Northern Territory Government

# Pastoral Land Board

## Annual Report 2007/08

# Contents

# Chairman's Foreword

The Annual Report of the Pastoral Land Board for 2007/08 covers the period 1 October 2007 to 30 September 2008 in line with a seasonal reporting period approved by the Minister in May 2005. The Board is conscious that this report is delivered well after the reporting period and has addressed the need to accelerate the process.

The Northern Territory pastoral estate is about 606,000 $km^2$ in size. The gross value of production for the NT cattle industry was estimated at $212.9 million in 2007, which represents approximately 42% of the total value of the Territory's rural industries and fisheries production.

One of the important functions of the Pastoral Land Board is to monitor the condition and use of pastoral land to facilitate its sustainable use and the economic viability of the industry in accordance with the objects of the *Pastoral Land Act*. The Board is committed to the maintenance of the condition of the Territory's pastoral land and, where possible, its improvement.

Based on analysis of the Tier 1 monitoring data and basic Landscape Function Analysis (LFA) the Darwin, Katherine, Roper, Victoria River, Sturt Plateau, Gulf and Barkly pastoral districts are considered to be stable. Tennant Creek, Plenty, Northern Alice Springs and Southern Alice Springs pastoral districts are considered to be declining in condition. Continued below average rainfall within these districts has significantly contributed to the persistent decline of landscape function. Increasing feral camel numbers and high stock numbers also contributed to the reduced pasture biomass during the 2007/08 reporting period. Relevant departmental officers have engaged with pastoral lessees to implement appropriate land management responses. The Board will continue to actively monitor land condition issues in Central Australia.

The Board thanks its Executive Officer, Ms Judy Bartolo, and officers of the Natural Resources Division, Department of Natural Resources, Environment, the Arts and Sport (NRETAS) who have given the Board invaluable support, assistance and advice. In particular the Board acknowledges the role of staff within the Land Resources Branch who are responsible for the continued operation and implementation of the pastoral land monitoring programs.

**Anthony Young**

Chairman

Pastoral Land Board

14 April 2010

# Membership of the Board

### Chairman

| | |
|---|---|
| Anthony David Young | 3 year term – expiring 25 June 2010 |

### Members

| | |
|---|---|
| Colleen Marie Costello | 3 year term – expiring 25 June 2011 |
| Steven Craig | 3 year term – expiring 25 June 2011 |
| Michael Francis Quirk | 3 year term – expiring 25 June 2010 |
| Thomas George Henry Stockwell | 3 year term – expiring 25 June 2011 |

### Executive Officer

Judy Bartolo

# Functions of the Board

Section 29 of the *Pastoral Land Act* outlines the functions of the Board:

[a] to report regularly to, and as directed by, the Minister, but in any case not less than once a year, on the general condition of pastoral land and the operations of the Board;
[b] to consider applications for the subdivision or consolidation of pastoral land and make recommendations to the Minister in relation to them;
[c] to plan, establish, operate and maintain systems for monitoring the condition and use of pastoral land on a District or other basis;
[d] to assess the suitability of proposed new pastoral leases over vacant Crown land;
[e] to direct the preparation, and monitor the implementation of, remedial plans;
[f] to monitor, supervise or cause to be carried out work in relation to the rectification of degradation or other damage to pastoral land;
[g] to monitor the numbers and effect of stock and feral and other animals on pastoral land;
[h] to monitor and administer the conditions to which pastoral leases are subject;
[j] to make recommendations to the Minister on any matter relating to the administration of the Act;
[k] to hear and determine all questions, and consider and make recommendations on all matters, referred to it by the Minister; and
[m] such other functions as are imposed on it by or under the *Pastoral Land Act* or any other Act or as directed by the Minister.

Other functions outlined in the Act include:

i. to determine applications for clearing pastoral land [section 38(1)(h)]
ii. to consider breaches of conditions referred by the Minister [section 41]
iii. to consider and make recommendations to the Minister on applications for conversion of term pastoral leases to perpetual tenure [section 62]
iv. to administer the access provisions of the Act, including nomination of access routes under PART 6
v. to determine applications for non pastoral use of pastoral land [PART 7].

# Meetings of the Board held during 2007/08

Four meetings of the Pastoral Land Board were held during 2007/08. In addition to these meetings, 15 matters were determined out of session and three applications were considered by sub-committees of the Board with relevant property inspections.

### 74th Meeting: held in Darwin on 11 October 2007

The Board determined one application to clear pastoral land, a non pastoral use application and gave further consideration to an application to convert a term lease to perpetual tenure and its recommendation to the Minister. Development plans for two term leases were also endorsed and the Board gave preliminary consideration to a subdivision application. Other matters discussed included unauthorised land clearing undertaken on a pastoral lease, requirements for clearing of regrowth and buffers to be retained adjacent to property boundaries and a review of the VRD Feral Animal program and procedures for notices.

### 75th Meeting: teleconference held on 31 March 2008

The Board determined one application to clear pastoral land, gave preliminary consideration to two subdivision applications and further consideration of a revised subdivision application. The Board also discussed requirements for wildlife corridors associated with clearing on pastoral land.

### 76th Meeting: teleconference held on 24 July 2008

The Board gave further consideration to a subdivision application and its recommendation to the Minister.

### 77th Meeting: held in Darwin on 3 & 4 September 2008

The Board determined two applications to clear pastoral land, gave further consideration to a subdivision application and its recommendation to the Minister, preliminary consideration to a subdivision application and two applications to convert to perpetual tenure, and resolved its recommendation to the Minister in respect of a further application to convert a term lease to perpetual tenure. The Board also considered a voluntary management plan to address land condition issues on one property.

The Board discussed its role and priorities within available resources. Discussions were held with NRETAS officers on requirements for wildlife corridors associated with clearing on pastoral land. Briefings were also given on estimating greenhouse gas emissions resulting from pastoral land clearing and the status of the VRD Feral Animal program.

# Policy Issues and New Initiatives

### Moratorium on Land Clearing in the Daly Region

No applications to clear pastoral land within the 'Daly Region' were lodged during 2007/08.

### Review of the *Pastoral Land Act*

A review of the *Pastoral Land Act* commenced in July 2004 with the release of a discussion paper. A Key Issues paper was issued in December 2004 which summarised issues raised during the consultation period. A Steering Committee was then established which included members of the Pastoral Land Board and relevant departmental officers to oversee the review process. A recommendation paper was prepared by the Steering Committee in May 2006 and released to stakeholders who had lodged submissions to the Key Issues paper. The Board had no further input to the review of the *Pastoral Land Act* during 2007/08.

### Guidelines for use of Introduced Pastures in Pastoral Lease Development

During 2005/06 the Board developed draft guidelines for the use of introduced pasture species in pastoral lease development. Further development and implementation of the guidelines was deferred pending review of the *Pastoral Land Act* and possible legislative amendments. No further progress was made during 2007/08 as the review of the *Pastoral Land Act* has not yet been completed.

### Requirements for Wildlife Corridors associated with Clearing on Pastoral Land

During 2007/08 discussions were held with NRETAS officers (Biodiversity Conservation and Land Resources) on requirements for wildlife corridors associated with clearing on pastoral land and provisions of the NT Land Clearing Guidelines. General agreement was reached that a benchmark of 500 ha was appropriate for clearing on pastoral land before a wildlife corridor was required.

# Pastoral Land Monitoring Programs

The Pastoral Land Board, the pastoral industry and the Northern Territory government are working together to maintain or improve the condition of the Territory's pastoral land. This land, held as pastoral leases, comprises around 45% of the Territory. Maintenance of this natural resource in good condition is essential for a profitable and sustainable pastoral industry.

Monitoring and reporting on the condition of pastoral land is a key function of the Pastoral Land Board under the *Pastoral Land Act.* The Board is also responsible for instigating remedial action to restore pastoral land condition. In support of the Board, NRETAS operates a two-tiered pastoral land monitoring system. Both tiers of the monitoring program aim to assist pastoralists in making better management decisions.

The Tier 1 program uses photos and visual assessment of photo-point sites to assess pastoral land condition and changes in condition over time. Pastoralists are encouraged to use the photo-point sites to become more aware of pasture plants and the level of pasture use by stock. This in turn will help them better manage their livestock and land.

Tier 2 programs are designed to provide an objective assessment of pastoral land condition using remote sensing and ground-based assessment methods. Currently, only a small percentage of pastoral land is monitored and updated annually using Landsat satellite data. A project to develop a monitoring program across the whole of the NT using MODIS (Moderate Resolution Imaging Spectroradiometer) satellite imagery to provide annual updates of land condition commenced in March 2007.

### Establishment and Reassessment of Tier 1 Photo-Point Monitoring Sites

The Tier 1 monitoring program commenced in 1993. By 30 September 2008, a total of 2291 Tier 1 photo-point monitoring sites had been established on 228 properties, which included 115 monitoring sites on 15 properties held under other tenure such as Crown leases and Aboriginal land. Of this total, 2,244 sites are considered to be active, with monitoring data routinely collected under the monitoring program. Generally, at least one site is located in each paddock on a preferred grazing land system. These sites provide a bench mark for pastoralists to assess pasture changes over time.

During 2007/08 a total of 460 monitoring sites were reassessed on 56 properties and 34 new monitoring sites were established on Aboriginal land (refer Table 1).

| Pastoral District | Total No. of Sites | No. of Properties [with Tier 1 sites] | Average Sites/Property | New Sites Established 2007/08 | Reassessed 2007/08 Sites | Reassessed 2007/08 Properties |
|---|---|---|---|---|---|---|
| **Darwin** 21 Pastoral Leases | **144** | **21** | **7** | **0** | **48** | **11** |
| **Katherine** 7 Pastoral Leases | **49** | **7** | **7** | **0** | **9** | **1** |
| **Roper** 10 Pastoral Leases | **51** | **10** | **5** | **0** | **23** | **6** |
| **VRD** 25 Pastoral Leases | **338** | **25** | **14** | **0** | **130** | **13** |
| **Sturt Plateau** 27 Pastoral Leases | **180** | **26** | **7** | **0** | **35** | **4** |
| **Gulf** 18 Pastoral Leases | **112** | **17** | **7** | **0** | **6** | **1** |
| **Barkly** 31 Pastoral Leases | **447** | **31** | **14** | **0** | **77** | **4** |
| **Tennant Creek** 8 Pastoral Leases | **80** | **8** | **10** | **0** | **28** | **4** |
| **Plenty** 14 Pastoral Leases | **157** | **14** | **11** | **0** | **0** | **0** |
| **Northern Alice Springs** 30 Pastoral Leases | **340** | **30** | **11** | **0** | **50** | **4** |
| **Southern Alice Springs** 26 Pastoral Leases | **278** | **24** | **12** | **0** | **54** | **5** |
| **Other Tenure** **All Pastoral Districts** Aboriginal Land and Crown Leases | **115** | **15** | **8** | **34** | **0** | **3** |
| **Totals** | **2291** | **228** | **10** | **34** | **460** | **56** |

*Table 1: Tier 1 Photo-point Monitoring Sites established and reassessed 2007/08 (1 October 2007 – 30 September 2008)*

# Pastoral District Reports 2007/08

## General Definition of Land Condition

A general definition of landscape condition is provided by the Commonwealth Land and Water Audit (2001) "as a value judgement related to the worth of a landscape for a particular use". In the Northern Territory, where maintaining natural pastures is a primary goal of sustainable pastoral management, landscape condition is most usefully defined in terms of the ability of the land to maintain productivity for future generations. Land condition in the Northern Territory pastoral estate can best be described by three main indicators:

- The distribution of water and nutrients in a landscape often scarce in these essential components, which in turn affects,
- The productivity and composition of pasture plant species, and
- The presence of feral animals and noxious weeds.

