



PASTORAL
LAND BOARD
NORTHERN TERRITORY

ANNUAL REPORT
2013-14



EXECUTIVE SUMMARY

The pastoral industry remains fundamental to the Northern Territory's regional economic growth, employment and export income. The Pastoral Land Board is chartered with monitoring the condition and use of pastoral land to facilitate both its sustainable use and the economic viability of the pastoral industry.

The pastoral estate of the Northern Territory covers around 596 091 km² comprising 45% of the area of the Northern Territory. The 221 pastoral leases vary from the smallest station of 198 km² to the Northern Territory's largest station which runs cattle over 12,212 km².

The Board is a statutory authority charged with administering NT pastoral leases in accordance with the *Pastoral Land Act*. The Board is made up of five members, including a Chairman appointed by the Minister for Land Resource Management.

In addition to being the consent authority for non-pastoral use permits and land clearing permits, the Board provides advice and recommendations to the Minister for Land Resource Management on a range of matters including pastoral lease subdivision or consolidation, lease conversions from term pastoral leases to perpetual pastoral leases, and breaches of pastoral lease conditions.

The Board is committed to the maintenance, and where possible, the improvement of the condition of the Territory's pastoral land.

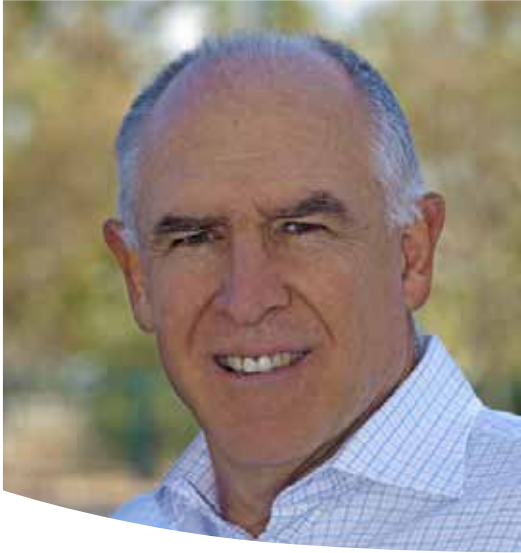
The Board's Annual Reports provide an overview of the general land condition for each pastoral district and where monitoring has occurred that reporting year as well as specific land condition issues faced by pastoralists such as erosion, feral animals, weeds and bushfires. The annual report also outlines what the role of the Board is, what applications the Board has assessed and what the current value of the NT cattle industry is.

*"It's our vision to support a viable
pastoral industry in the NT"*

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CHAIRMAN'S FOREWORD



I am pleased to present the 2013-14 Pastoral Land Board Annual Report highlighting the condition of the NT pastoral estate, the operations of the Board, the issues facing pastoralists through bushfires, weeds and feral animals, and some supplementary information on the pastoral industry.

The Pastoral Land Board reached a significant milestone this year, holding its 100th meeting at the Arid Zone Research Institute (AZRI) in Alice Springs on 15 September 2014. Since its establishment in 1992 the Board has played an important role in ensuring the health, economic viability and sustainability of the NT pastoral estate, which comprises 45% of the Territory's land. In reaching this significant milestone it is important to acknowledge both the former and current members and chairpersons. A special mention must also be made of current Board member Steven Craig, who was first appointed to the Board in 2002 and has attended 52 out of the Board's 100 meetings. I sincerely thank Steven for his dedicated commitment to the Board and the pastoral industry in general.

I wish to thank the Department of Land Resource Management, particularly the Rangeland Monitoring Branch, for their hard work in providing the land condition information presented in this report. During this year's field season rangeland monitoring officers visited 36 properties across seven pastoral districts, a significant increase from the 2013 field season where a total of 29 properties across six pastoral districts were visited.

Of the 36 properties visited 22 were assessed in good condition, seven were assessed in fair condition, one was assessed in fair to poor condition and five were assessed in poor condition. The properties that were assessed in poor condition were all located in the southern NT, where below average seasonal conditions were experienced. This fact was also reflected in the Northern Territory Government providing seasonal hardship rent waivers for pastoralists in the Plenty, Southern and Northern Alice Springs Pastoral Districts in 2014.

On a final note, I wish to thank Board members for their time, effort and support to the pastoral industry through their representation on the Board, particularly when they have such little time to spare. I also wish to thank the Board's Executive Officer for her continued support, particularly on the implementation of the non-pastoral use amendments that came into effect 1 January 2014.



MEMBERSHIP OF THE BOARD

Name	Position	Commenced	Current Term	Term Expiry Date
Richard Galton	Chairman	2013	3 years	25 June 2016
Colleen Costello	Member	2005	3 years	30 April 2016
Steven Craig	Member	2002	3 years	30 April 2016
Thomas Stockwell	Member	2005	3 years	30 April 2016
Dr Campbell (Joe) Miller	Member	2012	3 years	25 June 2015

Executive Officer

Mrs Karlie Weinert

FUNCTIONS OF THE BOARD

Section 29 of the *Pastoral Land Act* outlines the function 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;
- ha. to consider and determine applications for permission to use pastoral land for a non-pastoral purpose in accordance with Part 7;
- 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:

1. to determine applications for clearing pastoral land [section 38(1)(h)]
2. to consider breaches of conditions referred by the Minister [section 41]
3. to consider and make recommendations to the Minister on application for conversion of term pastoral leases to perpetual tenure [section 62]
4. to administer the access provision of the Act, including nomination of access routes under PART 6
5. to determine applications for non-pastoral use of pastoral land under PART 7.
6. to consider and make recommendations to the Minister on application for subdivision [section 61]; and
7. to consider and make recommendations to the Minister on application for consent to transfer a pastoral lease or sub-lease should the advice of the Board be sought [section 68(2)].

LAND CONDITION

Land condition should be an assessment of vegetation and soil health as indicated by ground species composition, tree and shrub density, abundance of invading plants (native and exotic), soil surface condition and soil erosion. These indicators are relatively unaffected by season or seasonal conditions compared with indicators like ground cover and pasture yield. The former, more stable attributes are assessed relative to land in near-pristine condition.

The main influences on land condition are grazing by domestic, native and feral grazers, fire and combinations of the two. Grazing is managed by manipulating stocking rate, stock water distribution, feral grazing control and fire. Fire on its own can change land condition by being too frequent or too infrequent over a long period of time, but its main effect on land condition is through changing the distribution of grazing as grazers prefer younger grass.

Implementation of Management Plans to address Land Condition Issues

In cases where 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.

While voluntary management plans are preferred in the first instance, if the Board is of the opinion that pastoral land has been degraded or otherwise damaged it may require a remedial plan detailing the proposed management of the pastoral land over a specified period of time. Remedial plans need to be endorsed by the Board and are registered on the title.

The Board has a voluntary management plan currently in place on a pastoral lease in the Katherine Pastoral District addressing land degradation caused by heavy grazing, poorly located linear infrastructure and weed infestations. There are currently no remedial plans in place.

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 Department of Land Resource Management's Rangelands Division 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.

PASTORAL LAND MONITORING PROGRAM

The Northern Territory Government's Department of Land Resource Management (DLRM) is chartered with the assessment, monitoring and reporting of land condition on behalf of the Pastoral Land Board.

Integrated Monitoring Program

The revised pastoral land monitoring program that was introduced in the 2012-13 monitoring season required alterations to the methodology used in collection of data at the current network of Tier 1 monitoring sites. Changes include collecting measurements of vegetation cover over a one hectare site rather than the previous 50 m radius from the monitoring picket. New measurements record total ground cover, including litter, bare ground, vegetation and species composition, providing a more consistent determination of land condition.

The current network of Tier 1 sites are used as the basis for the ground monitoring program. Some existing Tier 1 sites were not appropriate for monitoring landscape change. These sites have been moved up to 200m from their current location, to remove the effects of infrastructure, land type boundaries, and improve accessibility. Moving the sites has also made them appropriate to be used within the satellite based component of the integrated program.

The integrated program, like the Tier 1 monitoring program, is heavily reliant upon the knowledge and experience of land managers and lessees. Both the ground data collected and information products produced through the satellite based data requires on-ground local knowledge and understanding to explain changes and gain a further understanding of landscape dynamics. Measured field data collected is used with land manager knowledge and experience to inform not only ground and property based assessments, but also landscape and regional scale reporting from satellite based data products.

The 2013-14 reporting period saw the integration of the revised field methods, with the measured data collected used to inform on-ground reporting and satellite based products. As the number of revisits increase at a site, comparison and assessments will be able to be made of actual change at a site, as measurements will be compared with each other.

REMOTE SENSING VEGETATION MONITORING

The remote sensing or satellite based data component of the integrated monitoring program has been developed through a collaborative research program between DLRM and the Queensland Department of Science, Information Technology, Innovation and the Arts (DSITIA).

This is a nationally recognised integrated ground and satellite based program that provides objective information of land cover and land cover change.

Results from this program have been tested across the NT with an acceptable level of confidence, however limitations do exist as outlined in the descriptions below. The ongoing partnership between DLRM and DSITIA is improving the products to eliminate limitations.

Fractional Cover

The satellite based assessment within this Report uses fractional ground cover. This is a model of the three basic fractions of ground cover: Bare ground (soil, rocks and gravels), Photosynthetic vegetation (live and growing), Non-photosynthetic vegetation (dead and brown vegetation matter).

Developed by Scarth *et al* (2011)¹ through the TERN Aus cover program, and applied in the NT through the research program, it uses ground based measurements to calibrate and validate the model. Limitations include number of field sites across the NT to represent each land type and the vegetation's various growing stages.

Seasonal Fractional Cover

Three monthly composites remove the effects of cloud, shadow from cloud and terrain, water bodies and satellite sensor anomalies from individual images. A method developed by Flood (2013)² calculates the median or medoid to give a representative sample of the season for each pixel.

Decile Ranking

Ranking of each pixels (30m x 30m) total ground cover (green plus brown fractions) for a given season is made against a base line of 28 years for the same season, in this case the winter season (June to August) i.e. current winter vs. 28 previous winters. Winter has the least cloud affected areas. A grouping of rankings aims to present the information as ratings above and below the average.

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1. Scarth, P., Roder, A., & Schmidt, M. (2010). "Tracking Grazing Pressure and Climate Interaction - The Role of Landsat Fractional Cover in Time Series Analysis". 15th Australasian remote Sensing and Photogrammetry Conference (ARSPC), (pp. 13-17). Alice Springs, NT
 2. Flood, N. (2013). Seasonal Composite Landsat TM/ETM+ Images Using the Medoid (a Multi-Dimensional Median). *Remote Sens.* 2013, 5(12), 6481-6500. doi: 10.3390/rs5126481. Open Access

Fire

Fire and its effect on ground cover across the NT cannot be understated. This can be seasonal in the Northern Savannas or longer term in arid regions. The North Australian Fire Information's (NAFI) burnt area mapping detects large scale fires; a more detailed finer scale product is needed. The collaborative project is in the development of such a product.

Woody Tree/Shrub Cover

Woody trees and shrubs could overestimate the true level of ground cover. A model of woody cover extent is in development along with a model that could potentially estimate the ground cover component under the trees.

Rainfall

A major driver of the amount and distribution of ground cover is rainfall. A winter 2014 decile ranking of both ground cover and rainfall are illustrated on pages 11 and 12. Rainfall is ranked on a baseline of approximately 100 years and the ground cover on 28 years.



CRITERIA USED TO ASSESS PASTURE CONDITION

Three 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 are 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 most noticeable during dry periods. They require a very long period of spelling to improve condition or mechanical intervention such as erosion control earthworks or reseeded.



2013-14 MONITORING SEASON

During 2013-14 the DLRM Rangeland Monitoring Branch undertook rangeland monitoring assessments across seven of the 11 Pastoral Districts – Gulf, Sturt Plateau, Katherine, Plenty, Tennant Creek, Southern Alice Springs and Northern Alice Springs. A total of 36 properties were inspected and 260 sites assessed.

Seasonal conditions and rainfall for the 2013-14 reporting period were average to above average for the western and central parts of the NT. Southern NT, central Australia and both the Katherine and Arnhem land regions experienced below average rainfall and seasonal conditions. Pasture growth across the NT ranged from above average in the western and central band across the NT to very much below average in the southern regions, in particular the south eastern region and the Plenty District, which has experienced below average rainfall and pasture growth for two consecutive years.

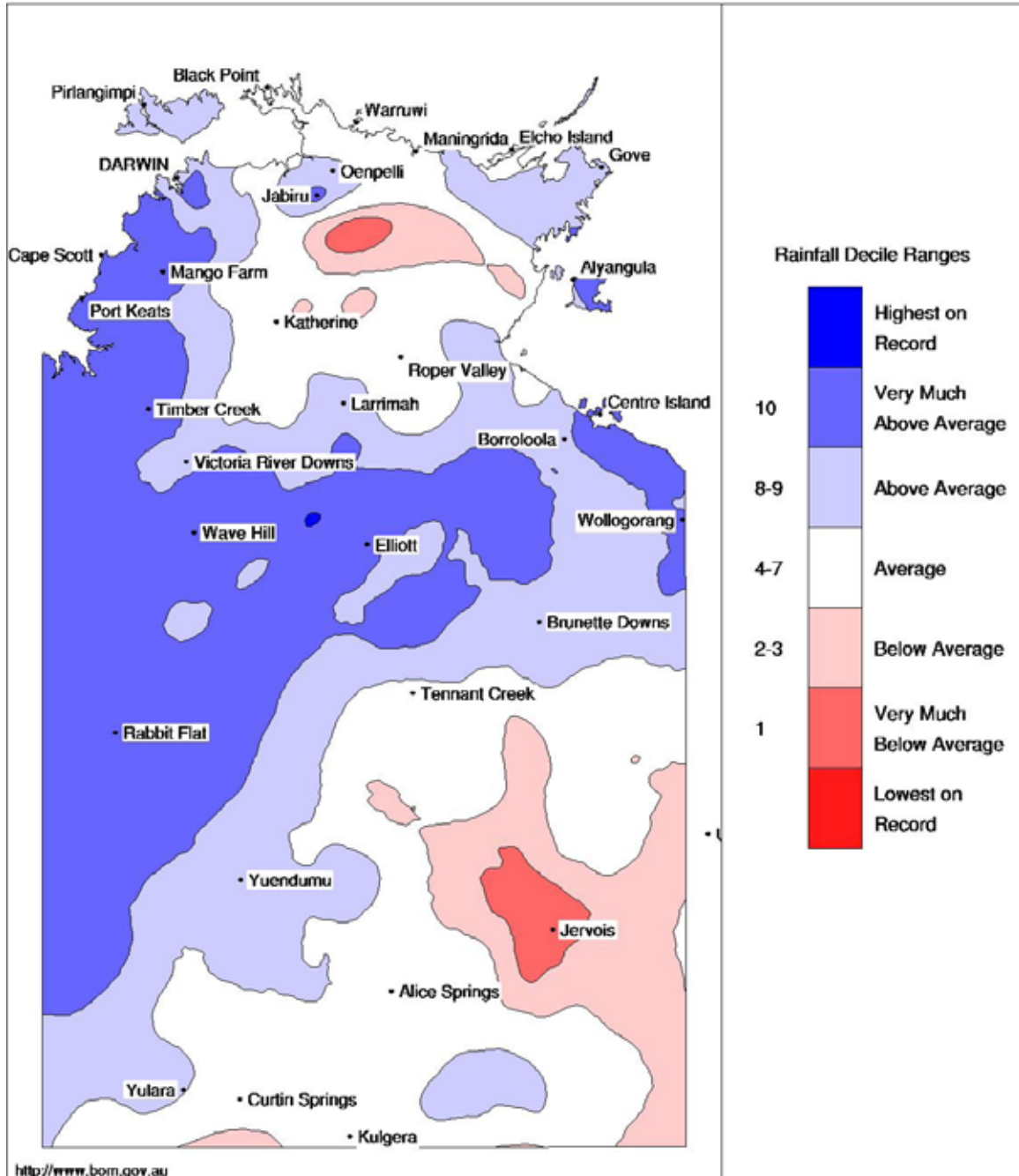
Seventeen properties were assessed across the southern regions of the NT – Tennant Creek, Plenty, Northern and Southern Alice Springs Pastoral Districts. Site assessment and property inspections highlighted the continued below average seasonal conditions and seasonal responses, with many sites having very low ground cover, even though some perennial species were present.

Across the more northern regions of the NT – Katherine, Sturt Plateau and the Gulf Pastoral Districts, 19 properties were inspected. Site and property assessments indicated seasonal response was reflective of the conditions experienced with large areas of properties with high levels of ground cover, species diversity and pasture growth.

