Most commercial plantings in northern NSW</td>
<td></td>
<td></td>
<td>Promotion of health benefits</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Myrtle rust (some ...)</td>
<td>Most growers also growing lemon</td>
<td>- Most growers also growing lemon myrtle. Most commercial plantings in northern NSW</td>
<td></td>
<td></td>
<td>Promotion of health benefits</td>
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</tr>
<tr>
<td></td>
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<tr>
<td>Species</td>
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<td>Production locations and constraints</td>
<td>Strengths/ opportunities</td>
<td>Weaknesses/Threats</td>
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<td>------------------------------------------------------------------------------------------</td>
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<td>------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Bush tomato
Solanum
central (Also known as desert raisin and kutjera.) | - Traded dried, either whole or ground into a powder.
- Bush tomato is used as a spice, and processed into a range of value-added products including herb blends, pasta, relishes etc. | - In 2002 and 2003, volumes of 7-10 tonnes were reported. Total volume was estimated at 15-20 tonnes more recently but based on high yield years.
- Farm gate prices $32-40/kilo in 2011, some reports as high as $45/kilo
- Retail price for dried bush tomato (whole or ground) $55-$80 per kilo.
- Smaller quantities 50-100g retail $20/100 g
- Based on average farm gate price of $36 and annual volume of 15 tonnes, total industry farm gate value is | - Demand has increased in recent years and significantly outstrips supply.
- Erratic supply of wild harvested bush tomato convinced many in industry that cultivation needed for commercial success. | - Bush tomato is highly marketable and there is ongoing increase in demand.
- Used extensively in the native food service and catering industries.
- Speciality tourist and food shops are a major market for bush tomato products and mainstream supermarket sales have been established.
- Export market is also important for the bush tomato industry. | - Native to WA, NT and northern SA. Also grown in central and coastal SA and western NSW.
- Plots in cooler areas less successful
- Commercial plantations at Kingston and Eudunda in SA and in Aboriginal communities in NT and SA. | - Unique flavour, well regarded by food industry and popular with consumers.
- Intensively flavoured food additive.
- Rich source of iron and selenium.
- Low sodium to potassium ratio which may assist in lowering hypertension. | - Development of varieties that are easier to grow and more profitable.
- Improved harvest methods, education and awareness and market development.
- Enrichment trial | - Wild harvest supply highly variable
- Lack of purpose built harvest and post-harvest technologies.
- Difficult to get regular hand harvest labour
- Other species of similar appearance and the green form are poisonous
- Cost and difficulty of establishing large-scale plantings and low yield of seed raised plants.
- Lack of traceability along the supply chain.
- Loss of Indigenous

- Price dependent on sale volume (price/kilo of dried and ground):
  - Wholesale $50-$60
  - Retail $60-70
  - Farm gate $27-45
- Price for essential oil (price/kilo):
  - Wholesale $300-$400
  - Retail $400-450
  - Farm gate $130-150

- Favourable with servicing export markets.
- Market demand in SE QLD with one or two in SA and WA.

- Invest and track market development pathway used by lemon myrtle.
- Report aniseed myrtle more susceptible)
### Native species with potential for cultivation

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| Quandong Santalum acuminatum (Also known as desert peach, native peach or wild peach.) | • Eaten fresh but predominantly used as processed fruit.  
• Kernal is also edible and very nutritious but rarely used commercially.  
• Traded frozen or dried.  
• Outstanding antioxidant capacity, high levels of folate, vitamin E and vitamin C and are good sources of magnesium, zinc and iron. | $540,000. | • Quality and volume depend on weather conditions.  
• Consistent production of large volumes of premium quality fruit has eluded the quandong industry.  
• As majority of quandong trees under cultivation have grown from seedlings, colour, yield, size, taste and strength of skin can vary significantly. | • Wide natural distribution in SA, WA, NSW and VIC from arid desert areas to coastal regions.  
• Smaller numbers in QLD and NT.  
• Plant tolerant of drought and salinity and prefer light and low relative humidity.  
• Commercial plantings in SA, NSW, VIC and small plantations near Alice Springs in NT.  
• Around 25 commercial quandong growers, several large enterprises >1000 trees but most plantations are small with >500 trees. | | • High recognition and saleability for first class fruit.  
• Improved cultivars required.  
• Potential for co-plating with host species with second revenue stream (e.g. wattle seed).  
• The quandong closely related to the fragrant sandalwood, potential for co-planting.  
• Use in farm revegetation projects.  
• Overseas market development for premium quality fruit. | • Cultivation challenge of managing of host-plant relationship.  
• Quandong moth significant pest.  
• Difficulty of cultivation.  
• Lack of market development, especially for premium fruit.  
• Slow growing.  
• Variability in yield and quality.  
• Expense and difficulty of labour for picking. |