## Criteria used to assess Pasture Condition

Three condition classes are used to assess pasture condition (good, fair and poor). These classes are based on indicators of pasture condition such as the abundance of perennial plants known to increase or decrease following grazing, and ground surface indicators such as the exposure of bare soil to wind and water and its subsequent erosion. These indicators of pasture condition and associated assessment criteria have largely been determined from historical information, local knowledge, cross fence comparisons and stock grazing gradients out from water. The further from water the less intense the stock grazing pressure and the higher the condition class rating tends to be.

The condition classes can be described as follows:

**Good:** There is close to maximum diversity and cover of annual and perennial plant species possible for that pasture type with perennial species of various ages. There is no active erosion other than natural features and processes. Plant and litter cover protects the soil from wind and water in all seasons except following fire.

Pastures in good condition are stable and at or close to their productive potential. Pastoral managers should be aiming for good pasture condition, which necessitates careful management practices that maintain or improve pasture condition.

**Fair:** Reduced cover and regeneration of palatable perennial species and there has been some establishment of less preferred unpalatable plants. Productivity remains high in good seasons but is markedly reduced in dry seasons. Lower plant cover increases the susceptibility of soil to erosion in most seasons and there is evidence of moderate erosion on susceptible land types.

Pastures in fair condition are productive, but below their productive potential. They are sometimes actively eroding and can rapidly deteriorate to poor condition. Maintaining pastures in fair condition is not a satisfactory status quo, as long term damage to their productive capacity will result. They should be managed with the aim of improving condition and ultimately achieving good condition status.

**Poor:** The palatable component of the pasture is depleted and the pasture is dominated by annual, ephemeral and unpalatable perennial species. There is no, or markedly reduced, regeneration of desirable perennial plants, productivity is impaired and the seasonal response is poor. Soils are unstable and susceptible to erosion in all seasons and past erosion leaves the site susceptible to further soil movement if grazed.

Pastures in poor condition have severely reduced productivity, which is often especially telling during dry periods. They require a very long period of spelling to improve condition or mechanical intervention such as erosion control earthworks or reseeding may be required.

## Change in Landscape Function (LF) Index

Assessing change in landscape function (landscape 'health') over time can assist in understanding if natural processes or grazing management practices are impacting upon pastoral district or individual station condition. Landscape function describes the capacity of landscapes to regulate (i.e. capture and retain, not leak) rainwater and nutrients, the vital resources for plant growth (Ludwig et al. 1997).

Functional landscapes have a good cover and arrangement of persistent vegetation patches (typically perennial vegetation) such that much of the rainfall is retained and is able to infiltrate the soil, and as there is little runoff, there is limited movement of sediment and loss of entrained nutrients, organic matter (litter) and seeds. Similarly, the good cover and arrangement of vegetation patches minimises wind erosion and loss of nutrients in dust. As patch cover decreases and patches become more distant, runoff increases resulting in lower infiltration and increased nutrient loss in transported sediments (i.e. erosion). These eroding landscapes become progressively more dysfunctional, i.e. have reduced landscape function. The composition of species contributing to pasture biomass (dry weight basis) is estimated at Tier 1 sites. Estimates are adjusted for any grazing that has occurred. The percentage area of bare ground is also estimated so that % ground cover can be calculated as 100 - % bare ground. These two data types have been combined to produce an index of landscape function, therefore potential 'health' of the pastoral districts.

The Richards-Green Functionality Index (RGFI) is a procedure for deriving an index of landscape functionality from data collected at monitoring sites, in the absence of more robust data collected through formal landscape function analysis. The index is based on vegetation and soil attributes that, in combination, contribute to increased retention of rainwater and nutrients as resources for the growth and persistence of plants. These attributes include perennial grass density, vegetation cover and soil surface conditions favourable to water infiltration and retention, nutrient cycling and surface soil stability.

Estimated ground cover has been weighted by the proportion of perennial grasses present (i.e. cover comprised of a high proportion of perennial grasses is assumed to contribute more to improved landscape function than a site with an equivalent cover of annual or ephemeral species).

## Darwin Pastoral District Report 2007/08

**Land condition in the Darwin Pastoral District is relatively stable.**

| **Rainfall Darwin District** | |
|---|---|
| 20 year district average<br>1329 mm | 2007/08 district annual average<br>1737 mm |
| 20 year district average summer (October to April)<br>1246 mm | 2007/08 district average summer (October to April)<br>1722 mm |
| 20 year district average winter (May to September)<br>83 mm | 2006/07 district average winter (May to September)<br>15 mm |

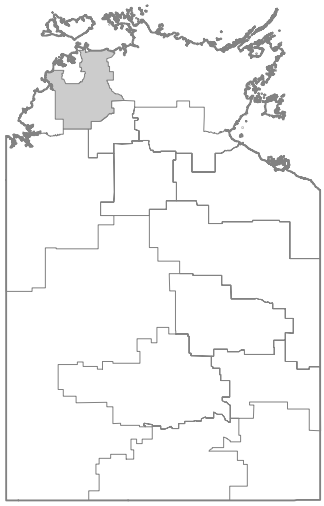

***Figure 1: Location of Darwin Pastoral District***

Tier 1 data collection was undertaken on 11 properties in the Darwin Pastoral District during 2007/08 and 48 sites were re-assessed. Land condition on the properties reassessed has generally remained stable with a decrease in the number of sites considered in good condition and an increase in sites considered in fair condition (Figure 2).

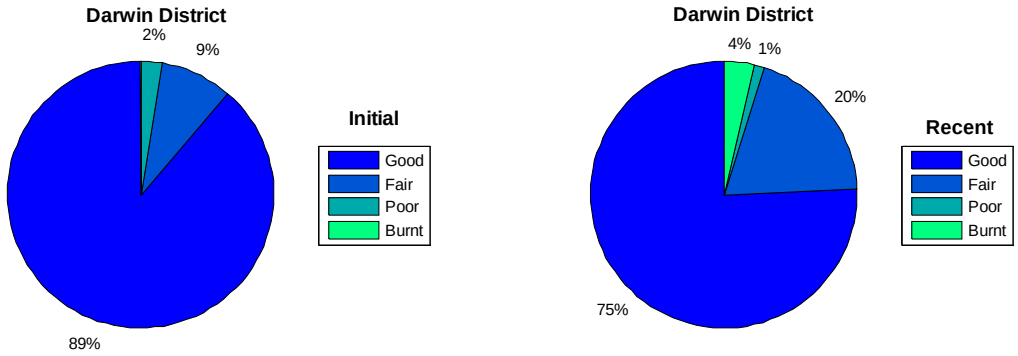


***Figure 2: Darwin Pastoral District condition assessed at establishment in 1997-2000 derived from 48 sites compared to condition assessed at the most recent visit in 2007 /08 derived from the same 48 sites.***

The Landscape Function Index (Figure 3) of sites within the Darwin District indicates a reasonably high level of landscape function, with a general trend for minimal change in perennial biomass and cover suggesting the region is reasonably stable from a landscape function perspective, indicative of a district trend of stable condition.

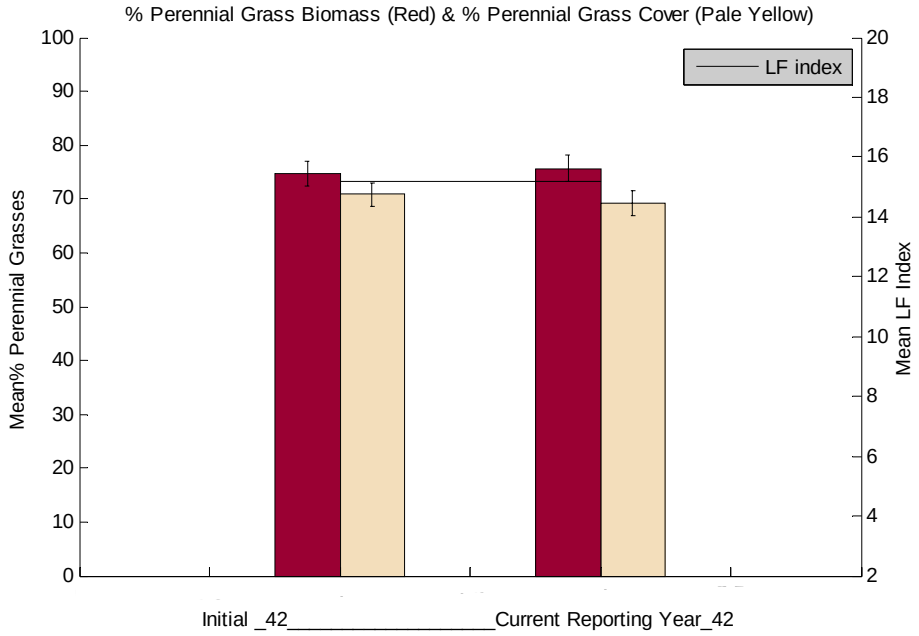


***Figure 3: Darwin Pastoral District trend of mean % perennial biomass, mean % perennial cover and mean Landscape Function Index from initial assessments to 2007/08 reassessments.***

## Katherine Pastoral District Report 2007/08

**Land condition in the Katherine Pastoral District is stable.**

| **Rainfall Katherine District** | |
|---|---|
| 20 year district average<br>1097 mm | 2006/07 district annual average<br>1209 mm |
| 20 year district average summer (October to April)<br>1051 mm | 2006/07 district average summer (October to April)<br>1206 mm |
| 20 year district average winter (May to September)<br>46 mm | 2006/07 district average winter (May to September)<br>3 mm |

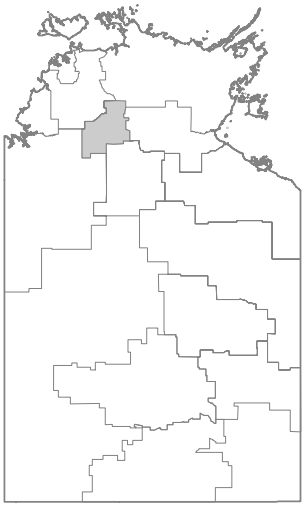

***Figure 4: Location of Katherine Pastoral District***

Tier 1 data collection was undertaken on one property in the Katherine Pastoral District during 2007/08 and nine sites were re-assessed. Land condition on this one property had improved with an increase of sites considered in good condition (Figure 5).