RAINFALL

Northern Territory Rainfall Deciles 1 October 2013 to 30 September 2014

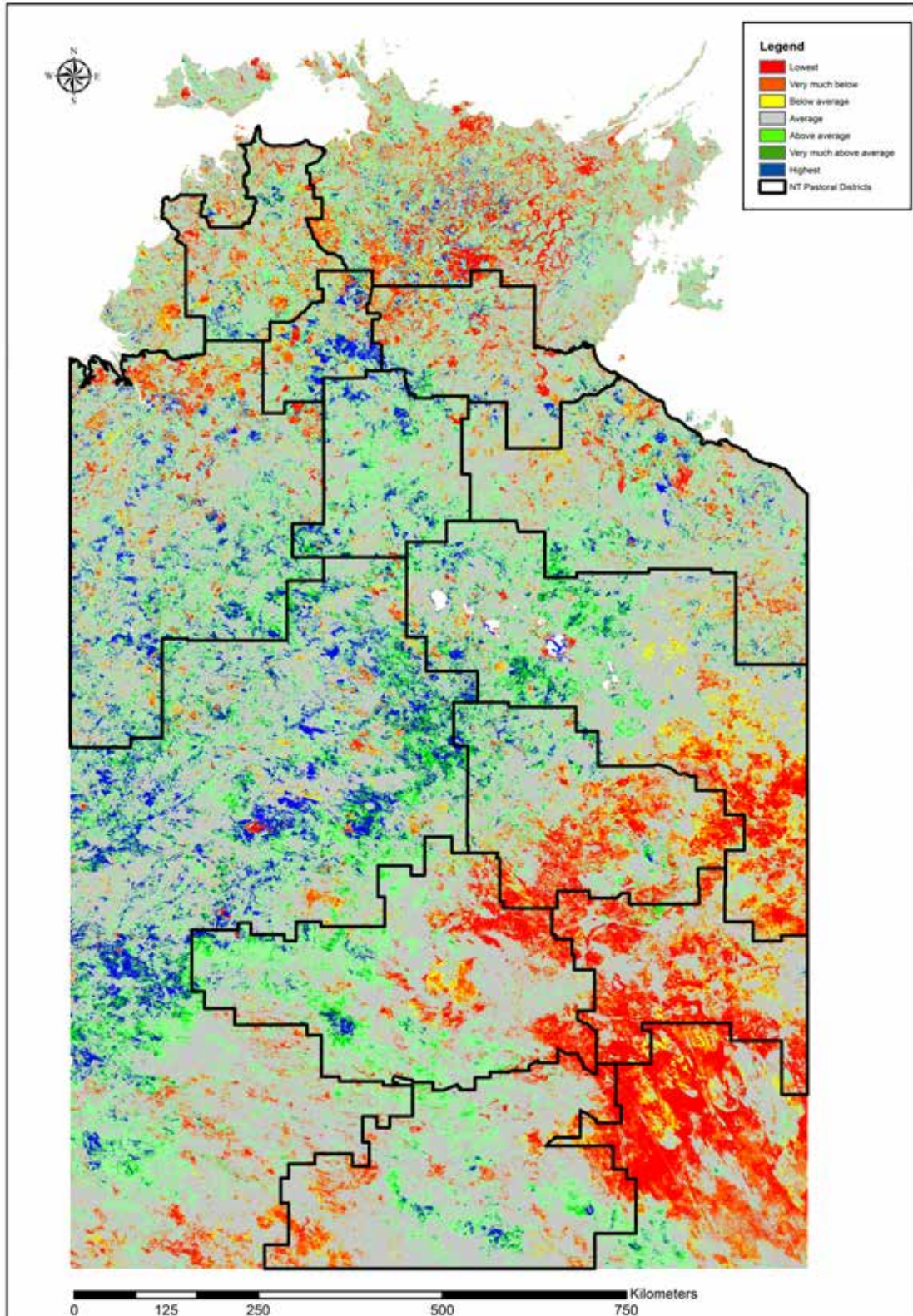
Distribution Based on Gridded Data
Australian Bureau of Meteorology



<http://www.bom.gov.au>
 © Commonwealth of Australia 2014, Australian Bureau of Meteorology ID code: AWAP Issued: 21/10/2014

Map showing rainfall ranked on a baseline of approximately 100 years from 1 October 2013 to 30 September 2014.

SATELLITE GROUND COVER



Map showing fractional ground cover ranked on a baseline of 28 years from 1 June 2014 to 31 August 2014.

DARWIN PASTORAL DISTRICT

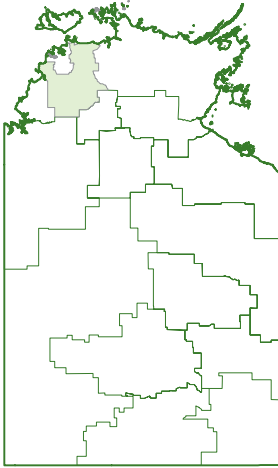


Figure 1: Location of Darwin Pastoral District

Historical Rainfall (mm)

District Median	1433.07 mm
District 20 year average rainfall	1430.84 mm
District 20 year summer (October to April) average rainfall	1404.21 mm
District 20 year winter (May to September) average rainfall	27.52 mm

2013/2014 Rainfall (mm)

District seasonal average	1687.78 mm
District summer (October to April) average	1683.51 mm
District winter (May to September) average	4.27 mm

Rainfall

Based on data from three weather stations located at Darwin Airport, Mango Farm and Douglas River in the Darwin Pastoral District, average to above average rainfall was experienced for the reporting season.

Pasture Growth

Pasture growth for the region was average from October 2013 to September 2014, as determined by AussieGrass Models.

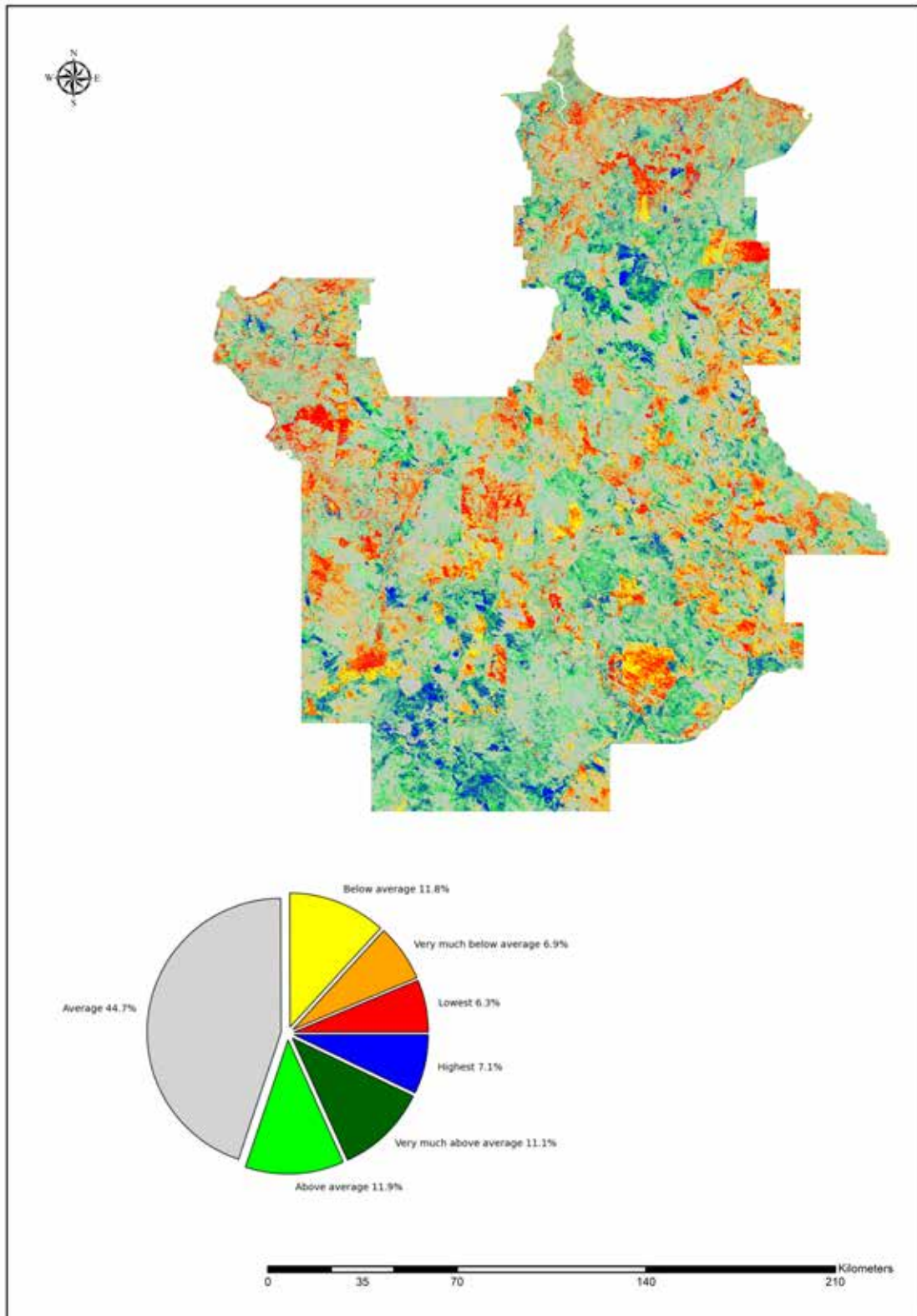
Standing Biomass

The standing biomass for April 2014 for the District tended to be average to extremely low, when compared to historical records. The trend continued through to September 2014, when the standing biomass was below average to average across the District, compared to historical records.

Rangeland Monitoring Program

No Darwin Pastoral District properties were assessed during the 2013-14 reporting period.

DARWIN PASTORAL DISTRICT



A total of 45% of the district has average cover, 30% above and 25% below. NAFI fire scar mapping estimated 51% of the region was burnt for this period.

KATHERINE PASTORAL DISTRICT

Historical Rainfall (mm)

District Median	1056.20 mm
District 20 year average rainfall	1003.17 mm
District 20 year summer (October to April) average rainfall	991.20 mm
District 20 year winter (May to September) average rainfall	12.96 mm

2013/2014 Rainfall (mm)

District seasonal average	803.60 mm
District summer (October to April) average	803.40 mm
District winter (May to September) average	0.20 mm

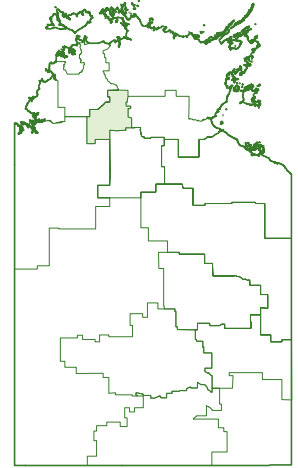


Figure 2: Location of Katherine Pastoral District

Rainfall

Based on data from one weather station located at the RAAF Tindall in the Katherine Pastoral District, below average rainfall was experienced for the reporting season.

Pasture Growth

Pasture growth for the region was average from October 2013 to September 2014, as determined by AussieGrass Models.

Standing Biomass

The standing biomass for April 2014 for the District was average when compared to historical records. This trend continued through to September 2014 with pasture biomass levels of average, when compared to historical records.

Rangeland Monitoring Program

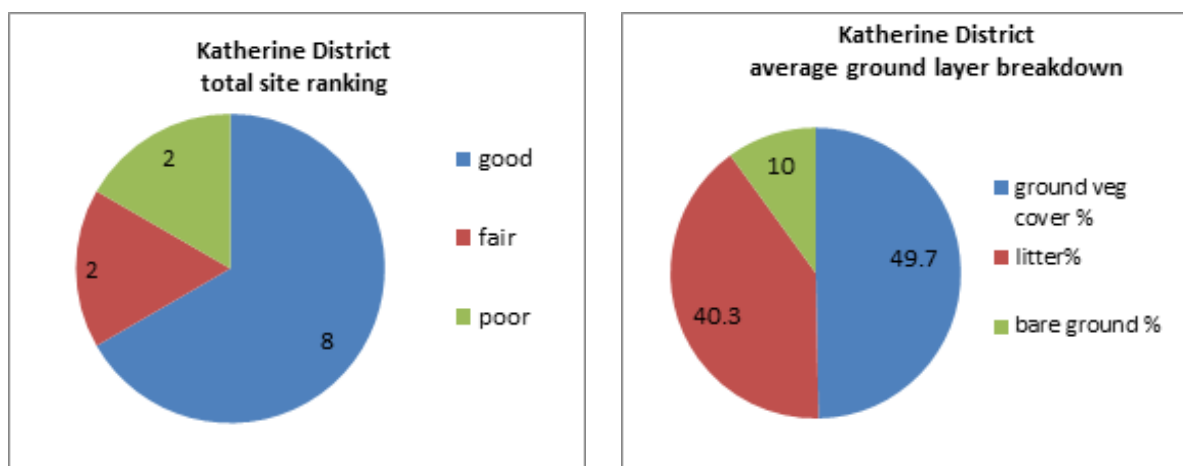
During the 2013-14 reporting period, three properties were assessed in the Katherine Pastoral District, with a total of 12 sites monitored as part of the integrated monitoring program.

Properties experienced average to below average seasonal conditions with the majority of sites assessed as having good condition.

The table on the following page represents sites visited and corresponding condition assessment for the 2013-14 reporting period.

Station	Total no of sites	Sites assessed	Good Condition	Fair Condition	Poor Condition	Property Condition
1	4	4	2	0	2	good
2	4	4	3	1	0	good
3	4	4	3	1	0	good
Totals	12	12	8	2	2	

The charts below depict the number of sites established and the breakdown of the average ground layer of the sites assessed as part of the integrated rangeland program for the Katherine Pastoral District.

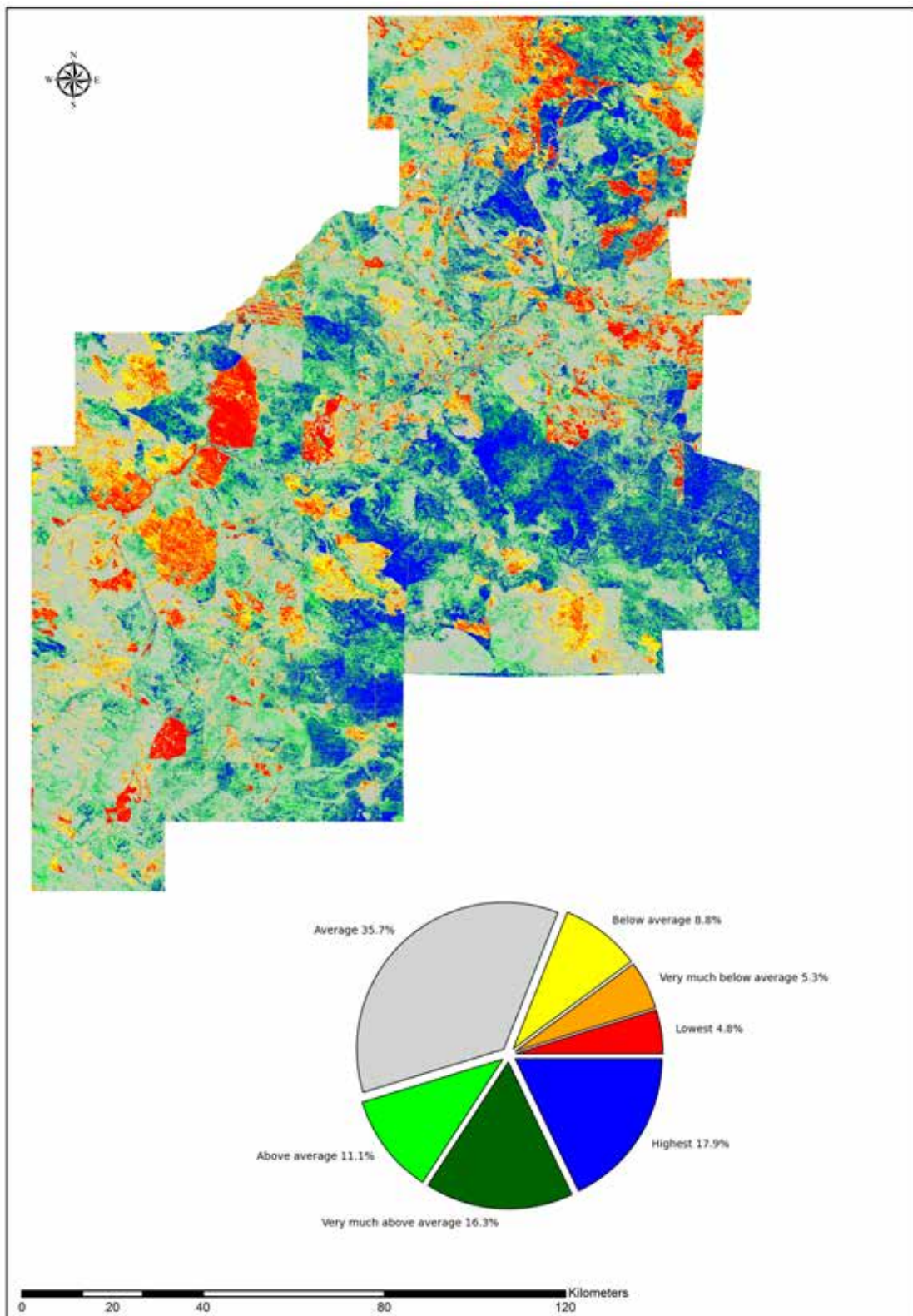


Condition assessment of monitoring sites assessed across the Katherine Pastoral District during the 2013-14 reporting period.