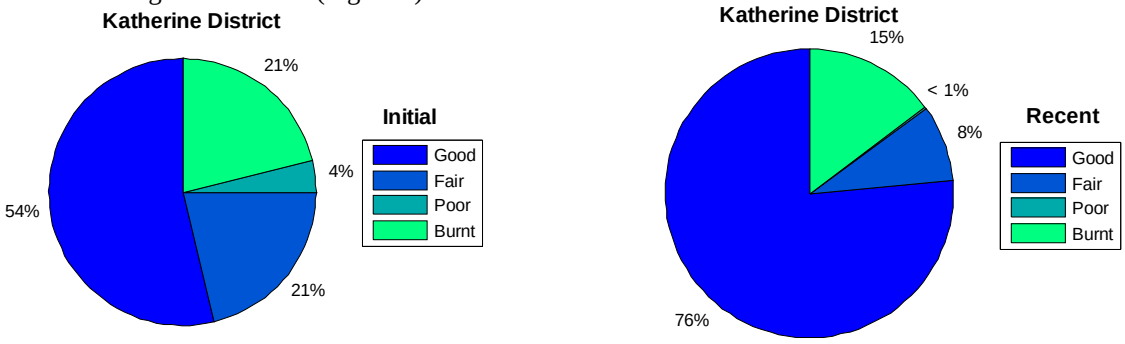


***Figure 5: Katherine Pastoral District condition assessed at establishment in 1993 derived from 9 sites compared to condition assessed at the most recent visit in 2007 /08 derived from the same 9 sites.***

The landscape function levels of the Katherine District have increased consistently since the sites were first assessed. This can be attributed to consistently average to above average seasonal conditions experienced throughout the district. Both perennial grass biomass and cover levels have increased across the sites assessed.
Due to a lack of suitable sites (only 9 sites reassessed 2007/08) landscape function analysis was calculated using the most recent assessment of sites across the District, including the 9 site reassessments for 2007/08.

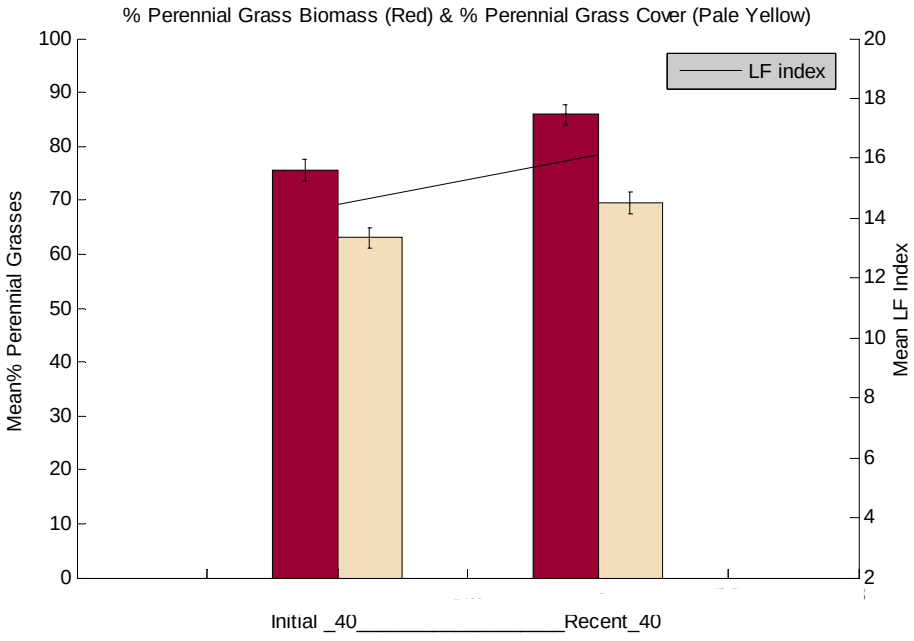


***Figure 6: Katherine Pastoral District trend of mean % perennial biomass, mean % perennial cover and mean Landscape Function Index from initial assessments to recent reassessments.***

## Roper Pastoral District Report 2007/08

**Land condition in the Roper Pastoral District is stable.**

| Rainfall Roper District | |
|---|---|
| 20 year district average<br>920 mm | 2007/08 district annual average<br>938 mm |
| 20 year district average summer (October to April)<br>881 mm | 2007/08 district average summer (October to April)<br>937 mm |
| 20 year district average winter (May to September)<br>39 mm | 2007/08 district average winter (May to September)<br>1 mm |

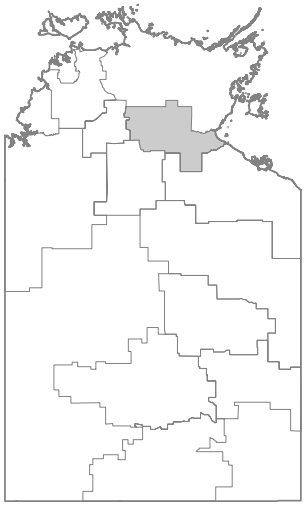

*Figure 7: Location of Roper Pastoral District*

Tier 1 data collection was undertaken on 6 properties in the Roper Pastoral District during 2007/08 and 23 sites were re-assessed. Figure 8 shows a slight increase in the number of sites assessed in good condition.

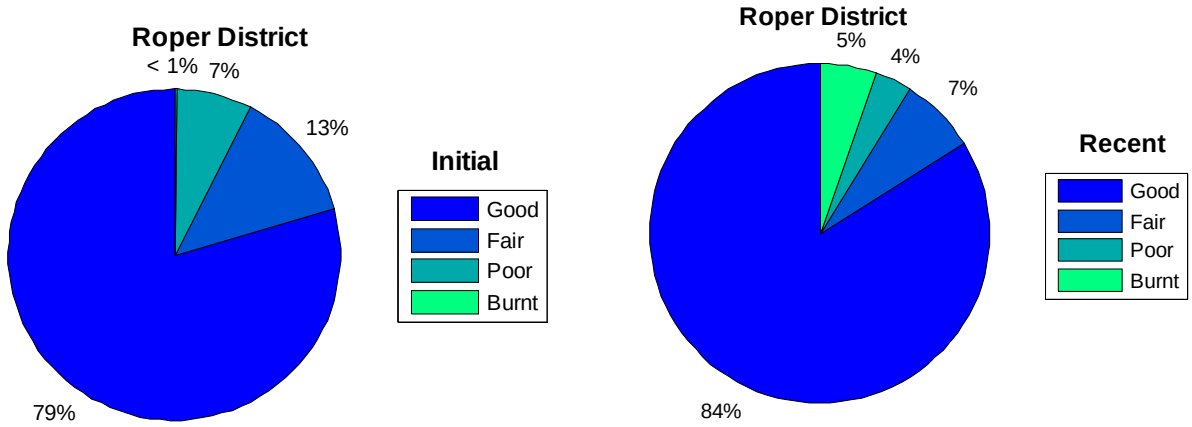


*Figure 8: Roper Pastoral District condition assessed at establishment in 1993 derived from 23 sites compared to condition assessed at the most recent visit in 2007 /08 derived from the same 23 sites.*

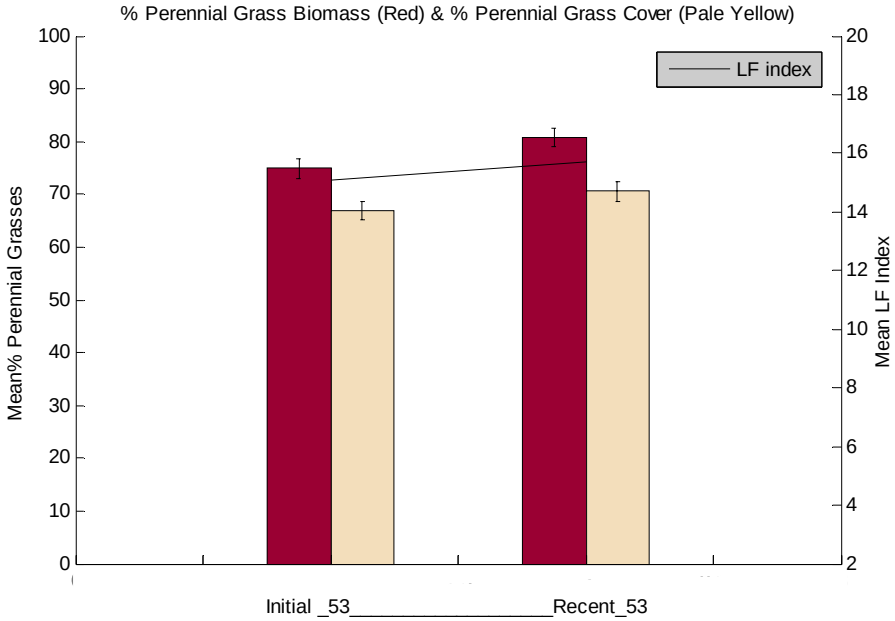


*Figure 9: Roper Pastoral District trend of mean % perennial biomass, mean % perennial cover and mean Landscape Function Index from initial assessments to the most recent reassessments.*

Due to lack of suitable sites (14 of 23 sites suitable for LFI analysis); landscape function analysis was calculated using the most recent assessment of sites across the District, including site assessments for 2007/08. The Landscape Function Index (Figure 9) trend of sites within the Roper District tends to indicate a reasonably high level of landscape function, with a general trend towards a slight increase in perennial grass biomass and cover, accompanying a slight increase in LF index. This suggests the region is reasonably stable to improving from a landscape function perspective, indicative of a district trend of stable - improving condition.

## VRD Pastoral District Report 2007/08

**Land condition in the VRD Pastoral District is stable and improving.**

| **Rainfall VRD District** | |
|---|---|
| 20 year district average<br>772 mm | 2007/08 district annual average<br>708 mm |
| 20 year district average summer (October to April)<br>734 mm | 2007/08district average summer (October to April)<br>696 mm |
| 20 year district average winter (May to September)<br>38 mm | 2007/08 district average winter (May to September)<br>12 mm |

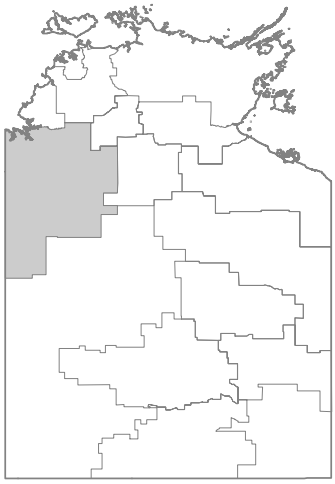

***Figure 10: Location of VRD Pastoral District***

Tier 1 data collection was undertaken on 13 properties in the Victoria River District during 2007/08 and 130 sites were re-assessed. Figure 11 shows land condition is stable and improving.