Property infrastructure developments and weed management were evident across the three properties inspected.

The average cover and biomass levels across the properties reflect the seasonal conditions, stocking rates and infrastructure development to promote sustainable grazing. Sites in good condition had higher levels of ground cover and a good mix of both perennial and annual species. High cover levels were observed in sites located further from established waters points and paddocks with lower numbers of cattle.

KATHERINE PASTORAL DISTRICT



A total of 36% of the district has average cover, 45% above and 19% below. NAFI fire scar mapping estimated 28% of the region was burnt for this period and a significant proportion of the below average cover may be due to these fires.

ROPER PASTORAL DISTRICT

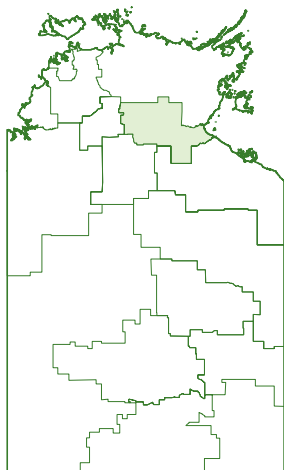


Figure 3: Location of Roper Pastoral District

Historical Rainfall (mm)

District Median	1087.96 mm
District 20 year average rainfall	1036.45 mm
District 20 year summer (October to April) average rainfall	1075.61 mm
District 20 year winter (May to September) average rainfall	12.35 mm

2013/2014 Rainfall (mm)

District seasonal average	952.40 mm
District summer (October to April) average	942.80 mm
District winter (May to September) average	9.60 mm

Rainfall

Based on data from one weather station located at Ngukurr in the Roper Pastoral District, below average rainfall was experienced for the reporting season.

Pasture Growth

Pasture growth for the region was average to above average from October 2013 to September 2014, as determined by AussieGrass Models.

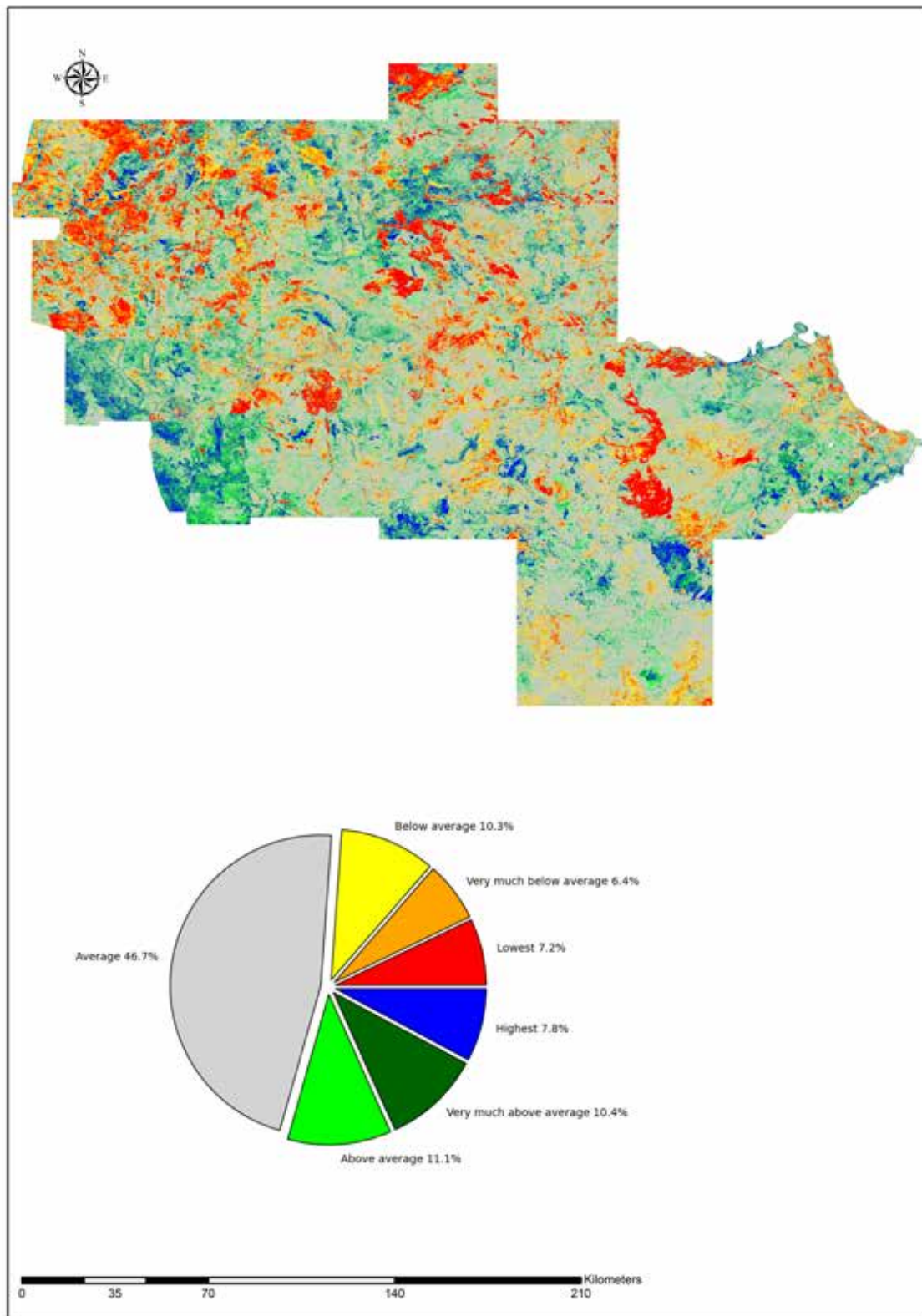
Standing Biomass

The standing biomass for April 2014 for the District was average to above average when compared to historical records. This trend continued through to September 2014 with pasture biomass levels of average, when compared to historical records.

Rangeland Monitoring Program

No Roper Pastoral District properties were assessed during the 2013-14 reporting period.

ROPER PASTORAL DISTRICT



A total of 47% of the district has average cover, 29% above and 24% below. NAFI fire scar mapping estimated 24% of the region was burnt for this period.

VRD PASTORAL DISTRICT

Historical Rainfall (mm)

District Median	774.05 mm
District 20 year average rainfall	763.56 mm
District 20 year summer (October to April) average rainfall	745.35 mm
District 20 year winter (May to September) average rainfall	18.08 mm

2013/2014 Rainfall (mm)

District seasonal average	938.13 mm
District summer (October to April) average	937.98 mm
District winter (May to September) average	0.15 mm

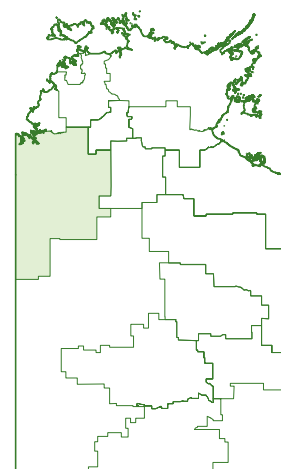


Figure 4: Location of VRD Pastoral District

Rainfall

Based on data from four weather stations located at Timber Creek, Wave Hill, Lajamanu and Victoria River Downs in the VRD Pastoral District, average rainfall was experienced for the reporting season.

Pasture Growth

Pasture growth for the region was average to above average from October 2013 to September 2014, as determined by AussieGrass Models.

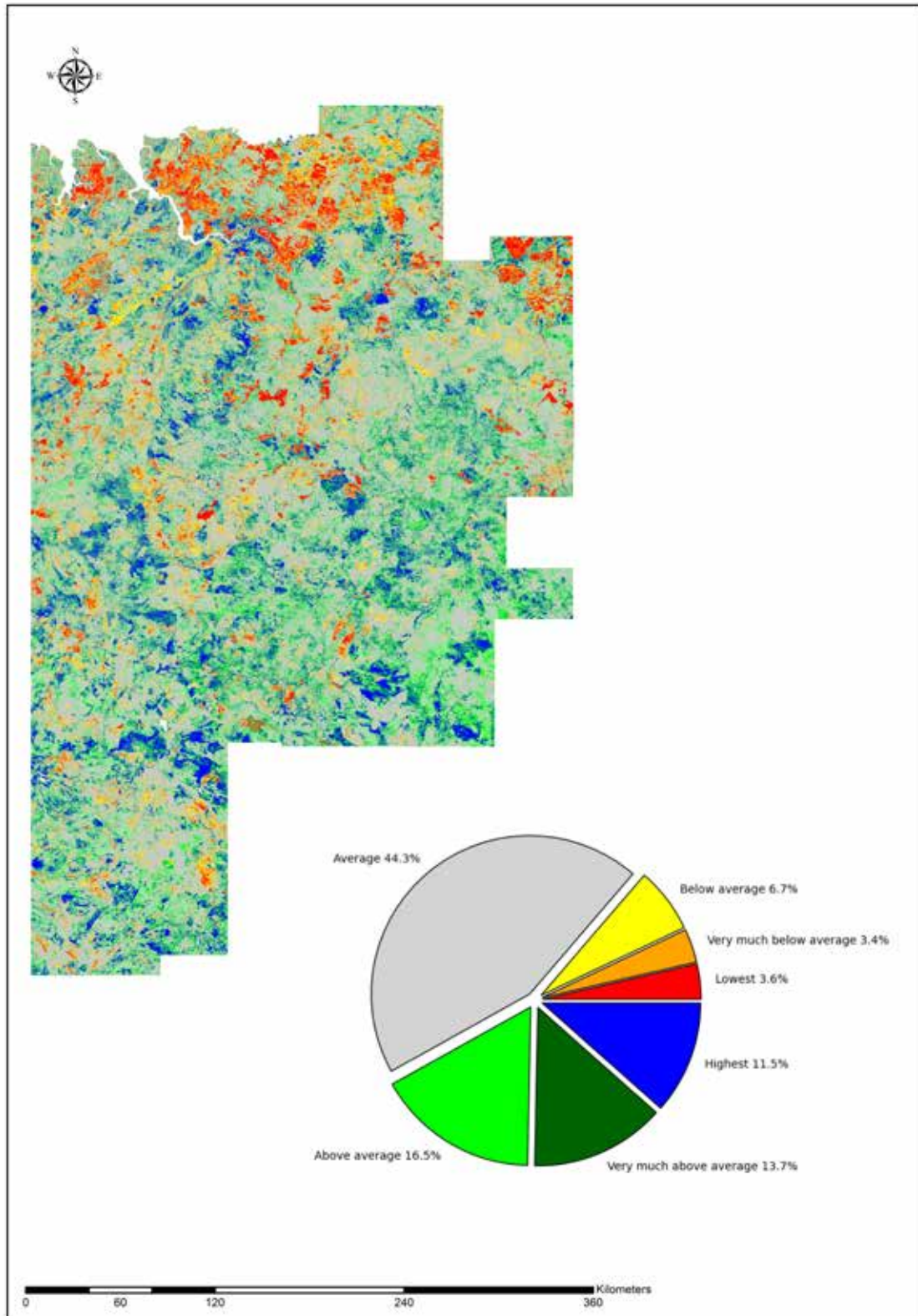
Standing Biomass

The standing biomass for April 2014 for the District was average to above average when compared to historical records. This trend continued through to September 2014 with pasture biomass levels of average to above average, when compared to historical records.

Rangeland Monitoring Program

No VRD Pastoral District properties were assessed during the 2013-14 reporting period.

VRD PASTORAL DISTRICT



A total of 44% of the district has average cover, 42% above and 14% below. NAFI fire scar mapping estimated 10% of the region was burnt for this period.

STURT PLATEAU PASTORAL DISTRICT

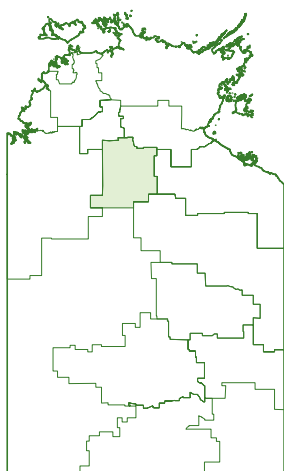


Figure 5: Location of Sturt Plateau Pastoral District

Historical Rainfall (mm)

District Median	811.60 mm
District 20 year average rainfall	849.84 mm
District 20 year summer (October to April) average rainfall	838.92 mm
District 20 year winter (May to September) average rainfall	10.92 mm

2013/2014 Rainfall (mm)

District seasonal average	903.40 mm
District summer (October to April) average	903.30 mm
District winter (May to September) average	0.10 mm

Rainfall

Based on data from two weather stations located at Daly Waters and Larrimah in the Sturt Plateau Pastoral District, above average rainfall was experienced for the reporting season.

Pasture Growth

Pasture growth for the region was average from October 2013 to September 2014, as determined by AussieGrass Models.

Standing Biomass

The standing biomass for April 2014 for the District ranged from average to above average when compared to historical records. This trend continued through to September 2014 with pasture biomass levels of average, when compared to historical records.

Rangeland Monitoring Program

During the 2013-14 reporting period, 10 Sturt Plateau Pastoral District properties were assessed, with a total of 55 sites monitored as part of the integrated monitoring program.

The monitoring sites and larger areas across the properties had consistently high levels of ground perennial cover, reflecting the above average rainfall and seasonal conditions experienced by the District. The sites consistently had low levels of bare ground, reflecting high levels of perennial grasses and high levels of litter, indicating that fires have been absent from areas across the District for a considerable time period.

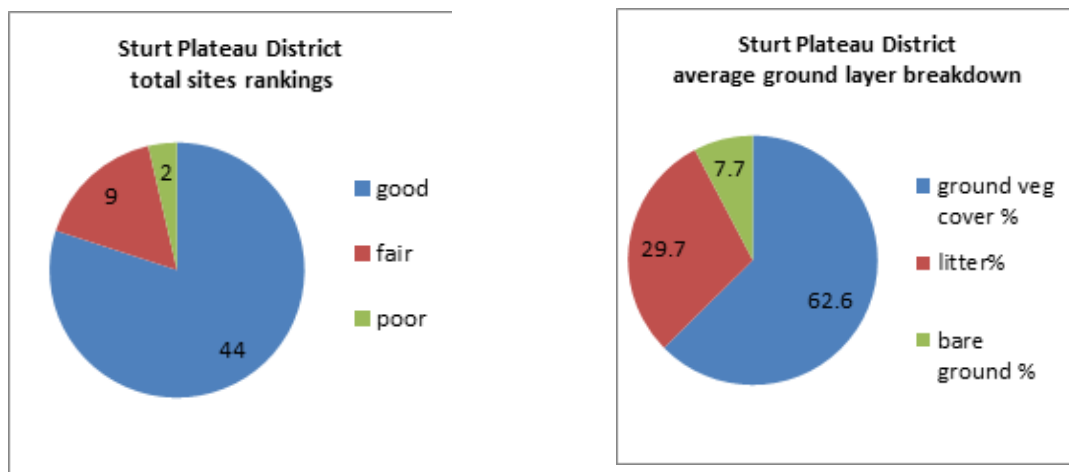
A number of properties had limited to no sites, as a result of recent subdivisions. Sites were established in consultation with managers and a considerable amount of development and infrastructure was also mapped.

The Sturt Plateau Pastoral District is continuing to develop areas of properties not previously used and are refining some current management approaches to further increase productivity and sustainability.

The table below presents sites visited and corresponding condition assessment for the 2013-14 reporting period.