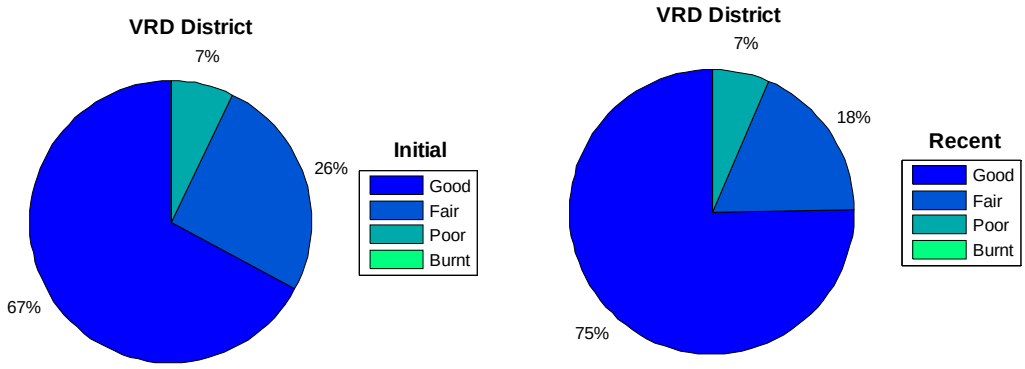


***Figure 11: Victoria River District condition assessed at establishment in 1993 derived from 130 sites compared to condition assessed at the most recent visit in 2007 /08 derived from the same 130 sites.***

From the establishment date to the present reporting period, the VRD District has seen a consistent assessment of stable to improving landscape condition. This is the result of average to above average seasonal conditions with unprecedented levels of plant growth and biomass. In recent years, particularly the last reporting period, the district experienced lower rainfall levels than those of the preceding years.

As shown in Figure 12, landscape function has remained stable with slight increases. The 2007/08 reporting year reflected favourable seasonal conditions with slightly increasing levels of perennial biomass coupled with stable levels of perennial cover.

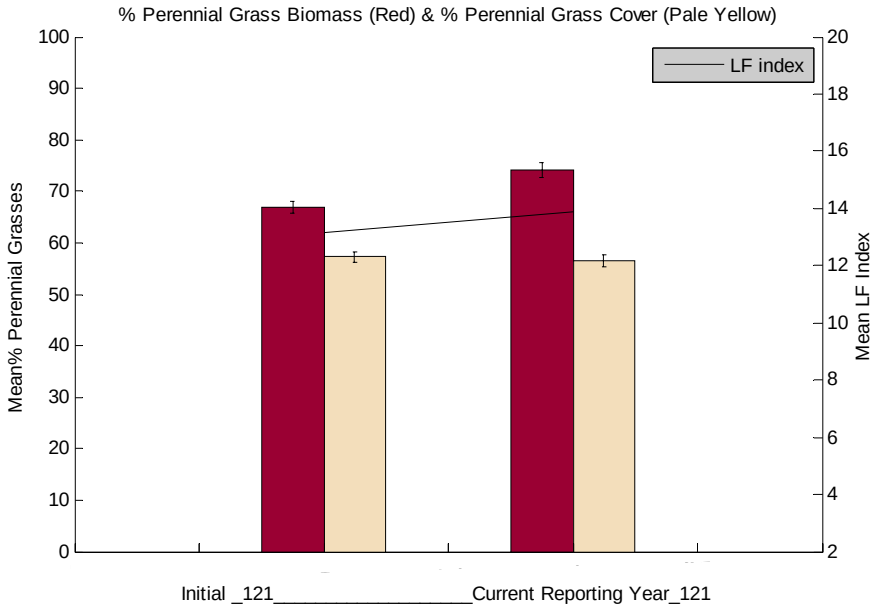


***Figure 12: Trend of sites assessed within Victoria River District of mean % perennial biomass, mean % perennial cover and mean Landscape Function Index from initial assessments to 2007/08 reassessments.***

## Sturt Plateau Pastoral District Report 2007/08

**Land condition in the Sturt Plateau Pastoral District is good.**

| **Rainfall Sturt Plateau District** | |
|---|---|
| 20 year district average<br>778 mm | 2007/08 district annual average<br>416.65 mm |
| 20 year district average summer (October to April)<br>747 mm | 2007/08 district average summer (October to April)<br>416.45 mm |
| 20 year district average winter (May to September)<br>31mm | 2007/08 district average winter (May to September)<br>0.2 mm |

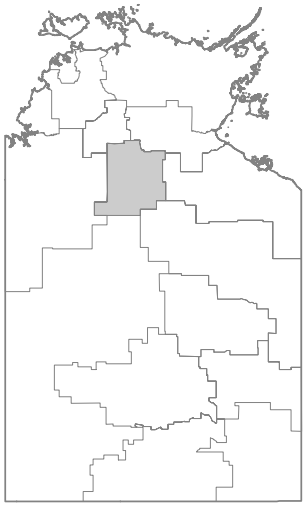

***Figure 13: Location of Sturt Plateau Pastoral District***

Tier 1 data collection was undertaken on 4 properties in the Sturt Plateau District during 2007/08 and 35 sites were re-assessed. Figure 14 shows land condition is good.

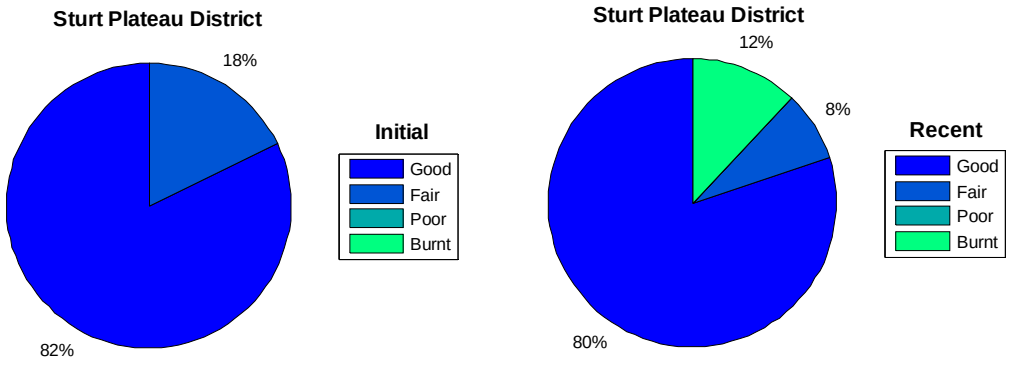


***Figure 14: Sturt Plateau Pastoral District condition assessed at establishment in 1993-2004 derived from 35 sites compared to condition assessed at the most recent visit in 2007/08 derived from the same 35 sites.***

Increasing landscape function, perennial biomass and stable perennial cover have been consistent trends for sites across the region since sites were established. Figure 15 highlights effects of favourable seasonal conditions and development of leases with current best practice principles.

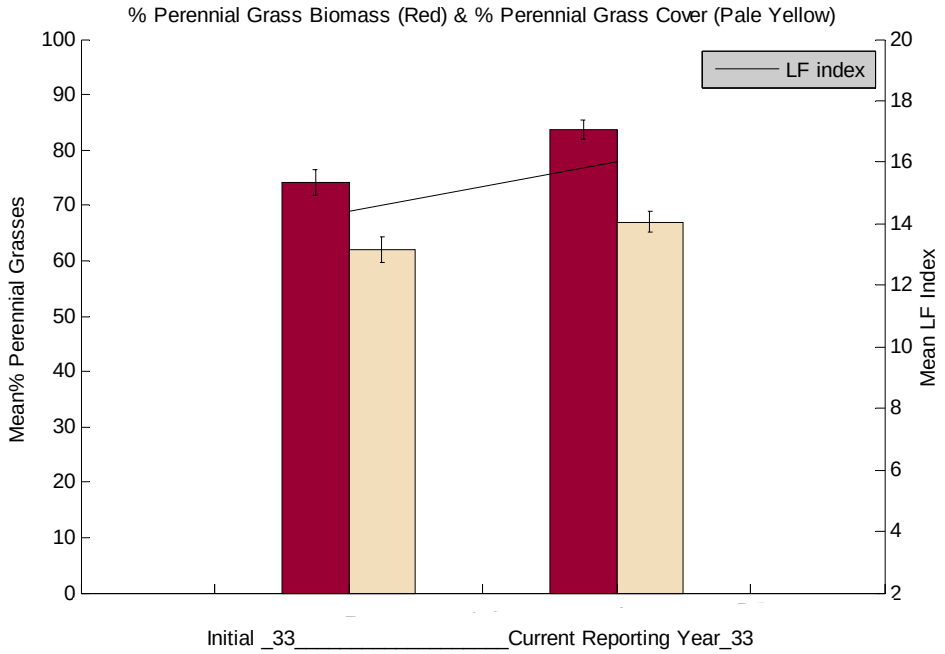


***Figure15: Trend of sites assessed within Sturt Plateau District of mean % perennial biomass, mean % perennial cover and mean Landscape Function Index from initial assessments to 2007/08 reassessments.***

## Gulf Pastoral District Report 2007/08

**Land condition in the Gulf Pastoral District is stable.**

| **Rainfall Gulf District** | |
|---|---|
| 20 year district average<br>763 mm | 2007/08 district annual average<br>460 mm |
| 20 year district average summer (October to April)<br>728 mm | 2007/08 district average summer (October to April)<br>458 mm |
| 20 year district average winter (May to September)<br>35 mm | 2007/08 district average winter (May to September)<br>2 mm |

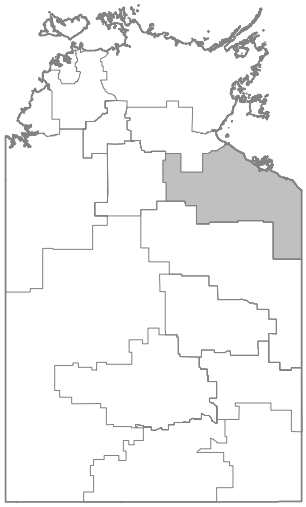

***Figure 16: Location of Gulf Pastoral District***

Tier 1 data collection during 2007/2008 was confined to six sites on one property in the far west of the region. Figure 17 shows land condition for this one property.

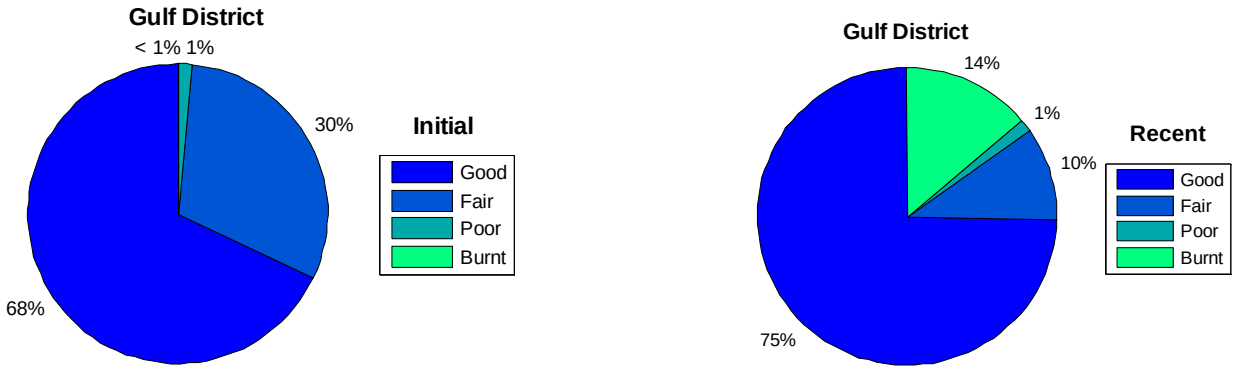


***Figure 17: Gulf Pastoral District condition assessed at establishment (1995 – 2001) derived from 6 sites compared to condition assessed at the most recent visit in 2007/08 derived from the same 6 sites.***

Due to lack of suitable sites (4 of the 6 sites suitable for LFI analysis) landscape function analysis was calculated using the most recent assessment of sites across the District, including site assessments for 2007/08.

The Landscape Function (Figure 18) trend of sites within the Gulf District tends to indicate a reasonably high level of landscape function, with a general trend for minimal change in perennial biomass and cover suggesting the region is reasonably stable from a landscape function perspective, indicative of a district trend of stable condition.

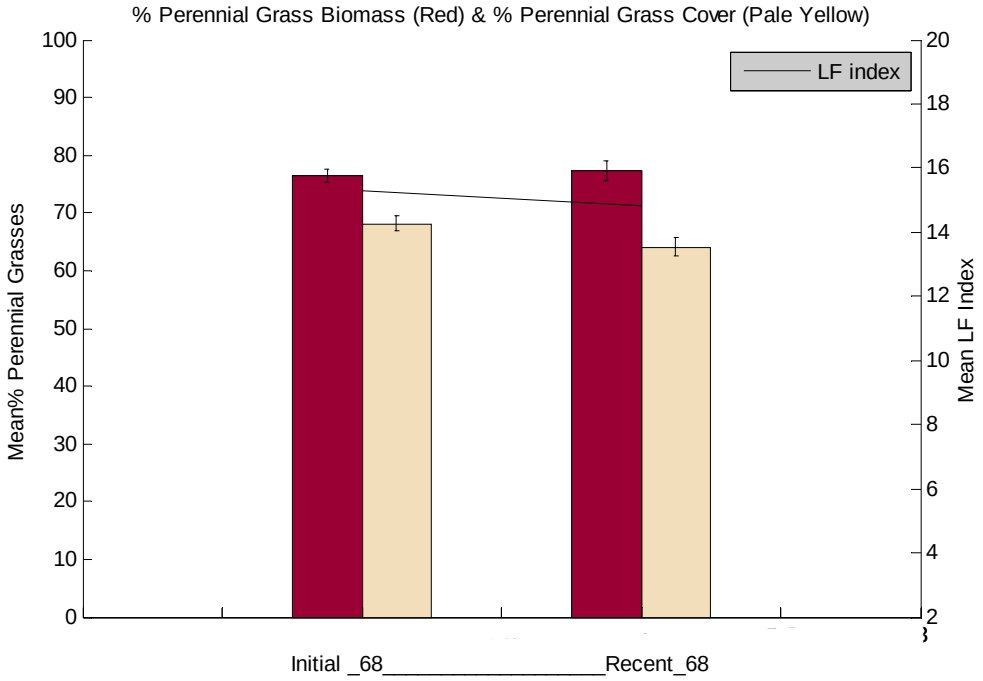


***Figure 18: Trend of sites assessed within Gulf Pastoral District of mean % perennial biomass, mean % perennial cover and mean LF Index from initial to recent assessments.***

## Barkly Pastoral District Report 2007/08

**Land condition in the Barkly Pastoral District is stable.**

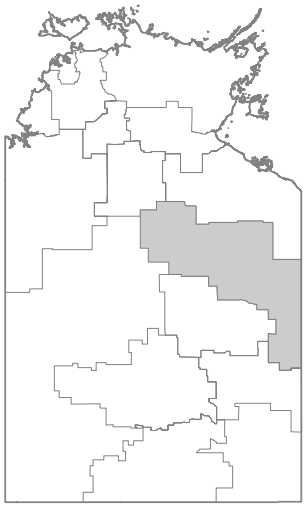

***Figure 19: Location of Barkly Pastoral District***

| **Rainfall Barkly District** | |
|---|---|
| 20 year district average<br>447 mm | 2007/08district annual average<br>178 mm |
| 20 year district average summer (October to April)<br>413 mm | 2007/08 district average summer (October to April)<br>176 mm |
| 20 year district average winter (May to September)<br>34 mm | 2007/08 district average winter (May to September)<br>2 mm |

Tier 1 data collection was undertaken on four properties in the Barkly Pastoral District during 2007/08 and 77 sites were re-assessed. The overall land condition of the sites assessed was considered fair to good (Figure 20).

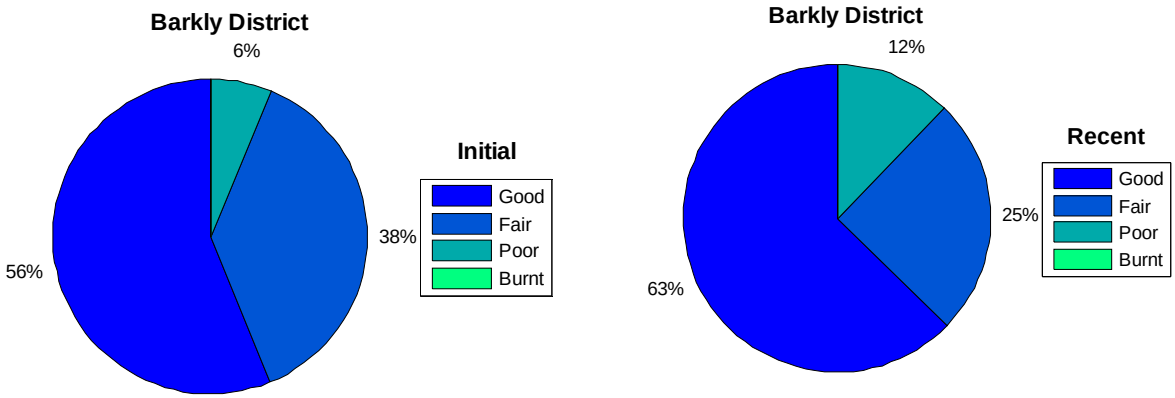


***Figure 20: Barkly Pastoral District condition assessed at establishment in 1995-2004 derived from 77 sites compared to condition assessed at the most recent visit in 2007/08 derived from the same 77 sites.***

Of the sites assessed, the number of sites assessed in good condition increased from 56% to 63%, fair sites reduced in number and sites assessed as poor condition increased from 6% to 12%. The district experienced very low rainfall in 2007/08 with a district average of 178 mm compared to the 20 year district average of 447 mm.

From establishment to the most recent assessment, Figure 21 indicates that sites assessed in the Barkly district have a stable level of landscape function. Perennial biomass levels have increased with cover levels decreasing. The reduction in cover levels is a result of the dry conditions experienced which shortens the flush of annual growth of the system. This resulted in a higher bare ground count at the time of assessment.

The assessment of sites from establishment to the 2007/08 reporting period indicates the district, even though experiencing low rainfall and shortened growing seasons, is quite resilient.

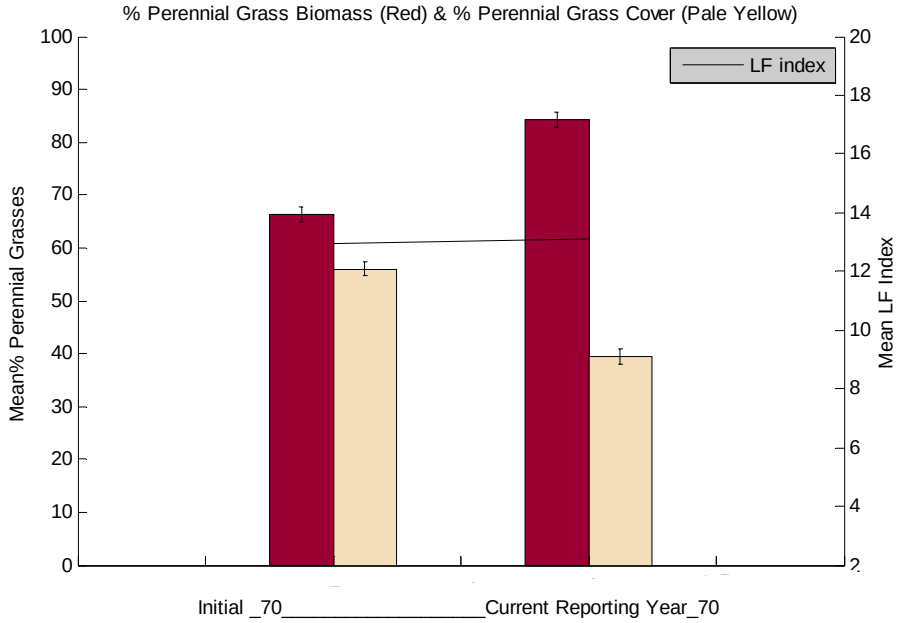


***Figure 21: Trend of sites assessed within Barkly Pastoral District of mean % perennial biomass, mean % perennial cover and mean Landscape Function Index from initial assessments to 2007/08 reassessments.***

## Tennant Creek Pastoral District Report 2007/08

**Land condition in the Tennant Creek Pastoral District is declining.**

| **Rainfall Tennant Creek District** | |
|---|---|
| 20 year district average<br>349 mm | 2007/08 district annual average<br>180 mm |
| 20 year district average summer (October to April)<br>312 mm | 2007/08 district average summer (October to April)<br>111 mm |
| 20 year district average winter (May to September)<br>37 mm | 2007/08 district average winter (May to September)<br>69 mm |

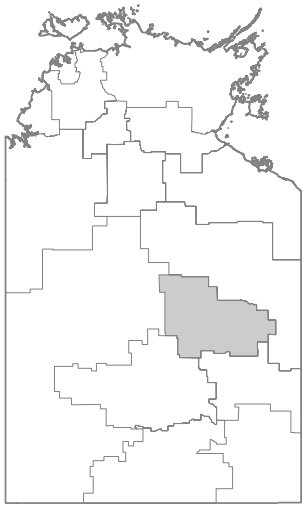

***Figure 22: Location of Tennant Creek Pastoral District***

Tier 1 data collection was undertaken on four properties in the Tennant Creek Pastoral District during 2007/08 and 28 sites were re-assessed. The overall land condition of the sites assessed was considered fair. However, land condition was declining due to unfavourable seasonal conditions and continued high number of stock on properties (Figure 23).