Station	Total no of sites	Sites assessed	Good Condition	Fair Condition	Poor Condition	Property Condition
1	3	3	3	0	0	good
2	6	6	5	1	0	good
3	12	12	11	1	0	good
4	3	3	3	0	0	good
5	4	4	4	0	0	good
6	5	5	2	3	0	good
7	6	6	2	3	1	good
8	2	2	2	0	0	good
9	9	9	9	0	0	good
10	5	5	5	0	0	good
Totals	55	55	46	8	1	

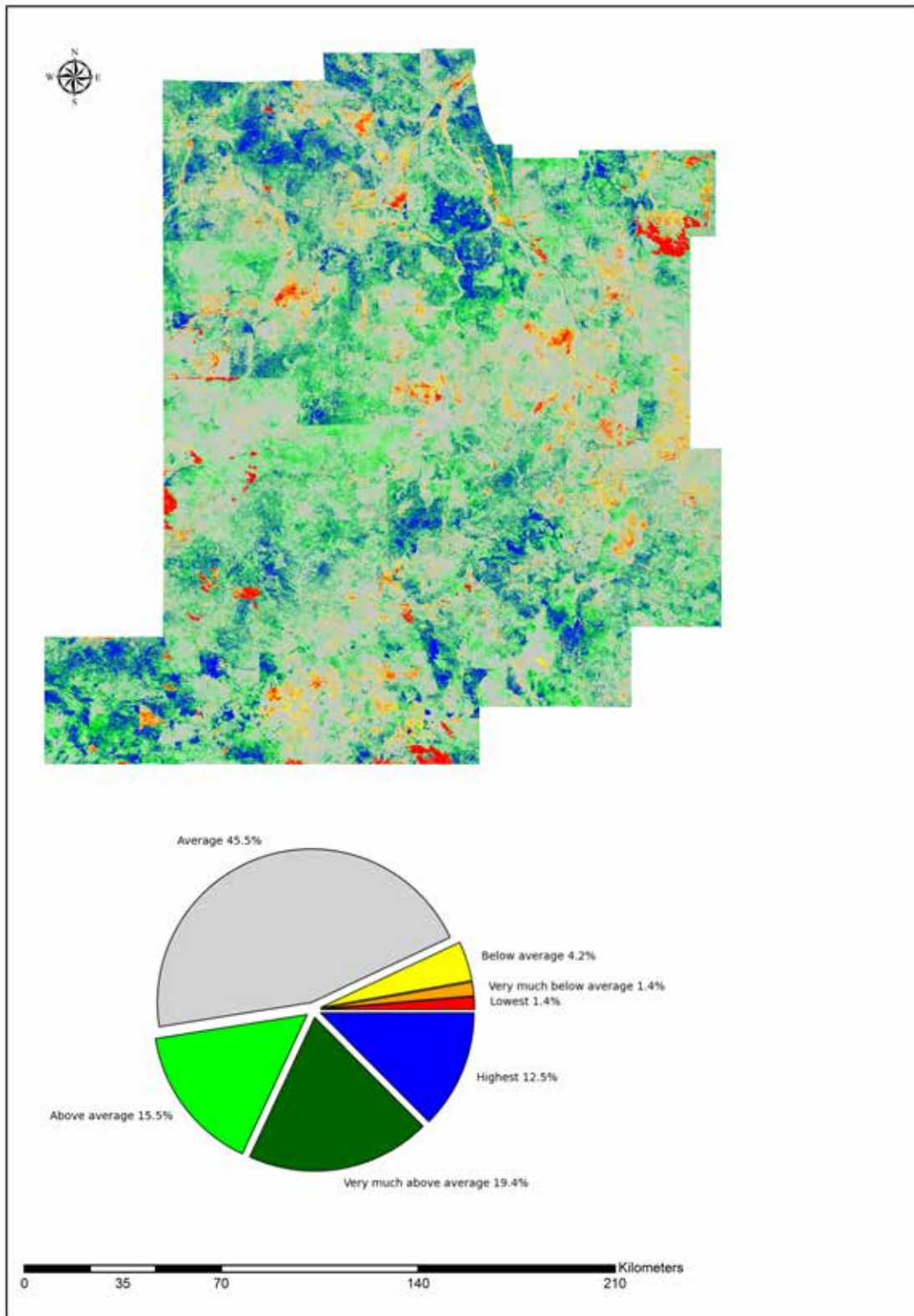
The charts below depict the number of sites established and the breakdown of the average ground layer of the sites assessed as part of the integrated rangeland program for the Sturt Plateau Pastoral District.



Condition assessment of monitoring sites assessed across the Sturt Plateau Pastoral District during the 2013-2014 reporting period.

The Sturt Plateau Pastoral District is responding well to the above average seasonal conditions experienced. Consistent high levels of perennial species, litter and low levels of bare ground indicate the Sturt Plateau Pastoral District has maintained good condition and utilisation levels.

STURT PLATEAU PASTORAL DISTRICT



A total of 46% of the district has average cover, 47% above and 7% below. NAFI fire scar mapping estimated less than 5% of the region was burnt for this period.

GULF PASTORAL DISTRICT

Historical Rainfall (mm)

District Median	762.90 mm
District 20 year average rainfall	751.73 mm
District 20 year summer (October to April) average rainfall	743.05 mm
District 20 year winter (May to September) average rainfall	8.96 mm

2013/2014 Rainfall (mm)

District seasonal average	1180.50 mm
District summer (October to April) average	1176.70 mm
District winter (May to September) average	3.80 mm

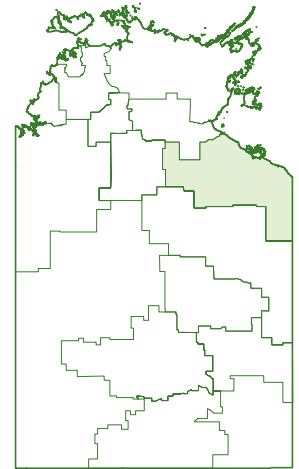


Figure 6: Location of Gulf Pastoral District

Rainfall

Based on data from one weather station located at McArthur River in the Gulf Pastoral District, above average rainfall was experienced for the reporting season.

Pasture Growth

Pasture growth for the region was average to above average from October 2013 to September 2014, as determined by AussieGrass Models.

Standing Biomass

The standing biomass for April 2014 for the District was average to extremely high when compared to historical records. This trend continued through to September 2014 with pasture biomass levels of average to extremely high, when compared to historical records.

Rangeland Monitoring Program

During the 2013-14 reporting period, six Gulf Pastoral District properties were assessed, with a total of 39 sites assessed as part of the integrated monitoring program.

Above average seasonal conditions and rainfall events coupled with continued development of properties in the Gulf, has ensured the continued high levels of pasture biomass and ground cover of the properties inspected.

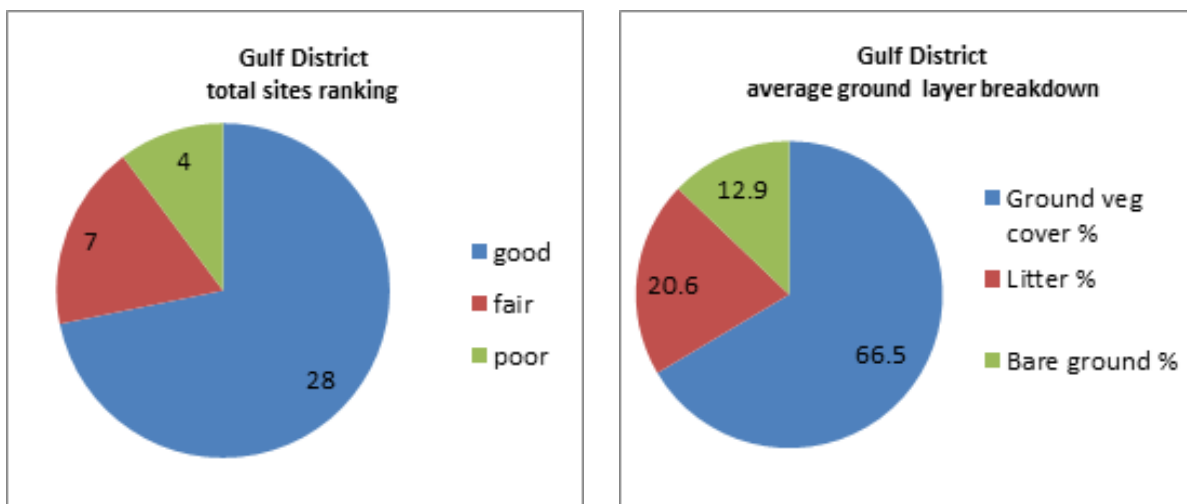
Most sites assessed in good condition had a variety of 3P grasses with high levels of ground cover. Sites in fair and poor condition had increased levels of bare ground and higher levels of annual species, even though some species are highly palatable.

Wild dogs and donkeys were observed across the properties inspected with managers commenting that controlling wild dogs was a priority with one property shooting more than 150 dogs a year.

The table below presents sites visited and corresponding condition assessment for the 2013-14 reporting period.

Station	Total no of sites	Sites assessed	Good Condition	Fair Condition	Poor Condition	Property Condition
1	4	4	2	2	0	good
2	4	4	2	0	2	good
3	2	2	2	0	0	good
4	11	11	7	2	2	good
5	6	6	3	2	1	good
6	12	12	11	1	0	good
Totals	39	39	27	7	5	

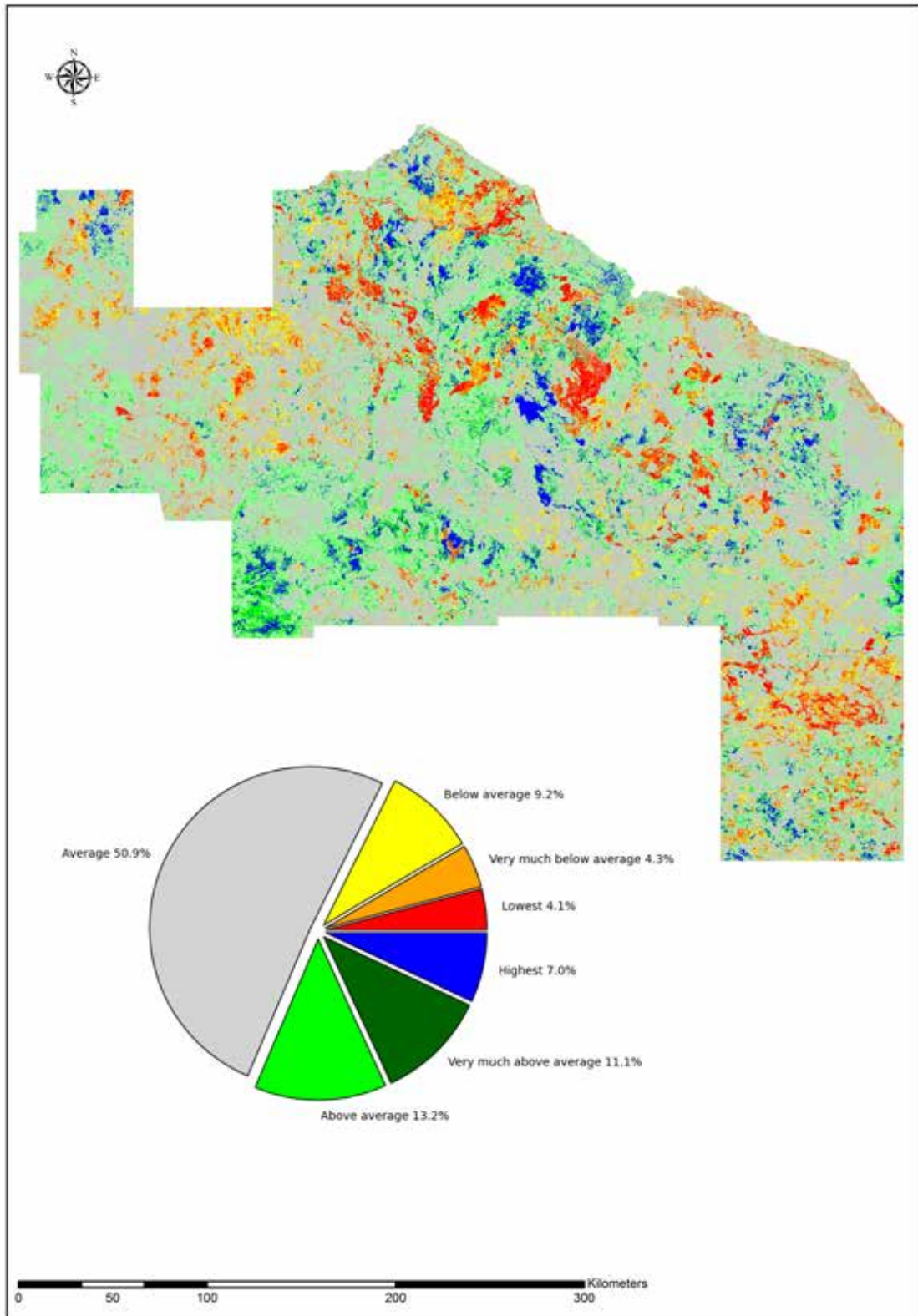
The charts below depict the number of sites established and the breakdown of the average ground layer of the sites assessed as part of the integrated rangeland program for the Gulf Pastoral District.



Condition assessment of monitoring sites assessed across the Gulf Pastoral District during the 2013-14 reporting period.

The Gulf Pastoral District has responded well to the above average seasonal conditions experienced. Continued high levels of perennial species and ground cover indicate the Gulf Pastoral District has maintained consistent ground cover and land condition.

GULF PASTORAL DISTRICT



A total of 51% of the district has average cover, 31% above and 18% below. NAFI fire scar mapping estimated 13% of the region was burnt for this period.

BARKLY PASTORAL DISTRICT

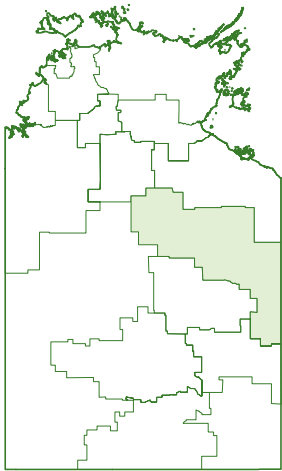


Figure 7: Location of Barkly Pastoral District

Historical Rainfall (mm)

District Median	479.10 mm
District 20 year average rainfall	504.41 mm
District 20 year summer (October to April) average rainfall	485.79 mm
District 20 year winter (May to September) average rainfall	28.03 mm

2013/2014 Rainfall (mm)

District seasonal average	833.08 mm
District summer (October to April) average	833.08 mm
District winter (May to September) average	0 mm

Rainfall

Based on data from two weather stations located at Brunette Downs and Elliott in the Barkly Pastoral District, above average rainfall was experienced for the reporting season.

Pasture Growth

Pasture growth for the region was average to above average from October 2013 to September 2014, as determined by AussieGrass Models.

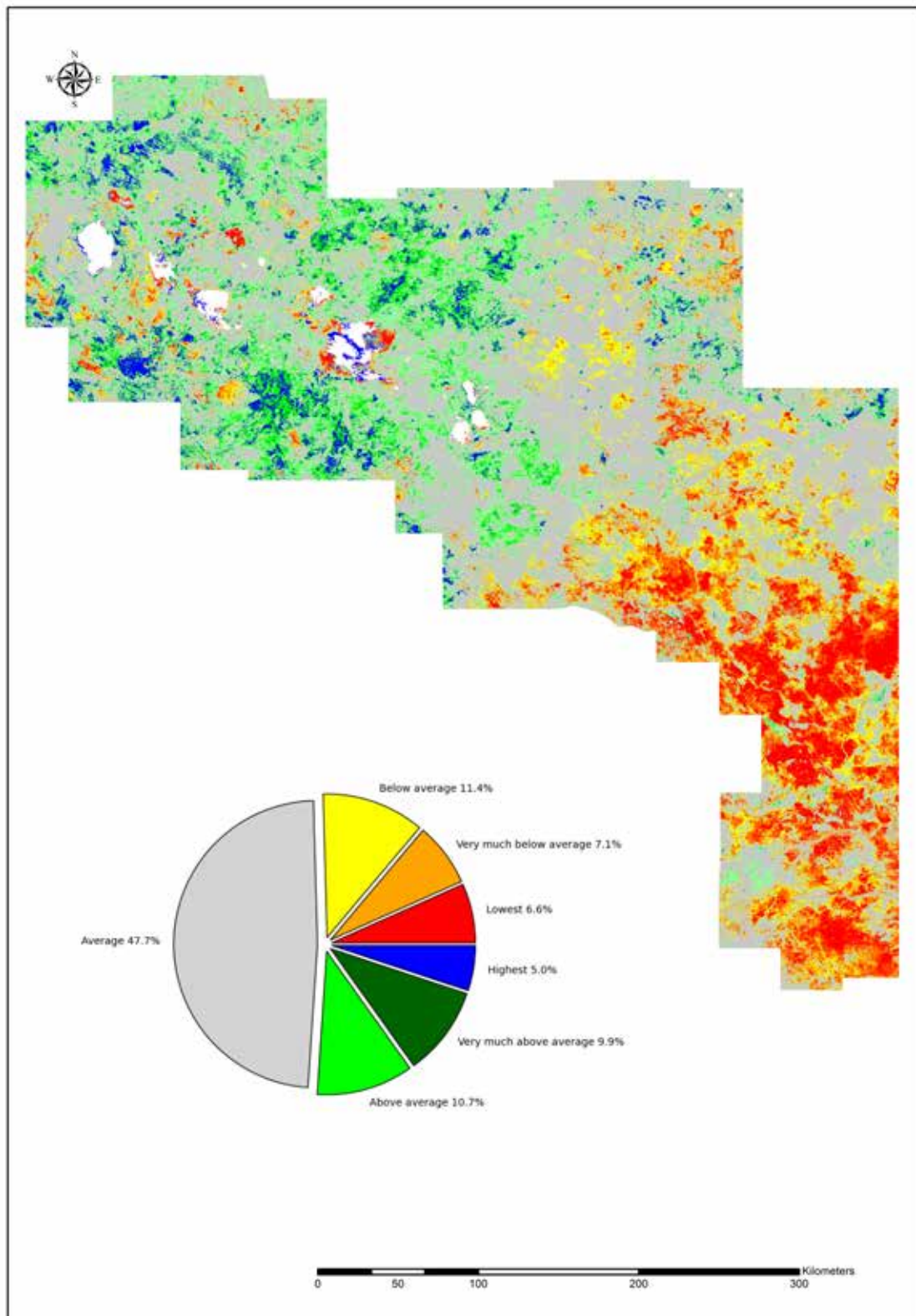
Standing Biomass

The standing biomass for April 2014 for the District was average to below average when compared to historical records. This trend continued through to September 2014 with pasture biomass levels of below average, when compared to historical records.