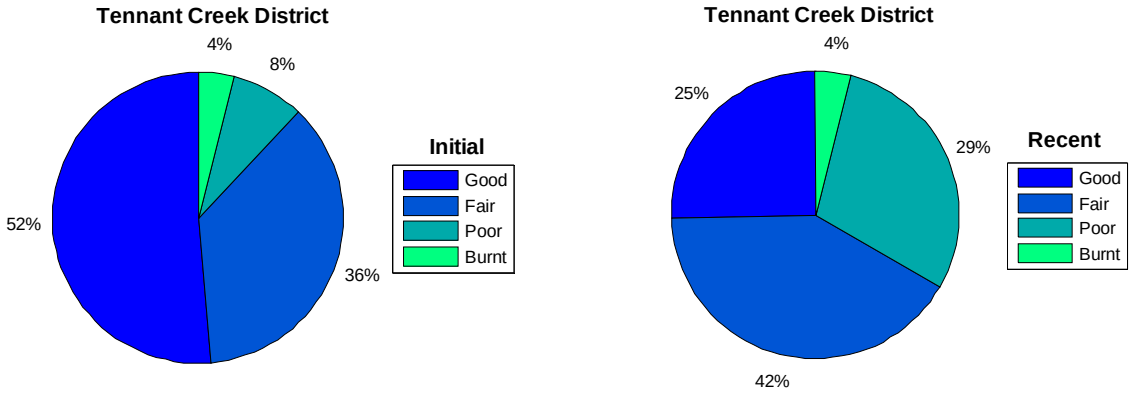


***Figure 23: Tennant Creek Pastoral District condition assessed at establishment in 1993 derived from 28 sites compared to condition assessed at the most recent visit in 2007/08 derived from the same 28 sites***

Due to lack of suitable sites (25 of 28 sites suitable for LFI analysis); landscape function analysis was calculated using the most recent assessment of sites across the District, including site assessments for 2007/08 with a total of 72 sites assessed.

Figure 24 indicates the district has a low level of landscape function that is declining over time. Perennial biomass has remained stable, with perennial cover levels declining markedly. The reduced cover levels and low stable levels of perennial biomass are an indication of effects of low rainfall from preceding years coupled with the current season well below average rainfall.

Sites assessed indicate that prevailing seasonal conditions and management practices undertaken are contributing to the decline of land condition across the district and if continued could result in unsustainable cover levels and condition for the District.

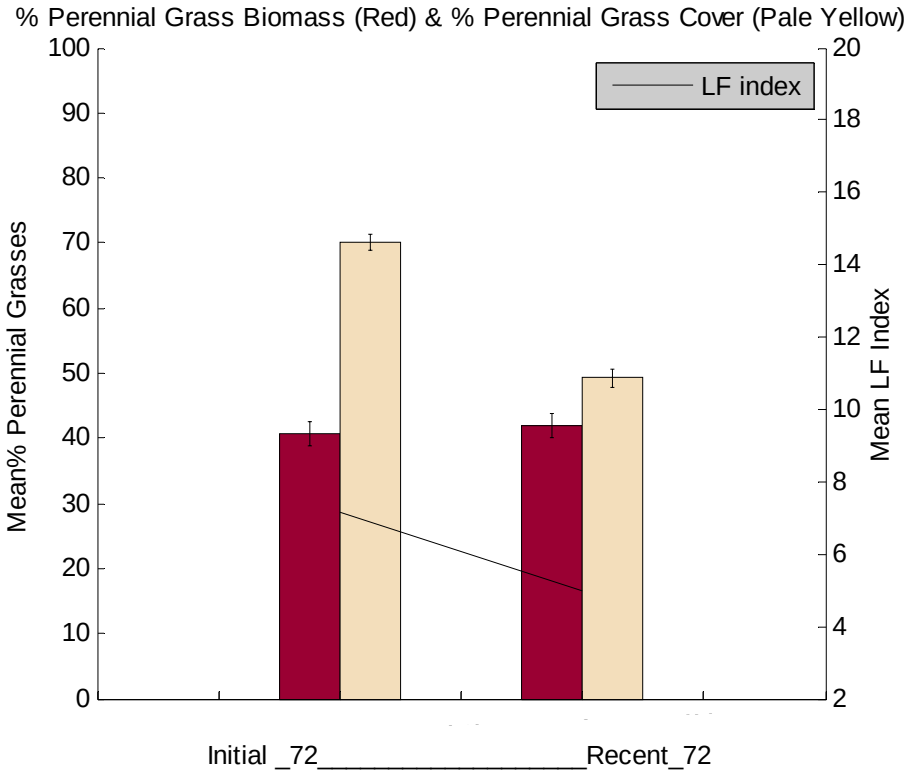


***Figure 24: Trend of sites assessed within Tennant Creek District of mean % perennial biomass, mean % perennial cover and mean LF Index for all properties from initial to most recent assessments.***

## Plenty Pastoral District Report 2007/08

**Land condition in the Plenty Pastoral District is declining.**

| Rainfall Plenty District | |
|---|---|
| 20 year district average<br>269 mm | 2007/08 district annual average<br>102 mm |
| 20 year district average summer (October to April)<br>217 mm | 2007/08 district average summer (October to April)<br>53 mm |
| 20 year district average winter (May to September)<br>52 mm | 2007/08 district average winter (May to September)<br>49 mm |

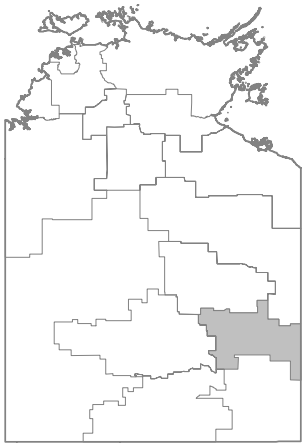

***Figure 25: Location of Plenty Pastoral District***

Tier 1 data collection was not undertaken during the 2007/08 reporting period.

As no sites were assessed during the 2007/08 reporting period landscape function analysis was calculated using the most recent assessment of sites across the District, a total of 123 sites. An assessment of sites suitable for LF Index analysis from site establishment to 2006/07 is presented in Figure 26.

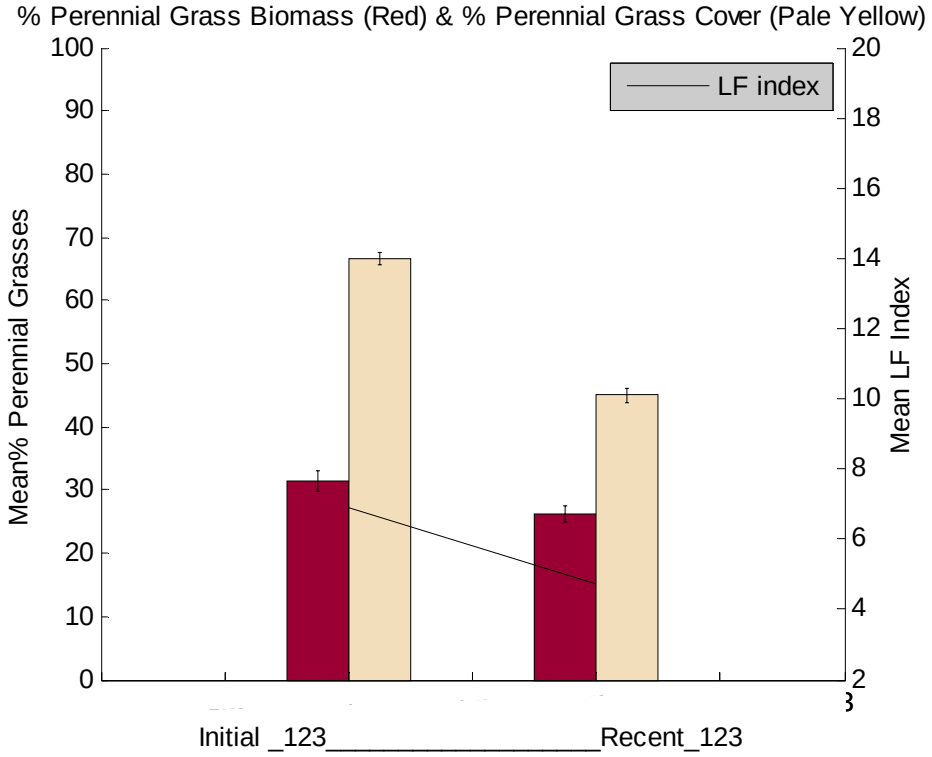


***Figure 26: Plenty Pastoral District trend of mean % perennial biomass, mean % perennial cover and mean LF Index from initial to most recent assessment.***

Comparison between the initial assessment and the most recent assessment indicates that the district has very low levels of landscape function and this has persisted in a state of decline since establishment of the sites assessed. From establishment to the most recent assessment, perennial plant cover and biomass have declined.

Landscape function analysis reflects current conditions of very low pasture biomass growth with levels for the district in the 10-20% range, as determined by AussieGrass models.

Without a review of current management techniques, the current conditions of prevailing low rainfall and declining pasture biomass with high stock numbers are conducive to declining land condition, resulting in land degradation. This is an issue for stations that did not reduce stock numbers in response to the run of unfavourable seasonal conditions.

## Northern Alice Springs Pastoral District Report 2007/08

**Land condition in the Northern Alice Springs Pastoral District is declining.**

| Rainfall Northern Alice Springs District | |
|---|---|
| 20 year district average<br>294 mm | 2007/08 district annual average<br>110 mm |
| 20 year district average summer (October to April)<br>230 mm | 2007/08 district average summer (October to April)<br>79 mm |
| 20 year district average winter (May to September)<br>64 mm | 2007/08 district average winter (May to September)<br>31 mm |

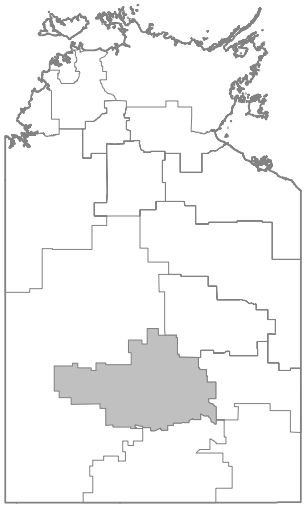

*Figure 27: Location of Northern Alice Springs Pastoral District*

Tier 1 data collection was undertaken on four properties in the Northern Alice Springs Pastoral District during 2007/08 and 50 sites were re-assessed. The overall land condition of the sites assessed was considered fair. However, land condition was declining due to unfavourable seasonal conditions and continued high number of stock on properties (Figure 28).

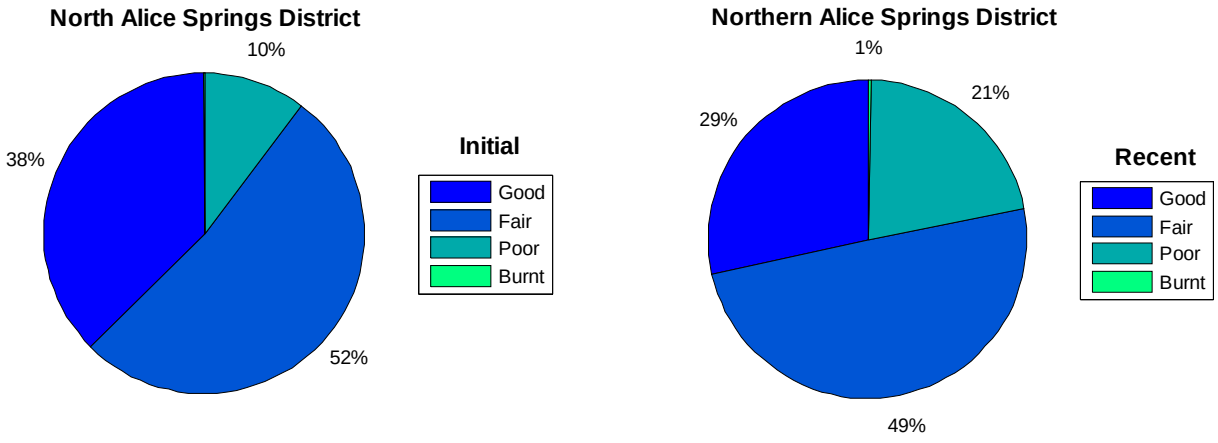


***Figure 28: Northern Alice Springs Pastoral District condition assessed at establishment in 1994/1997 derived from 50 sites compared to condition assessed at the most recent visit in 2007/08 derived from the same 50 sites.***

Sixteen sites changed status to poor condition due to severe trampling, over grazing and change in pasture composition and diversity. Perennial species present at the establishment assessment were not present at the 2007/08 re-assessment.

Effects of overgrazing were present at some sites - palatable species present declined with an increase of *Sida platycalyx* (Lifesaver Burr), a species indicative of pasture deterioration.

Some of the sites assessed exhibited signs of large cattle numbers, even through the current run of low seasonal rainfall. Heavy trampling; reduced cover levels and degraded pasture species were noted at some of the sites.

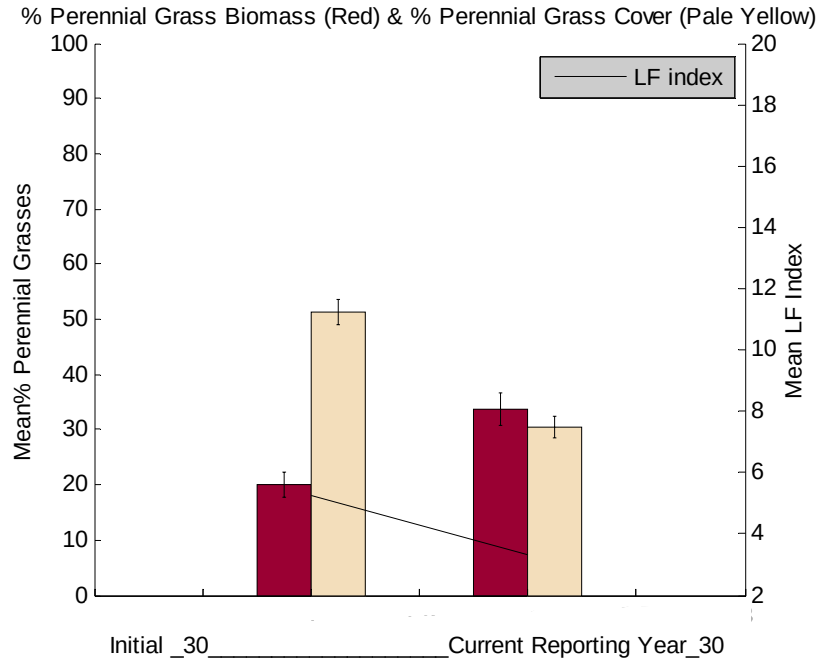


***Figure 29: Trend of sites assessed within Northern Alice Springs Pastoral District mean % perennial biomass, mean % perennial cover and mean LF Index trend of 2007-2008 assessed sites from establishment.***

Figure 29 indicates the district has a low level of landscape function that has significantly declined since establishment of monitoring sites. Perennial cover levels have declined markedly. The reduced cover and low levels of perennial biomass are an indication of effects of low rainfall from preceding years coupled with the current season of well below average rainfall.

Sites assessed indicate that seasonal conditions and inadequate management response have contributed to the decline of land condition across the district.

## Southern Alice Springs Pastoral District Report 2007/08

**Land condition in the Alice Springs Pastoral District is declining.**

| **Rainfall Southern Alice Springs District** | |
|---|---|
| 20 year district average<br>212 mm | 2007/08 district annual average<br>77 mm |
| 20 year district average summer<br>(October to April)<br>150 mm | 2007/08 district average summer<br>(October to April)<br>62 mm |
| 20 year district average winter<br>(May to September)<br>62 mm | 2007/08 district average winter<br>(May to September)<br>15 mm |

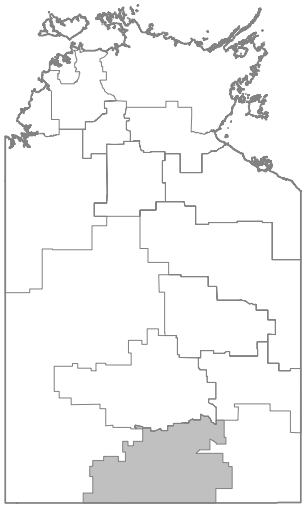

***Figure 30: Location of Southern Alice Springs Pastoral District***

Tier 1 data collection was undertaken on five properties in the Southern Alice Springs Pastoral District during 2007/08 and 54 sites were assessed.
The overall land condition of the sites assessed was considered poor and land condition was declining due to unfavourable seasonal conditions and high numbers of stock on properties during preceding years (Figure 31).

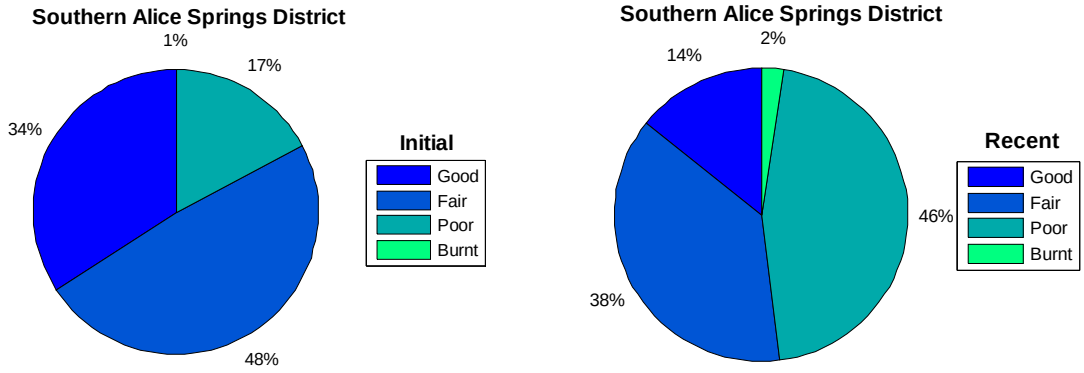


***Figure 31: Southern Alice Springs Pastoral District condition assessed at establishment in 1994/1997 derived from 54 sites compared to condition assessed at the most recent visit in 2007/08 derived from the same 54 sites.***

Decline in site condition can be attributed to a number of low rainfall years and properties maintaining high stock numbers during the preceding years. Due to the dry conditions and low cover and forage levels most properties inspected during 2007/08 had either reduced stock numbers or were in the process of doing so.

Feral animals, mainly camels, were widespread across the district, contributing to the impact upon pasture diversity and condition.

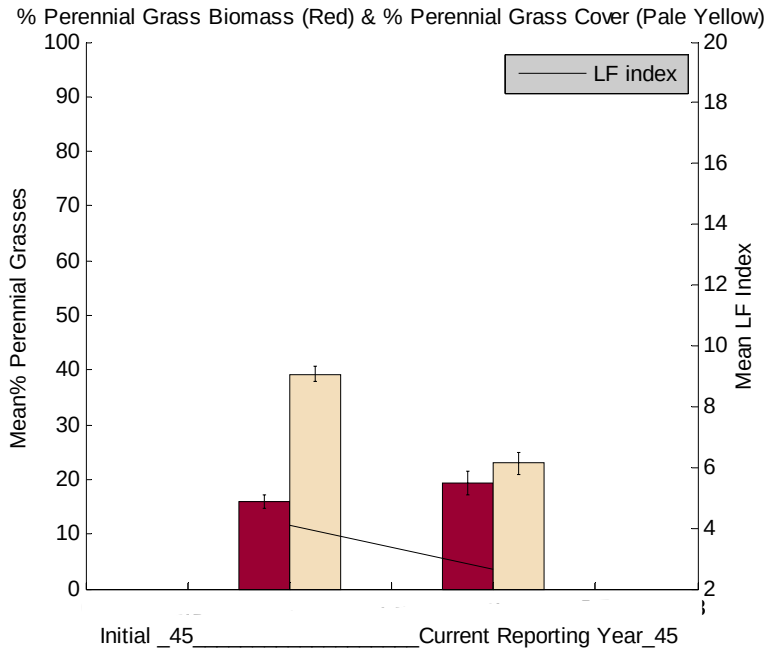


***Figure 32: Trend of sites assessed within Southern Alice Springs District mean % perennial biomass, mean % perennial cover and mean LF Index trend of 2007/08 assessed sites from establishment.***

Figure 32 indicates the district has a low level of landscape function that has been steadily declining from when the sites were established.

Perennial biomass levels have remained very low with perennial cover continuing to decline. The reduced cover and low perennial biomass are a result of low rainfall from preceding years coupled with the 2007/08 well below average rainfall. Sites assessed indicate that the prevailing seasonal conditions and management practices undertaken have contributed to the decline of land condition across the district. Stock have been removed to relieve grazing pressure.

# Specific Land Condition Issues

## Implementation of Management Plans to address Land Condition Issues

In cases where specific land condition issues are identified on a pastoral property, the Pastoral Land Board may request the lessee to prepare a management plan detailing the action to be taken to address the land management issues which have been identified. It is a basic tenet of the *Pastoral Land Act* that pastoral lessees acknowledge their duty to adopt sound management practices and their responsibility to address any land condition issues that may arise. In line with this philosophy, the Pastoral Land Board seeks voluntary collaboration with pastoral lessees to address land condition issues and implementation of rehabilitation programs.

During 2007/08 action continued in respect of implementation of management plans on a number of properties throughout the Territory.

## Drought

The dry conditions experienced in 2004/05, 2005/06 and 2006/07 continued across parts of the NT in 2007/08. There were 36 applications for drought status and all 36 properties were determined to be in drought, with 10 being declared in severe drought (declared in drought two years in a three year period). Departmental officers have engaged in discussions with affected properties to encourage appropriate land management response and reduction in stock numbers where required.

## Erosion on Roads, Fences and other Infrastructure

Erosion on roads, tracks and fence lines continues to be a significant soil management issue on pastoral leases throughout the Northern Territory. Officers of the Land Resources Branch, NRETAS adopt a co-operative approach to assist station managers with appropriate soil conservation earthwork design and construction. Voluntary management plans have been prepared by pastoral lessees and successfully implemented on a number of properties to address issues arising from the poor siting of infrastructure, and/or inappropriate maintenance techniques.

***Photo 1: Fenceline erosion within the Darwin Pastoral District.***

***Photo 2: Erosion adjacent to a road within the Tennant Creek Pastoral District.***

## Feral Animals

Large feral vertebrates are a significant problem throughout the Northern Territory as a result of their negative impacts on the agricultural and natural environment. For instance, feral animals have been associated with:

- Declines in the abundance and diversity of native plant communities due to trampling and ingestion of seedlings.
- Increased soil erosion and sedimentation of natural waterways and water bodies as a result of trampling.
- Competition with native species for feed and habitat.
- Consumption of seedlings and plant materials, reducing the capacity for the ecosystem to regenerate.