Rangeland Monitoring Program

No Barkly Pastoral District properties were inspected during the 2013-14 reporting period.

BARKLY PASTORAL DISTRICT



A total of 48% of the district has average cover, 25% above and 25% below. Water bodies and cloud account for the remaining 2%. NAFI Fire scar mapping estimated less than 1% of the region was burnt for this period.

TENNANT CREEK PASTORAL DISTRICT

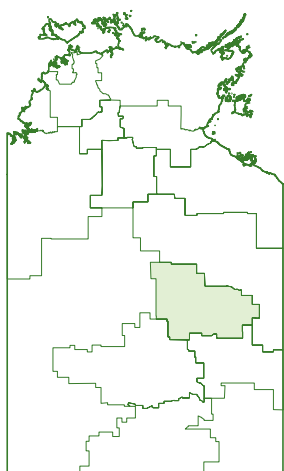


Figure 8: Location of Tennant Creek Pastoral District

Historical Rainfall (mm)

District Median	409.00 mm
District 20 year average rainfall	464.36 mm
District 20 year summer (October to April) average rainfall	442.00 mm
District 20 year winter (May to September) average rainfall	22.36 mm

2013/2014 Rainfall (mm)

District seasonal average	464.40 mm
District summer (October to April) average	464.40 mm
District winter (May to September) average	0 mm

Rainfall

Based on data from one weather station located at Tennant Creek Airport in the Tennant Creek Pastoral District, average rainfall was experienced for the reporting season.

Pasture Growth

Pasture growth for the region was average from October 2013 to September 2014, as determined by AussieGrass Models.

Standing Biomass

The standing biomass for April 2014 for the District was average to below average when compared to historical records. This trend continued through to September 2014 with pasture biomass levels of average to below average, when compared to historical records.

Rangeland Monitoring Program

During the 2013-14 reporting period, one property was assessed for the Tennant Creek Pastoral District. Eight sites were assessed across the property as part of the integrated monitoring program.

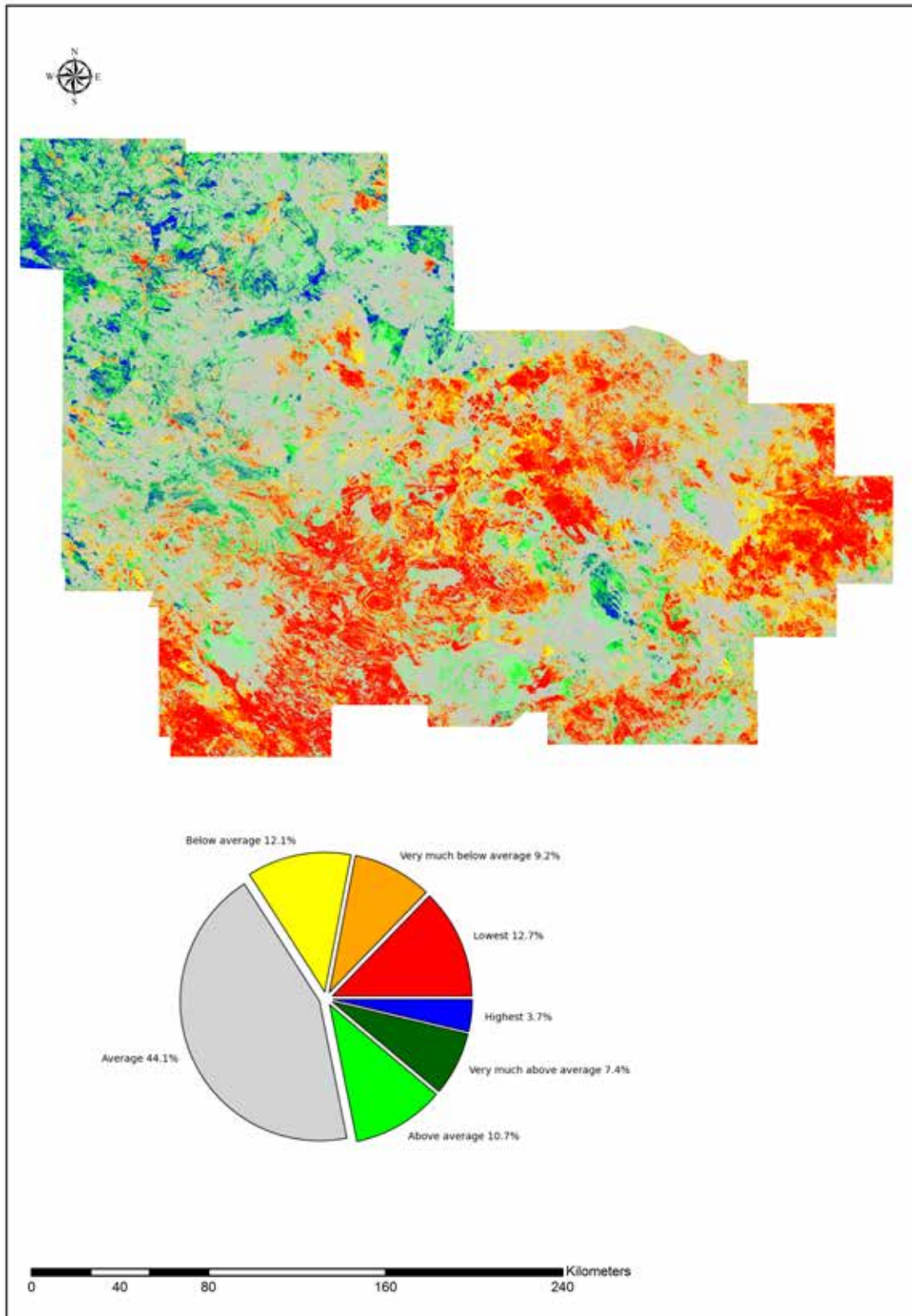
Rainfall at the station was restricted to January and February resulting in reduced pasture production and growth for the 2014 season.

The table on the following page presents the sites visited and corresponding condition assessment of the one property inspected for the 2013-14 reporting period.

Station	Total no of sites	Sites assessed	Good Condition	Fair Condition	Poor Condition	Property Condition
1	8	8	3	4	1	good
Totals	8	8	3	4	1	

The majority of sites assessed were in good to fair condition, for the seasonal conditions experienced, with stable levels of ground cover. The sites were consistently comprised of a variety of perennial grasses, of which many were palatable. Areas across the property also had a variety of perennial grasses and ground cover consistent with the seasonal conditions.

TENNANT CREEK PASTORAL DISTRICT



A total of 44% of the district has average cover, 22% above and 34% below. NAFI fire scar mapping estimated less than 1% of the region was burnt for this period.

PLENTY PASTORAL DISTRICT

Historical Rainfall (mm)

District Median	214.60 mm
District 20 year average rainfall	263.51 mm
District 20 year summer (October to April) average rainfall	208.28 mm
District 20 year winter (May to September) average rainfall	58.95 mm

2013/2014 Rainfall (mm)

District seasonal average	81.40 mm
District summer (October to April) average	79.00 mm
District winter (May to September) average	2.40 mm

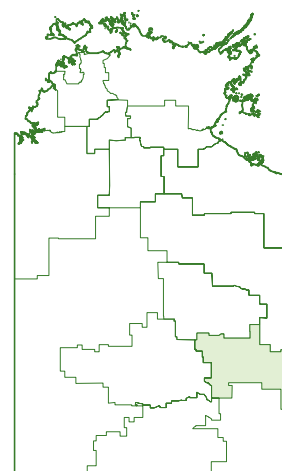


Figure 9: Location of Plenty Pastoral District

Rainfall

Based on data from one weather station located at Jervois in the Plenty Pastoral District, below average rainfall was experienced for the reporting season.

Pasture Growth

Pasture growth for the region was below average to extremely low from October 2013 to September 2014, as determined by AussieGrass Models.

Standing Biomass

The standing biomass for April 2014 for the District was average to low when compared to historical records. This trend continued through to September 2014 with pasture biomass levels of below average to extremely low, when compared to historical records.

Rangeland Monitoring Program

During the 2013-14 reporting period, two Plenty Pastoral District properties were assessed, with a total of 18 sites assessed as part of the integrated monitoring program.

The properties inspected experienced below average seasonal conditions resulting in majority of sites assessed as having poor to fair condition. The rainfall for the 12 months preceding the inspection was below average, particularly in the southern regions of the District, with both summer and winter rainfall very low.

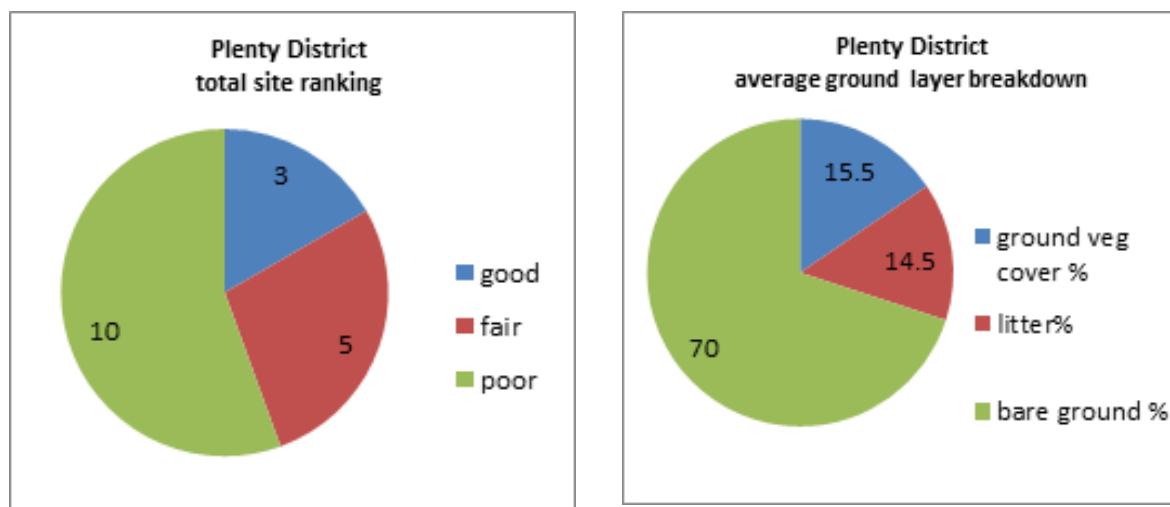
Two years of significant rain events in 2010 and 2011 stimulated massive growth events across the region and were followed by an average to below average year in 2012 and a dry 2013.

Both properties inspected were subject to wildfires during both 2011 and 2012, with up to 50% of each property burnt. The removal of ground vegetation due to fire significantly reduced the condition of the land and the ability to respond to any following rainfall within the current reporting period.

The following table presents sites visited and corresponding condition assessment for the 2013-14 reporting period.

Station	Total no of sites	Sites assessed	Good Condition	Fair Condition	Poor Condition	Property Condition
1	8	8	3	2	3	fair
2	10	10	0	3	7	fair to poor
Totals	18	18	3	5	10	

The charts below depict the number of sites established and the breakdown of the average ground layer of the sites assessed as part of the integrated rangeland program for the Plenty Pastoral District.

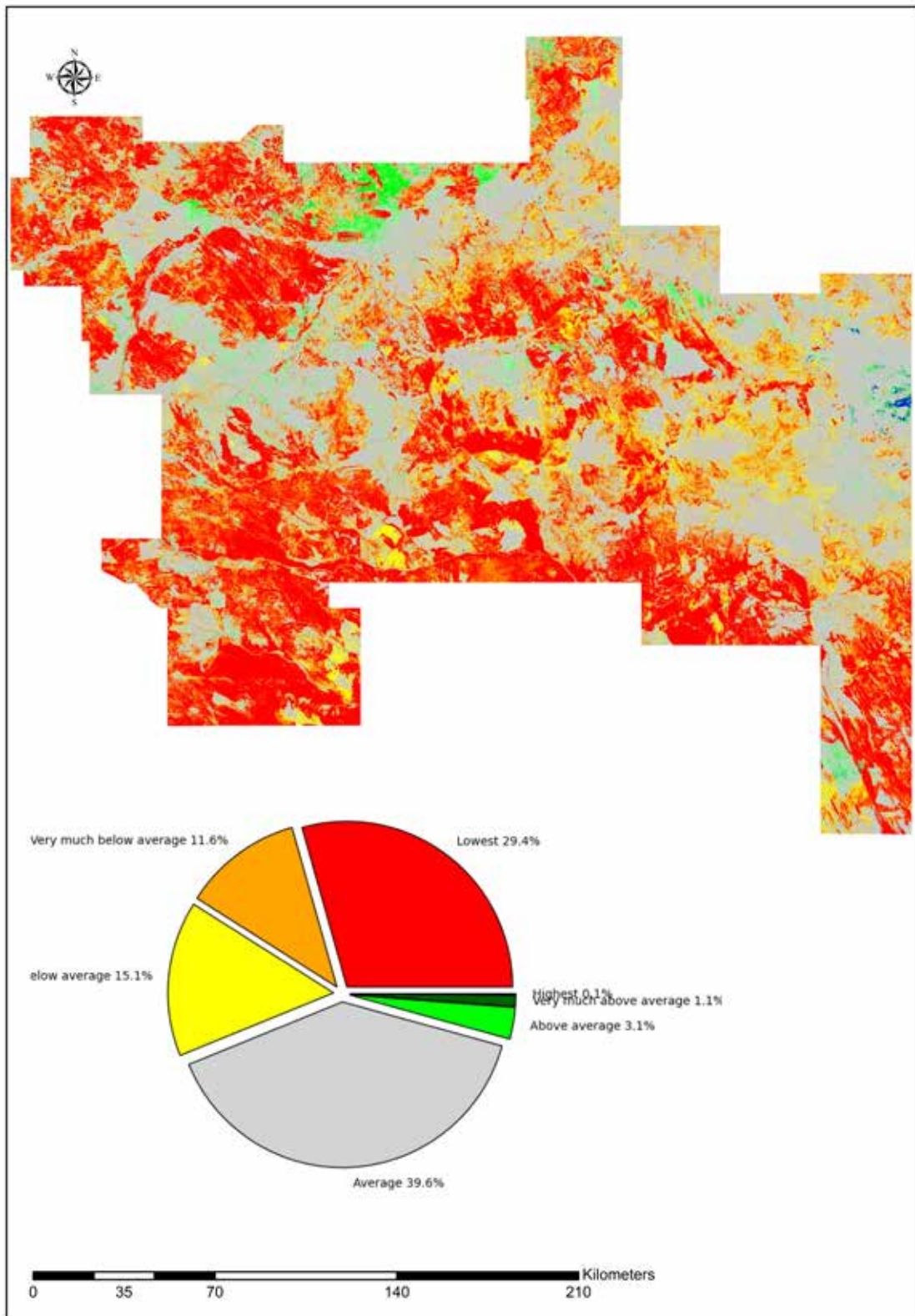


Condition assessment of monitoring sites assessed across the Plenty Pastoral District during the 2013-14 reporting period.