- Increased spread and establishment of weeds.
- Decreased abundances and diversities of aquatic and terrestrial invertebrates.
- Decreased agricultural productivity by reducing the availability of feed for stock.
- Damage to fences and other infrastructure.

### Feral Animal Control Program – VRD Pastoral District

The VRD feral animal control program has resulted in the removal of large numbers of feral animals. Since its implementation in 1999, a total of 206,327 feral animals have been removed from the region.

A feral animal survey was undertaken in 2006/07. The results of this survey demonstrated that there has been a 50% reduction in the numbers of donkeys, and a very slight increase in the numbers of feral horses. The survey information was used in conjunction with the survey results collected in 2001 and tally information that has been received from landholders to:

- Estimate the number of feral animals in the region.
- Improve our understanding of the impact of animal removals on the population sizes of ferals in this region.
- Assist in estimating required removal rates of horses and donkeys in the future, in accordance with the *Pastoral Land Act* and the *Territory Parks and Wildlife Conservation Act.*
- Increase the accuracy of future notices.

The feral animal removal program resulted in renewed negotiations with the Indigenous Land Corporation and the Northern and Central Land Councils to ensure their ongoing participation in this program into the future. In the past, this funding agreement has provided reimbursement for helicopter and ammunition costs for control programs administered on Aboriginal Land Trust lands.

### Feral Camels in Central Australia

Feral camels occur in SA, WA, Qld and the NT and are an emerging pest. Aboriginal settlements in Central Australia and pastoral properties fringing the Simpson, Great Sandy and Tanami Deserts are experiencing increasing problems with feral camels as the size of the camel population increases. However, the situation south of Alice Springs over the summer of 2006/07 (where tens of thousands of camels moved onto pastoral stations and Aboriginal settlements on search of water) was not repeated in 2007/08.

Current management of feral camels is largely *ad hoc* and has little impact on populations overall. Management falls into four categories- (1) fencing off of key areas, (2) mustering for the purpose of commercial sale, (3) field slaughter for pet meat, and (4) culling (both ground-based and aerial). Feral camels are extremely mobile animals and have been known to cover areas in excess of 3,000 square kilometres in a 12 month period. This together with the fact that feral camels inhabit areas which are remote and sparsely populated makes the design and implementation of management programs difficult.

A small number (< 1,000 animals) of feral camels in the Northern Territory were mustered and live-exported in 2007/08. In Alice Springs, about 30 camels per week are currently being processed for the domestic meat market.

The Desert Knowledge Cooperative Research Centre (DK CRC) is undertaking a project regarding management of feral camels with the aim of developing a national management strategy.

### Weeds

Weeds threaten the sustainability of rural primary industries in the Northern Territory through increased costs, reduced efficiency and limitations on marketing. They also threaten water resources, freshwater fishing, and conservation of the natural environment, recreation, tourism and traditional hunting.

The Weed Management Branch, Department of Natural Resources, Environment, the Arts and Sport assists landholders to manage weeds by providing technical advice, assisting with weed management plans, carrying out surveys and controlling key infestations.

Major weed issues for each pastoral district during 2007/08 are summarised in Table 2 on page 26.

| Pastoral District | Main weed issues & control programs |
|---|---|
| Darwin | • Mimosa (*Mimosa pigra)*<br>Mimosa continues to be the major weed impacting on the pastoral industry in the Darwin Pastoral District, with approximately $1.4 million being spent annually in control programs.<br>• *Senna obtusifolia*, *Hyptis suaveolens* and *Sida acuta*.<br>These species are abundant in areas impacted by intense fire regimes, feral animal damage and heavy grazing regimes. |
| Katherine | • Bellyache bush *(Jatropha gossypifolia)*<br>• Lantana (*Lantana spp*.)<br>• Mimosa (*Mimosa pigra)*<br>• Parkinsonia (*Parkinsonia aculeate*)<br>• Parthenium (*Parthenium hysterophorus*)<br>• Prickly Acacia *(Acacia nilotica)* |
| Roper | • Bellyache bush (*Jatropha gossypifolia*)<br>• Lantana (*Lantana spp*.)<br>• Mimosa (*Mimosa pigra)*<br>• Parkinsonia *(Parkinsonia aculeata)* |
| VRD | Control programs were undertaken on the following priority weed species:<br>• Bellyache bush (*Jatropha gossypifolia*)<br>• Mimosa (*Mimosa pigra)*<br>• Parkinsonia *(Parkinsonia aculeata)*<br>• Prickly Acacia *(Acacia nilotica)* |
| Sturt Plateau | • Bellyache bush *(Jatropha gossypifolia)*<br>Infestation at Daly Waters on vacant Crown land |
| Gulf | • Bellyache bush (*Jatropha gossypifolia*)<br>• Prickly Acacia *(Acacia nilotica)* |
| Barkly | • Mesquite *(Prosopis spp.)*<br>• Parkinsonia *(Parkinsonia aculeata)*<br>• Prickly Acacia *(Acacia nilotica)* |
| Tennant Creek | • Bellyache bush (*Jatropha gossypifolia*)<br>• Parkinsonia *(Parkinsonia aculeata)*<br>• Rubber Bush *(Calotropis procera)* |
| Plenty | • Parkinsonia *(Parkinsonia aculeata)*<br>• Rubber Bush *(Calotropis procera)* |
| Northern Alice Springs | • Athel Pine *(Tamarix aphylla)*<br>Athel pine is principally located south of Alice Springs along the Finke River catchment. Approximately 30 large mature athel pine trees have been controlled on Aboriginal land north-west of Alice Springs. |
| Southern Alice Springs | • Athel Pine *(Tamarix aphylla)* |

***Table 2: Weed Issues in NT Pastoral Districts 2007/08***

# Value of the Cattle Industry to the Northern Territory

The pastoral estate of the Northern Territory covers around 606,000 $km^2$ comprising 45% of the area of the Northern Territory under 219 pastoral leases. Pastoral holdings vary from small stations of 198 $km^2$ to the Territory's largest station, which runs cattle over 12,212 $km^2$.

The estimated gross value of production from the NT cattle industry in 2006/07 was $212.9 million, representing approximately 42% of the total value of production of the rural and fisheries industries in the Territory. In addition, the pastoral activity provided significant flow-on benefits to other industries, particularly transport, with flow-on effects estimated to be $175 million.

A total of 426,138 head of cattle were turned off from Territory pastoral properties to interstate and overseas markets in 2006/07. Of the total NT cattle turned off, 49.2% went interstate (209,581 head) and 50.8% were exported overseas live (216,557 head). Figures for NT live cattle exports through the Port of Darwin show that in 2007/08 about 293,217 head of NT cattle were exported, an increase of 35% compared to 2006/07.

# Applications considered by the Board during 2007/08

### Applications to clear Pastoral Land 2007/08

### (i) Clearing applications approved 2007/08 – Purpose and Areas

| Purpose of clearing | Number of proposals | Area approved |
|---|---|---|
| Introduced pastures/hay production | 4 | 6514 ha |
| **Totals** | 4 | 6514 ha |

***Table 3: Purpose and areas of pastoral land clearing approved 2007/08***

### (ii) Applications to clear Pastoral Land 2007/08

| | |
|---|---|
| Applications carried over from 2006/07 | 1 |
| Total number of clearing applications lodged 2007/08 | 7 |
| Applications approved | 4 |
| **Applications carried over** | **4** |

***Table 4: Clearing applications determined 2007/08***

## Applications for Non Pastoral Use 2007/08

### (i) Applications for non pastoral use 2007/08

| | |
|---|---|
| Applications carried over from 2006/07 | 2 |
| Applications lodged during 2007/08 | 13 |
| Applications approved | 13 |
| Applications lapsed/withdrawn | 1 |
| **Applications carried over** | **1** |

***Table 5: Applications for non pastoral use determined 2007/08***

### (ii) Purpose of non pastoral use approvals 2007/08

| **Non Pastoral Use Activity** | **No. of Approvals** |
|---|---|
| Tourism | 8 |
| Horticulture | 3 |
| Store | 1 |
| Mining rehabilitation | 1 |

***Table 6: Purpose of non pastoral use approvals 2007/08***

## Applications to Subdivide a Pastoral Lease into two or more Pastoral Leases 2007/08

| | |
|---|---|
| Applications carried over from 2006/07 | 2 |
| Applications referred 2007/08 | 2 |
| Applications considered by the Board with recommendation to the Minister | 2 |
| **Applications carried over** | **2** |

***Table 7: Subdivision applications considered 2007/08***

## Applications to surrender Term Pastoral Leases in exchange for Perpetual Pastoral Leases 2007/08

| | |
|---|---|
| Applications carried over from 2006/07 | 1 |
| Applications referred 2007/08 | 3 |
| Applications considered by the Board with recommendation to the Minister | 2 |
| **Applications carried over** | **2** |

***Table 8: Applications to convert to perpetual tenure considered 2007/08***

# Report on Land Clearing previously approved

It is a requirement of the *Pastoral Land Act* that a lessee shall not undertake clearing on pastoral land without the written consent of the Pastoral Land Board. The Pastoral Land Board has included details of the number of clearing applications and purpose of land clearing approvals in each of its Annual Reports to the Minister since 1992/93. Since 1999/2000, the Board has also reported on progress with previous land clearing approvals. Table 9 below outlines whether clearing has proceeded and current status for determinations of the Board since the last report.

| Year | Clearing Purpose | Area | Comments |
|---|---|---|---|
| 2005/06 | Introduced pastures & hay production | 439 ha | Clearing not yet commenced. |
| 2005/06 | Selective clearing to reduce shrub dominance | 420 ha | Clearing not yet commenced. |
| 2005/06 | Selective clearing to reduce shrub dominance | 300 ha | Clearing completed 2007. |
| 2005/06 | Introduced pastures & hay production | 1431 ha | Clearing completed 2007 |
| 2006/07 | Clearing of regrowth | 852 ha | Clearing commenced. Not completed |
| 2006/07 | Clearing of regrowth | 1003 ha | Clearing commenced. Not completed |
| 2006/07 | Introduced pasture & hay production | 170 ha | Clearing commenced. Not completed |
| 2006/07 | Introduced pasture & hay production | 206 ha | Clearing completed 2007. |
| 2006/07 | Introduced pasture for grazing | 388 ha | Clearing completed 2007. |
| 2006/07 | Introduced pasture for grazing | 1438 ha | Chained 2008. Not raked. |
| 2006/07 | Non Pastoral Use. Horticultural Trial | 5.07 ha | Clearing completed. |
| 2006/07 | Introduced pasture for grazing | 232.2 ha | Clearing commenced. Not completed |
| 2006/07 | Introduced pasture for grazing | 924 ha | 300 hectares chained. |

***Table 9: Status of land clearing previously approved***