Infrastructure development bores, tracks and fences and maintenance of existing infrastructure continued across the properties.

Even though sites assessed across the properties had consistently very low levels of ground cover and litter, some perennial species were present with annual grasses and forbs. It was observed across the properties, large areas of reduced cover and the impact of previous fires. Some areas, where cattle numbers were consistently lower than other area, ground cover and species diversity was higher than areas with concentrated grazing after the fires.

PLENTY PASTORAL DISTRICT



A total of 40% of the district has average cover, 4% above and 56% below. NAFI fire scar mapping did not detect fire for this period.

NORTHERN ALICE SPRINGS PASTORAL DISTRICT

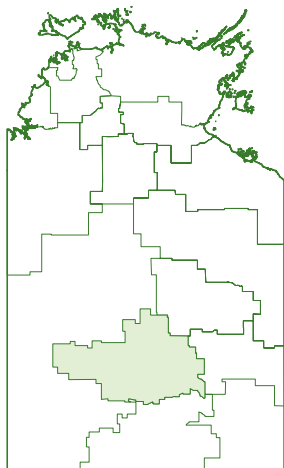


Figure 10: Location of Northern Alice Springs Pastoral District

Historical Rainfall (mm)

District Median	292.28 mm
District 20 year average rainfall	331.71 mm
District 20 year summer (October to April) average rainfall	274.12 mm
District 20 year winter (May to September) average rainfall	57.59 mm

2012/2013 Rainfall (mm)

District seasonal average	331.03 mm
District summer (October to April) average	300.20 mm
District winter (May to September) average	30.83 mm

Rainfall

Based on data from three weather stations located at Arltunga, Territory Grape Farm and Yuendumu in the Northern Alice Springs Pastoral District, average rainfall was experienced for the reporting season.

Pasture Growth

Pasture growth for the region was average from October 2013 to September 2014, as determined by AussieGrass Models.

Standing Biomass

The standing biomass for April 2014 for the District was average to above average when compared to historical records. This trend continued through to September 2014 with pasture biomass levels of above average, when compared to historical records. It should be noted that the eastern portion of the District experience significantly lower seasonal conditions, with extremely low standing biomass, lowering the District average.

Rangeland Monitoring Program

During the 2013-14 reporting period, eight Northern Alice Springs Pastoral District properties were assessed, with 64 sites assessed as part of the integrated monitoring program.

The properties assessed in 2013-14 across the Northern Alice Springs District are located in the central portion of the District. Properties experienced average seasonal conditions, with the

majority of the sites assessed having fair to poor condition. Discussions with land holders and managers highlighted the low seasonal response experienced and the low levels of ground vegetation across the properties.

Many of the properties inspected were impacted by large wild fires across the region during 2011 and 2012, with reduced vegetation and grazing impacts still evident during the 2014 inspections. Some properties were in the process of destocking and moving cattle around the property to increase utilisation.

One manager was actively reducing stock numbers, as explained to monitoring officers, to increase the longer term stocking rate of the property.

A number of the properties inspected had recently changed ownership with the current managers still becoming aquatinted with the previous management practices and stocking rates. They all were aware of the impact of the low seasonal response and were actively managing their property within the seasonal conditions.

During inspections it was observed the monitoring site and larger areas across the properties had increased areas of bare ground and lower levels of ground cover.

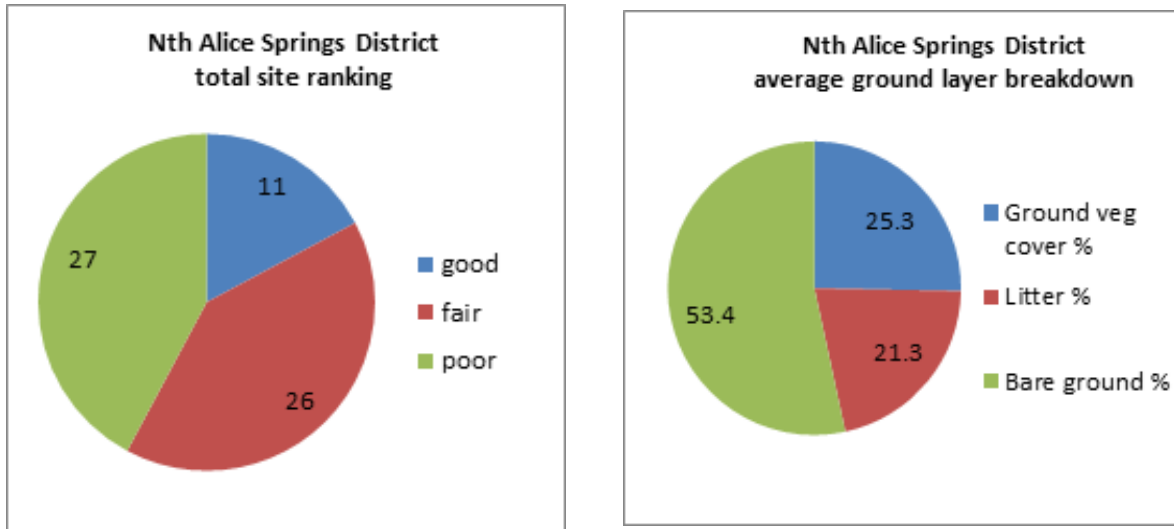
The sites rated in good condition had both a variety of perennial species and increased ground cover levels when compared to sites annual species dominated with low palatability and extremely low vegetation levels.

The table below presents sites visited and corresponding condition assessment for the 2013-14 reporting period

Station	Total no of sites	Sites assessed	Good Condition	Fair Condition	Poor Condition	Property Condition
1	10	10	0	5	5	fair
2	3	3	0	3	0	fair
3	8	8	0	3	5	poor
4	8	8	1	3	4	fair
5	13	13	3	1	9	poor
6	9	9	1	7	1	fair
7	5	5	1	3	1	fair
8	8	8	5	1	2	good
Totals	64	64	11	26	27	

One property located in the western portion of the District experienced higher levels of rainfall and a greater seasonal response when compared to the remaining properties. This property had an extended period of light to no grazing, with new owners managing the property this year. Sites and areas across the property had high levels of ground cover and a variety of perennial and palatable species, highlighting the ability of the land to respond when spelled.

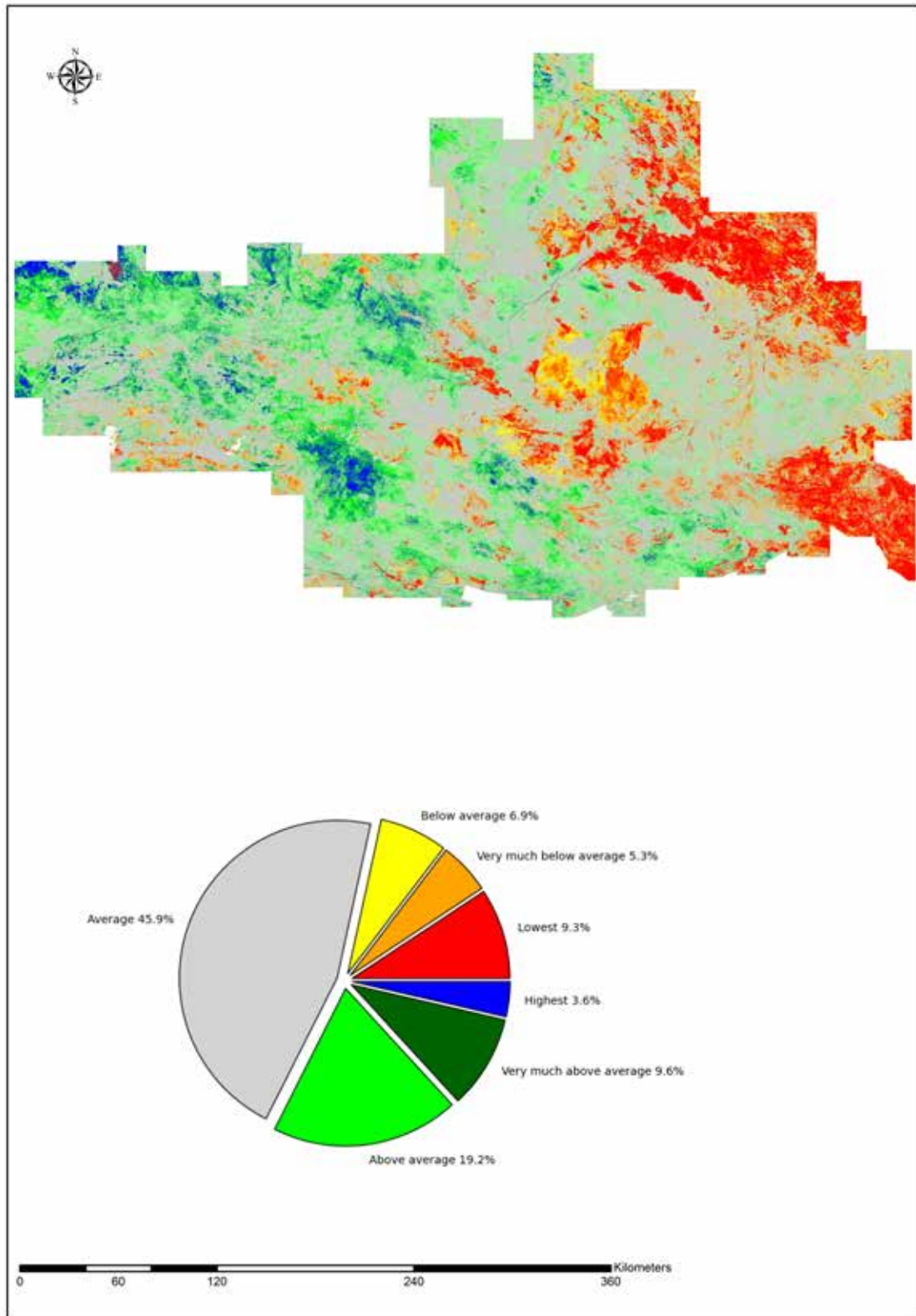
The following charts depict the number of sites established and the breakdown of the average ground layer of the sites assessed as part of the integrated monitoring program for the Northern Alice Springs Pastoral District.



Condition assessment of monitoring sites assessed across the Northern Alice Springs Pastoral District during the 2013-14 reporting period.

The Northern Alice Springs District is responding to the average seasonal conditions with low seasonal growth and ground cover, with many properties having sites in fair to poor condition. The impact of wildfires from previous years are evident with concentrated grazing activity and reduced ground and vegetation cover. Pastoralists are aware of the reduced seasonal response and adjusting property management to match the conditions experienced.

NORTHERN ALICE SPRINGS PASTORAL DISTRICT



A total of 46% of the district has average cover, 32% above and 22% below. NAFI fire scar mapping estimated less than 1% of the region was burnt for this period.

SOUTHERN ALICE SPRINGS PASTORAL DISTRICT

Historical Rainfall (mm)

District Median	219.89 mm
District 20 year average rainfall	256.89 mm
District 20 year summer (October to April) average rainfall	199.82 mm
District 20 year winter (May to September) average rainfall	58.19 mm

2013/2014 Rainfall (mm)

District seasonal average	191.80 mm
District summer (October to April) average	163.60 mm
District winter (May to September) average	28.20 mm

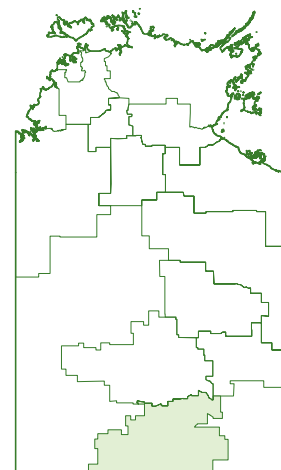


Figure 11: Location of Southern Alice Springs Pastoral District

Rainfall

Based on data from three weather stations located at the Alice Springs Airport, Curtin Springs and Kulgera in the Southern Alice Springs Pastoral District, below average rainfall was experienced for the reporting season.

Pasture Growth

Pasture growth for the region was average to below average from October 2013 to September 2014, as determined by AussieGrass Models.

Standing Biomass

The standing biomass for April 2014 for the District was average to below average when compared to historical records. This trend continued through to September 2014 with pasture biomass levels of above average to below average, when compared to historical records.

Rangeland Monitoring Program

During the 2013-14 reporting period, six Southern Alice Springs Pastoral District properties were assessed, with 64 sites assessed as part of the integrated monitoring program.

The majority of properties assessed in 2013-14 across the Southern Alice Springs District are located in the south eastern portion of the District. Properties experienced below average seasonal conditions, resulting in the majority of the sites assessed as having poor to fair condition.

The majority of land types in the southern region of the NT have naturally occurring sparsely vegetated areas with bare surfaces, reflecting the arid environment.

During the inspections it was observed that some properties had areas of sustained ground cover responding to April rains across the District. Productive land types with concentrated cattle activity consistently had poor condition with low levels of vegetation cover and species diversity.

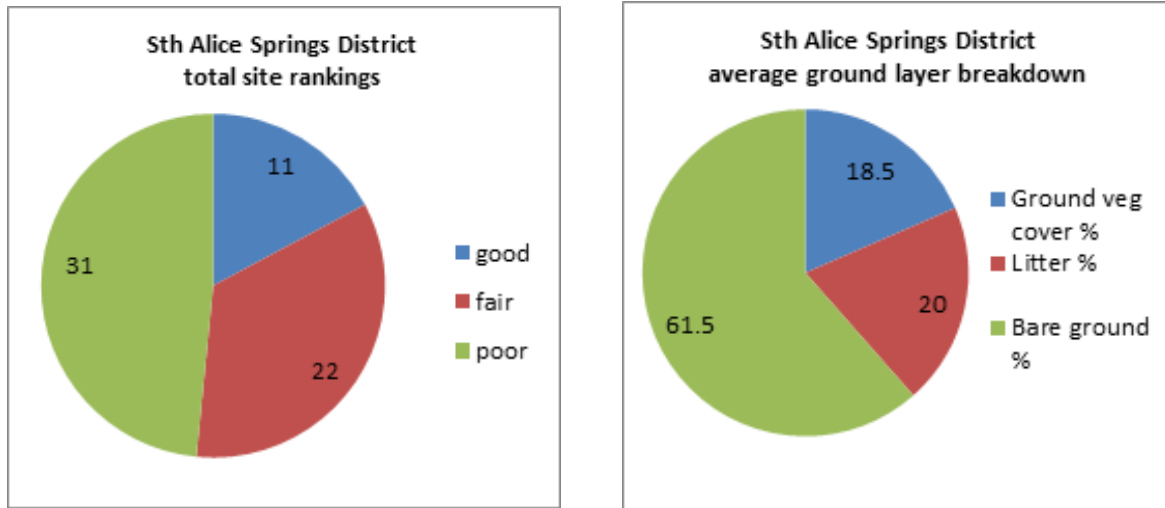
Sites rated in good condition had increased levels of cover with a mix of perennial and annual palatable species. Sites in poor condition had extremely low levels of cover dominated by unpalatable annual grasses or forbs.

Erosion across the District was continued to be observed with large areas of sheet erosion evident, particularly with the low seasonal response experienced across the properties. Previous wildfire events in 2011 and 2012 were still evident across some of the properties inspected, with reduced ground cover and recovery.

The table below presents sites visited and corresponding condition assessment for the 2013-14 reporting period.

Station	Total no of sites	Sites assessed	Good Condition	Fair Condition	Poor Condition	Property Condition
1	14	14	6	5	3	good
2	11	11	3	4	4	fair
3	7	7	0	4	3	poor
4	10	10	1	6	3	fair
5	11	11	0	2	9	poor
6	11	11	1	1	9	poor
Totals	64	64	11	22	31	

The charts below depict the number of sites established and the breakdown of the average ground layer of the sites assessed as part of the integrated rangeland program for the Southern Alice Springs Pastoral District.

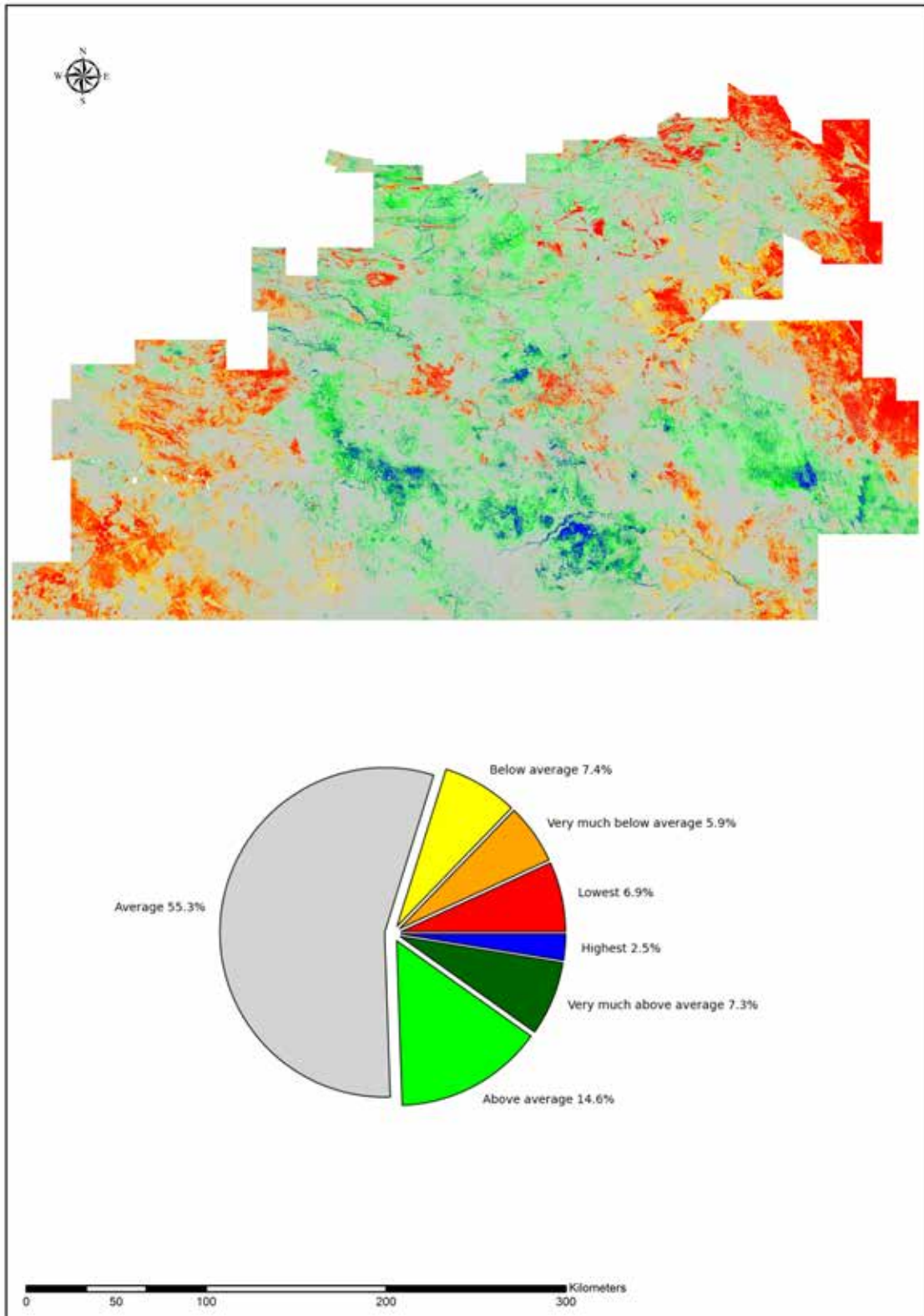


Condition assessment of monitoring sites assessed across the Southern Alice Springs Pastoral District during the 2013-14 reporting period.

The Southern Alice Springs Pastoral District is responding to the below average seasonal conditions with below average seasonal growth and ground cover, with many sites across the properties having poor to fair land condition.

Properties had areas of increased cover, which mainly reflected the less pastorally productive land types across the District. Grazing activities continue to be concentrated upon pastorally significant land types, which have low levels of cover and species diversity at sites assessed.

SOUTHERN ALICE SPRINGS PASTORAL DISTRICT



A total of 55% of the district has average cover, 25% above and 20% below. NAFI fire scar mapping did not detect fire for this period.

BUSHFIRE ACTIVITY

Information supplied by the Department of Land Resource Management Bushfires NT Division

Savanna Region

The 2013-14 fire season was very active and impacted upon many stations across the region.

Several stations were affected by significant late season wildfires in 2013 including Murrانji, Camfield, Hodgson River, Auvergne, Mountain Valley, Birrindudu, Katherine Downs and Mainoru stations. Extensive rainfall across the region in early November 2013 ended the fire season abruptly.

Early in the 2014 dry season approximately 30 stations across the region undertook aerial incendiary burning to prepare for the 2014 fire season. Bushfires NT staff also implemented strategic burns on Murrانji, Vermelha, Willeroo, Aroona, Manbulloo, Eley and Pungalina stations.

To the end of September 2014 two significant fires had impacted on the region. The first affected West Eley, Gorrie, Lakefield, Cow Creek, Bloodwood Downs, Middle Creek and Birdum Creek stations and required significant effort from pastoralists and Bushfires NT to contain over six days.

A second significant fire around the Buchanan Highway/ Wave Hill area impacted on Murrانji, Dungowan, Birrimba/ Killarney, Gilnockie, Providence, Avago, Hidden Valley, Buchanan Downs, Wave Hill, Montejinni, Camfield, Wave Hill and Cattle Creek stations. This fire continued for two months late in the season until it stopped in the Tanami Desert. Despite extensive efforts by pastoralists and Bushfires NT, several stations lost significant portions of fenced and productive country to this fire.

With little rain forecast for October and November, and the increased likelihood of dry storms, fire danger remains high across the Savannas Region throughout 2014.

Barkly Region

The 2013-14 fire season was average. Significant fires occurred on Beetaloo, Mallapunyah, Anthony Lagoon, Walhallow and Mungabroom stations. The total area affected by these fires was a little over 5,000km². A number of smaller fires through the region were quickly controlled and had little impact.

Alice Springs Region

Due to below average rainfall and reduced fuel loads the fire season did not have a great impact on the region. Many small fires were reported, but none had a significant impact.

WEED ACTIVITY

Information supplied by the Department of Land Resource Management Weed Management Branch

Weeds threaten the sustainability of rural primary industries through increasing costs, reducing productivity, reducing efficiency and also potentially posing limitations on market options. The Weed Management Branch works to preserve our natural resources, industries and lifestyles by preventing the introduction and spread of weeds. Managing rapid responses to new, high weed risk incursions is also a priority.

The Branch provides landholders with best practice management information which is used to:

- Promote techniques and approaches for effective weed management
- Assist with identification, survey and mapping of weeds
- Develop weed management plans to eradicate or control weeds

For more information phone 8999 4567 (Darwin), 8973 8100 (Katherine), 8951 9210 (Alice Springs) or email the Weed Management Branch at weedinfo@nt.gov.au.

Bellyache bush

Bellyache bush (*Jatropha gossypifolia*) management continued in the Daly catchment, with a concerted increase in activities with assistance from the Federal Biodiversity Fund. Trial and monitoring plots further evaluated chemical and fire control methods for management of bellyache bush on properties within the upper Daly catchment. Other core infestations on the Roper River and Rosie Creek continue to be difficult to manage, although there has been a campaign, including dissemination of aerial footage demonstrating spread, to increase stakeholder awareness of bellyache bush spread within the Roper catchment. Isolated infestations within the Tennant Creek region are being controlled and monitored with assistance from the Weed Management Branch.

Rubber bush

Rubber bush (*Calotropis procera*) poses a significant risk to grazing land in the NT. It has the potential to colonise large parts of the Barkly Tablelands and Victoria River District, where it competes with native pastures. A Meat and Livestock Australia (MLA) funded project focussing on improved management outcomes for rubber bush in northern Australia is continuing. As part of the project, a series of herbicide trials were established within the Barkly region in 2014 on Rockhampton Downs Station and Helen Springs Station. Results will be used to develop improved best practice control options for rubber bush.

Parkinsonia

Parkinsonia (*Parkinsonia aculeata*) is a weed of concern across most of the NT. Strategic management of parkinsonia within the Lake Tarrabool and Lake Sylvester catchments of the Barkly region has continued in 2014, despite the completion of two federally funded projects in 2013. Ongoing management also continues in the Lake Woods, Newcastle Creek Catchment.



The 'uu' (*Eueupithecia cisplatensis*) biocontrol project significantly expanded in 2013-14. This included the release of the leaf feeding moth, at a further six stations including: Brunette Downs, Birrindudu, Newcastle Waters and Allroy Downs. Refinements in the rearing procedure have allowed for greater number of biocontrol agents per release. Monitoring has detected establishment at Newcastle Waters and on the Adelaide River, however effectiveness as a weed management tool is yet to be determined. The project aims to continue mass rearing and releasing across the entire geographical range of parkinsonia.

Rubbervine

Rubbervine (*Cryptostegia grandiflora*) occupies more than 3.5 million ha in Queensland and is spreading towards the Territory at a rate of 1-3% per year. There have also been isolated infestations in Western Australia. Since 2009, the Weed Management Branch has conducted biennial surveys of at risk border areas, including those adjoining the Gulf of Carpentaria. Infestations were located within 8km of the NT border in September 2013. The Weed Management Branch re-visited sites in September 2014 to undertake control works. The control program targeted areas of Wentworth Station between Tully and Massacre Inlets. The isolated incursion of rubbervine located further south on Soudan Station in 2011 remains under active surveillance. Eradication at this site is deemed achievable. Integrated approaches to management will be required to intercept the westward spread of rubbervine. Survey and control should be continued in conjunction with affected and at risk land managers. Emphasis should be placed on maintaining collaborative, cross border approaches to management.

Grasses

Rat's tail grass (*Sporobolus* spp.) and grader grass (*Themeda quadrivalvis*) are emerging as weed threats for many pastoral properties across the Darwin, Katherine, Roper, Gulf and VRD regions. Trial plots across the Finnis, Daly and Adelaide River catchments have been set up to examine the effects of different herbicides, rates and timing with a view to determining the best methods of chemical control. Plots will allow analysis of the 'knock down' and residual effects of the herbicides, including effects on improved and native pasture species. Interim results using flupropanate formulations have indicated good species selectivity for rat's tail grass in native pasture. As such trials have been expanded to examine broad-acre application. Results for initial trials are testing the residual activity of the herbicides and as such will not be available after the 2014-15 wet season.

Mesquite

In the NT mesquite (*Prosopis* spp.) occurs as scattered, isolated, low level infestations across 12 pastoral leases in the Barkly region, with the exception of one pastoral lease where there is an extensive core infestation identified in 2012 as part of the federally funded Lake Tarrabool weed project. All of the isolated infestations of mesquite located in the Barkly region are current high priorities for management as further spread and establishment into clean areas poses a significant risk.

Mimosa

Mimosa (*Mimosa pigra*) is well established in many Top End wetlands and rivers. 2014 has seen the ongoing funding of control in the Finnis Reynolds catchments via a large scale Australian Government weed and feral project administered by Territory Natural Resource Management. The Daly, Mary and Adelaide River catchments continue to see substantial investment by pastoral properties to either maintain current infestation levels and or reclaim productive floodplain country from mimosa monocultures. Small satellite infestations in the Katherine and VRD Regions are being monitored by Weed Management Branch staff with the aim of eradication. The Branch's main goals for mimosa management is to assist land holders to manage growth and spread within property boundaries, reclaim productive country from monocultures and prevent spread into clean catchments.

Athel Pine

Athel pine (*Tamarix aphylla*) had previously been declared a Class B weed across the NT requiring that growth and spread be controlled. In January 2014 a decision gazetted by the Minister for Land Resource Management changed the legislative status of athel pine. Athel pine now has a split zoning. Severe athel pine infestations established within the Finke River system will remain within a Class B zoning. All other areas have now been declared to be a Class A weed, meaning that all athel pine trees must be eradicated. This amendment recognises that there are many small, isolated plantings of athel pine which pose significant risk of spread. The continuation of dry conditions in central Australia has continued to benefit control works. An athel pine stakeholder meeting will be held in October 2014, to discuss current and future management options for the ongoing athel pine management program in the upper 420 km managed section of the Finke River.

Parthenium

Parthenium (*Parthenium hysterophorous*) is regarded as one of the worst weeds in Australia because of its invasiveness, potential for spread and economic, health and environmental impacts. It is well established through central Queensland and New South Wales, however all known occurrences in the NT have been detected early and eradicated. A single infestation of parthenium was identified at a livestock holding facility in Tennant Creek in 2010. The outbreak has since been controlled and monitored for reoccurrence. The last seedlings emerged in January 2012. The site remains under strict quarantine with an education and awareness campaign continuing to remain in place.

FERAL ANIMALS

Information supplied by the Department of Land Resource Management Flora and Fauna Division

Camels

While the Australian Feral Camel Management Project (AFCMP) finished in December 2013, the Northern Territory Government continued with aerial culling operations targeting feral camels up until June 2014 using internal funds. Three culling operations were undertaken in the western deserts of the Northern Territory during 2014 and a total of 6567 camels were removed. An additional 199 camels were culled under the Red Centre Biodiversity Project which is funded under the Caring For Our Country programme. Aerial surveys conducted in 2013 indicated that camel densities in the Northern Territory were reduced by upwards of 80% under the AFCMP and recent anecdotal reports indicate that camels are not causing any major issues in the Northern Territory at present.

Horses and donkeys

A total of 1887 horses and 217 donkeys have been removed from Aboriginal land and the park estate during culling operations undertaken in the southern Northern Territory during 2014.

There is a large-scale horse and donkey management program in the Victoria River District (mostly through the Victoria River District Conservation Association), where horses have been declared as a pest and landholders are required to manage horse populations on their property under the *Territory Parks and Wildlife Conservation Act*.





Water buffalo

An aerial survey undertaken in Arnhem Land during June 2014 indicated that there was a minimum of 98,000 feral water buffalo in the region at an overall density of about 1 buffalo per km². However, the population is patchily distributed and localised densities in excess of 10 buffalo per km² were recorded in some areas. The population increase from 1998 to 2014 indicates that the current estimated minimum population is approaching that in 1985, prior to the BTEC program. There are concerns over the impacts of buffalo across much of Arnhem Land in both upland and lowland habitats.

Rabbits

Rabbit numbers in central Australia appear to have increased in recent years but are not at levels recorded prior to the arrival of Rabbit Haemorrhagic Disease (RHD). The RHD and myxomatosis are periodically active throughout the region and help to keep rabbit numbers in check. Very little additional rabbit management is undertaken anywhere in central Australia.

Wild dogs

Wild dogs are managed on the pastoral estate using a range of methods including 1080 baits under permit. In addition, procedures have been developed to enable one shire council to undertake dog management under strict conditions specific to their situation, within their boundaries where dogs pose a threat to public safety.

Over the last 18 months a new system has been developed to manage the impacts of wild dogs to the pastoral industry in the Northern Territory which reflects the jurisdiction's circumstances and needs. This system is still evolving, but has the following features:

- (1) greater involvement of industry with a higher level of self-management and balanced with an increased auditing of records;
- (2) industry-led coordination of baiting activities through the establishment of authorised Regional Wild Dog Management Groups; and
- (3) a one-stop-shop (single lead agency) for baiting authorisations.

This system has enabled an increasing shift of the process to produce injected wet meat baits solely by Northern Territory Government employees to trained and authorised members of the Regional Wild Dog Management Groups, on a non-fee for service basis. The entire system involves no subsidies or levies and a Northern Territory Wild Dog Management Group has been formed with industry and government representatives to oversee ongoing improvements to the system.

Feral pigs

Feral pig management is undertaken on some pastoral properties in the Top End using an integrated program of 1080 baiting, trapping, aerial and ground shooting. There is increasing interest from pastoral properties to undertake pig management using 1080 baiting.

Parks and Wildlife are currently undertaking a pig and banteng management program on the Cobourg Peninsula, which is having considerable success in the management of these species.

Some pig management is being undertaken in Arnhem Land, particularly in the Blue Mud Bay area, to manage the impacts of pigs on the environment. Parks and Wildlife staff provides free assistance to landholders who wish to conduct 1080 management for pigs.



Feral cats

Exclusion fences are used to protect small populations of the endangered mala (rufous hare wallaby) from foxes and cats on Watarrka National and Uluru Kata Tjuta National Parks.

Experimental cat baiting using Eradocat baits occurs on West Island. Cat detection rates have dropped markedly to near zero levels in some areas, and delicate mice are starting to breed up for the first time since 2004.

A multifaceted research effort is underway in the Top End to investigate the role of feral cats in mammal declines, funded by the National Environmental Research Program. Two 64 ha experimental cat exclusion plots have been constructed in Kakadu National Park to investigate the natural population responses of in situ small mammal and reptile populations in comparison to unfenced paired areas.

An enclosure experiment is also underway at Wongalara Station (Australian Wildlife Conservancy). Survival of captive-bred pale field rats that have been released into paired predator-proof and non-predator proof 6.25 ha enclosures is being evaluated.

A large camera trapping trial has been undertaken, comparing lure types, camera position and camera number, in order to improve detection rates and optimise survey and monitoring methods for cats. Surveys have commenced across different land tenures, including parks, Indigenous protected areas and grazing lands and peri-urban areas to evaluate spatial relationships amongst small mammal diversity, cats, dogs and other pertinent environmental parameters.

Using specially trained cat-dogs provided by the Australian Wildlife Conservancy, two cats have recently been trapped in Arnhem Land and had GPS collars attached. Home range and behaviour data from these cats will be contributed to other cat ecological research currently underway in the Kimberly.

MEETINGS OF THE BOARD

Five meetings of the Pastoral Land Board were held between 1 October 2013 and 30 September 2014 as follows:

96th Meeting: teleconference held 17 December 2013

The Board considered a development plan for a term pastoral lease, approved the guidelines for non-pastoral use applications under the amended legislation and finalised the Board's first newsletter to be distributed to pastoralists quarterly.

97th Meeting: teleconference held 17 February 2014

The Board noted three non-pastoral use permit renewals approved out-of-session, commenced discussions on the draft 2012-13 Pastoral Land Board Annual Report and prepared a response to the Commonwealth Government's proposed nomination for the *Environment Protection and Biodiversity Conservation Act 1991*.

98th Meeting: held 22 May 2014 in Katherine

The Board considered two voluntary management plans, endorsed a development plan for a term lease, considered the draft 2012-13 Pastoral Land Board Annual Report and noted two non-pastoral use applications received for existing tourism operations.

99th Meeting: teleconference held 28 July 2014

The Board approved the 2012-13 Pastoral Land Board Annual Report and gave further consideration to a revised voluntary management plan.

100th Meeting: held 15 September 2014 in Alice Springs

The Board approved a non-pastoral use permit and noted the out-of-session approval of another non-pastoral use permit. The Board considered the status of two voluntary management plans and received a presentation on the rangeland monitoring program.

APPLICATIONS CONSIDERED BY THE BOARD IN 2013-14

Land Clearing Applications

Station	Pastoral District	Purpose	Total Area (approx.)	Decision
Tipperary	Darwin	Irrigated agriculture	724 hectares	Approved

Non-Pastoral Use Applications

Station	Pastoral District	Purpose	Term	Decision
Curtin Springs	Southern Alice Springs	Tourism	30 years	Approved
Narwietooma	Northern Alice Springs	Tourism	30 years	Approved

Subdivision Applications

Under section 61 of the *Pastoral Land Act*, the Minister refers applications for subdivision of pastoral leases to the Board for consideration and recommendation. During 2013-14 no applications were received.

Perpetual Pastoral Lease Applications

Under section 62 of the *Pastoral Land Act*, the Minister refers applications for conversion of term pastoral leases to perpetual tenure to the Board for consideration and recommendation. During 2013-14 no applications were received.

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APPENDIX 1

NT Cattle Industry 2014

Source: Department of Primary Industry and Fisheries Livestock Industries Development Group

The NT cattle population has historically accounted for an estimated 2 million head, or over 7.0% of the Australian total. NT cattle herd by pastoral district, Alice Springs 20%, Barkly Tablelands and Tennant Creek 30%, Victoria River District and Katherine 32%, and Darwin, Roper and Gulf 18% of the total NT herd.

In 2012-13, an estimated 583,869 head of cattle were turned off from Territory pastoral properties, a decrease of 7.0% on 2011-12.

Of the total Territory cattle turned off in 2012-13, 57.6% were destined for interstate trade, and 42.4% were exported live overseas reflecting the challenging conditions in live export markets. Some cattle were slaughtered in small private abattoirs as there is currently no commercial, domestic or exporting abattoir operating in the NT. AAco has completed construction of a large-scale, state of the art meat processing facility at Livingstone (outside Darwin) and are preparing to ramp-up operations in 2015.

More recent figures for NT live cattle exports through the Port of Darwin show that in 2012-13, 247,399 head of NT cattle were exported, a decrease of 7.0% compared to 2011-12. Due to the subsequent reduction in import by the Indonesian Government permits (caused by the 2011 trade ban) have impacted on export numbers. Facing of escalating prices for beef, the Indonesian Government subsequently eased import quotas on beef imports.

Interstate movements' rose to 336,470, a 6.9% increase on 2011-12 as overall NT turn-off decreased marginally as Indonesian buyers were importing fewer cattle.

Gross Value of Production

The estimated gross value of production for the cattle industry was \$307.4 million in 2012-13, a 6.3% decrease compared to the previous year. This was mainly due to a small decrease in the value of live cattle exports and value of cattle movements' interstate. In 2013-14, cattle production value is projected to increase by 0.9% to \$310.1 million.

Cattle contributed 49.0% of the total value of Territory rural industries and fisheries production in 2012-13.

a. Direct Contribution to Gross State Product (GSP)

NT cattle industry's value adding direct contribution (output) to NT GSP in 2012-13 is estimated to be \$156.8 million, or approximately 0.82% of total NT GSP.

b. Flow-on Value (Direct and Indirect Contribution)

The flow-on effects of additional output (direct contribution) of \$156.8 million and additional income (indirect contribution) of \$38.9 million by the pastoral industry on the rest of the NT economy is estimated to be \$195.6 million.

NT Farm Performance

The financial performance of beef producers in the NT on average in 2011-12 and 2012-2013 was challenging, largely due to the live export ban, subsequent changes to Indonesian import quotas and appreciating Australian dollar. This is responsible for the decrease in cattle receipts that were offset by a decrease in farm cash costs. The Australian Bureau of Agricultural and Resource Economics (ABARE) estimates that average farm cash incomes¹ (per farm) of Territory beef producers in 2011-12 was \$253 728, increasing to \$267 270 in 2012-13 while farm cash incomes are projected to increase (on average) to \$403 400 in 2013-14. However, there are historically considerable variations in farm financial performance between the pastoral regions and between large and small cattle enterprises.

Rural Land

During 2012-13, rural property sales recorded little activity in the market for beef cattle stations in the northern half of the NT. In 2012, 22 of the same 25 stations listed for sale at beginning of 2011 are still on the market. Property values in Top End fell by around double those in Alice Springs.²

1. ABARE Australian farm survey results: All broadacre industries selected physical and financial estimates, by state dataset

2. Source: Herron Todd White National Rural Overview http://www.htw.com.au/Industry_Presentations/Rural-Breakfast-2012.pdf

APPENDIX 2

NT Cattle Outlook

Source: Department of Primary Industry and Fisheries Livestock Industries Development Group

For 2013–14 as a whole, the weighted average saleyard price of beef cattle is forecast to average 290 cents a kilogram (dressed weight), 2% lower than in 2012–13 and 18% below the 10-year average to 2012–13, in real terms. This downward trend reflects the deterioration of the season as it has progressed.

Assuming a return to average seasonal conditions in eastern Australia in 2014–15, the weighted average saleyard cattle price is forecast to rise by 12 per cent to 325 cents a kilogram. Increased restocker demand, is expected to place upward pressure on prices of trade steers, while greater heifer retention is likely to place upward pressure on medium cows. Strong export demand assisted by an assumed lower Australian dollar, is expected to put upward pressure on heavy steer prices.

Cattle prices are projected to average higher in real terms to 2016–17, reflecting increased demand for younger steers for restocking, lower supplies available for slaughter and ongoing strong export demand. A return to an expansionary phase of cattle slaughter and beef production is projected in the final two years of the outlook period, placing downward pressure on prices.³



Prospects for Interstate Movement

Australian beef and veal exports are forecast to increase by 10% in 2013-14 to 1.1 million tonnes (shipped weight), maintaining Australia's position as the world's third largest exporter, after India and Brazil. Exports to the United States, Republic of Korea and China are forecast to rise, offsetting lower exports to the largest market, Japan. The value of exports is forecast to increase by 18% to \$5.7 billion.

In 2014-15 beef and veal exports are forecast to fall by 7% to 1.04 million tonnes as domestic beef supply falls, assuming a return to average seasonal conditions. International demand for beef is expected to continue rising, resulting in a forecast 2% rise in the average export price of beef to \$5.25 a kilogram.

The Australian cattle industry's high reliance on overseas trade is projected to increase further out to 2018-19. The proportion of domestic production exported is projected to increase to 70% by 2018-19, up from an estimated 68 per cent in 2013-14.

Demand for imported beef in Japan is forecast to be largely unchanged in the short term, but increased competition from US beef in the Japanese market is expected. Japan's demand for imported beef in 2014-15 is forecast to remain largely unchanged at around 520 000 tonnes (shipped weight), consistent with the past five years. However, the proportion of imports from Australia is forecast to fall, while the proportion from the United States is forecast to rise.

In the short term, Japanese demand for imported beef is expected to increase. However, a relaxation of import restrictions to US beef is expected to result in increased shipments from the United States to Japan at the expense of Australian beef, particularly higher valued chilled cuts.

Over the medium term, Australian beef and veal exports to Japan are projected to decline further, reaching 240 000 tonnes in 2016-17, and stabilising over the remainder of the projection period to 2018-19. Australian beef and veal exports to Japan are projected to decline over the next few years, before stabilising toward the end of the outlook period.

Australian beef and veal exports to the United States are forecast to increase by 11% in 2013-14 to 230 000 tonnes (shipped weight) and a further 4% in 2014-15 to 240 000 tonnes. This reflects lower supply of manufacturing beef in the United States and a subsequent increase in demand for imports.

In the United States, supplies of domestically produced manufacturing beef - primarily from beef and dairy cows - are expected to fall in 2013-14 and 2014-15 as cow slaughter declines. Australian beef and veal exports to the United States are projected to rise to 280 000 tonnes by 2018-19.

Australian beef and veal exports to the Republic of Korea are forecast to increase by 9% in 2013-14 to 150 000 tonnes (shipped weight) and a further 3% in 2014-15 to 155 000 tonnes. With domestic beef production expected to fall in the short term, beef imports in the Republic of Korea are forecast to rise, and Australia is expected to remain the largest supplier. Over the medium term, Australian beef and veal exports to the Republic of Korea are projected to increase gradually to around 170 000 tonnes by 2018-19.

Australian beef and veal exports to China are forecast to increase by 79% in 2013-14 to 165 000 tonnes (shipped weight). Chinese demand for imported beef has increased significantly in 2013-14 as consumption growth has exceeded domestic production. Australia is the largest supplier of beef to China, forecast to account for around 60 per cent of imports

in 2013-14. In 2014-15 beef exports to China are forecast to increase slightly to 175 000 tonnes, as competition from other beef exporting countries increases.

Australian beef and veal exports to South-East Asia are forecast to increase by 6% in 2013-14 to 100 000 tonnes (shipped weight), largely reflecting increased demand from Indonesia. In 2014-15 beef and veal exports to South-East Asia are forecast to remain steady at around 100 000 tonnes, with increased exports to Indonesia offsetting declines to the Philippines and Malaysia. Over the medium term, Indonesia is projected to account for most of the growth in Australia's beef exports to South-East Asia.⁴

Prospects for Live Cattle Trade

Australian live feeder and slaughter cattle exports are forecast to increase by 46% in 2013-14 to 750 000 head and a further 3% in 2014-15 to 775 000 head. This reflects increased demand from South-East Asia, particularly Indonesia and Vietnam.

Over the medium term, live feeder and slaughter cattle exports are projected to increase, reaching 875 000 head by 2018-19. After peaking in 2013, beef production in Indonesia is projected to fall over the next few years, despite rising consumer demand.

Vietnam is likely to become an increasingly important market for live cattle exports in the short term. Increasing consumer demand for beef in Vietnam and stagnant domestic production is contributing to growth in live cattle imports. Vietnam, the Philippines and Malaysia are important markets for northern Australian cattle producers because they impose no restrictions on the number of cattle imported or on their weight.

In response to higher demand from South-East Asia, export cattle prices in northern Australia have risen. As a result, the value of feeder/slaughter cattle exports is forecast to increase by more than 60% in 2013-14 to \$575 million and a further 4% to \$600 million in 2014-15.

Over the medium term, live feeder and slaughter cattle exports are projected to increase, reaching 875 000 head by 2018-19. After peaking in 2013, beef production in Indonesia is projected to fall over the next few years, despite rising consumer demand. During 2011-12 and 2012-13, when import restrictions were imposed, the domestic herd in Indonesia decreased as farmers took advantage of high meat prices. This also reduced Indonesia's capacity for domestic supply into the future. As a result, an increasing proportion of Indonesia's beef supply will have to be imported over the medium term. Most recently, the Indonesian government announced that it would require importers to supply 25% of their live cattle imports as productive heifers, to build the domestic herd.⁵

3. ABARE Agricultural commodities – vol. 4 no. 1 • March quarter 2014 p74-83

4. ABARE Agricultural commodities – vol. 4 no. 1 • March quarter 2014 p74-83

5. ABARE Agricultural commodities – vol. 4 no. 1 • March quarter 2014 p74-83

APPENDIX 3

Pastoral Production Activities

Source: Department of Primary Industry and Fisheries Livestock Industries Development Group

The DPIF Livestock Industries Development Group provides research, development and extension services to facilitate the sustainable development of the Northern Territory pastoral industry. Areas of expertise include rangeland management, animal production, genetics, improved pastures and market development. The DPIF also plays a role in Indigenous economic development through its partnership in the Indigenous Pastoral Program.

The DPIF Rangeland Program's research and extension activities aim to optimise the sustainable and productive use of native pastures. Recent research efforts have focussed on investigating the benefits and costs of a range of grazing systems and land management practices. Over the past 13 years, DPIF has developed a nationally-significant catalogue of pasture growth models for the important pastoral land types of the NT. These models are used to estimate sustainable livestock carrying capacity and to test management scenarios with potential to increase the resilience of pastoral businesses to seasonal variability and climate change. The following sections summarise the outcomes of some of the main activities undertaken by the Rangeland Program in the past year. This is followed by a summary of the seasonal conditions and pasture growth experienced across the NT between October 2013 and September 2014.

Pastoral Feed Outlook Bulletin

Since late 2011 DPIF has produced a quarterly bulletin that summarises the seasonal outlook, recent forage growth and current standing pasture biomass in each of the 11 pastoral districts of the NT. The bulletin can alert the industry and its advisers to issues such as low pasture levels, increasing drought risk and high fire risk. The bulletin is available on the DPIF website at: www.nt.gov.au/dpif. Alternatively if you wish to receive an alert when a new Pastoral Feed Outlook is released, contact dionne.walsh@nt.gov.au to be added to the distribution list.

Carrying Capacity Research and Application

The DPIF continues to provide carrying capacity assessments to property owners and the Pastoral Land Board on request.

The DPIF has calibrated pasture growth models for more than 20 pasture types across the NT. Median pasture growth estimates from these models are routinely used for property carrying capacity assessments, Grazing Land Management workshops and for testing the performance of management options/practices in research projects.

It is difficult for the DPIF to undertake objective assessments of carrying capacity in some areas of the NT due to inadequate land type mapping. This is particularly the case for parts of the Roper, Gulf and southern Sturt Plateau Districts.

Grazing Systems Beyond Continuous Set Stocked Grazing

Current DPIF grazing systems trials and demonstrations are being conducted at Old Man Plains (OMP) Research Station near Alice Springs, Mungabroom station (Barkly) and Douglas Daly Research Farm. Updates on these projects can be found in the DPIF Annual Research Achievement Reports in the Technical Publications section of the website www.nt.gov.au/dpif.



The “Quality Graze” trial at OMP is testing and demonstrating recommendations that have been identified from recent research projects and promoted through the Grazing Land Management (GLM) workshops. The strategies being investigated include using the GLM methodology to set sustainable stocking rates, annual stocking rate adjustment based on seasonal variability, and pasture spelling achieved via rotational grazing. Pasture productivity, land condition and animal performance are regularly measured. The trial will determine the profitability and sustainability outcomes of these strategies and will run until at least December 2015. More information about this trial can be obtained by contacting chris.materne@nt.gov.au.

The DPIF (in partnership with the Barkly Landcare and Conservation Association) has been evaluating the intensive development and rotational grazing system implemented by the owners of Beetaloo and Mungabroom stations since 2012. We are measuring the pasture productivity, land condition and live weight performance across 47 paddocks ranging in size from 2.4 to 25km². The rotation is stocked with a single mob of 5,000-7,000 young bulls which are moved every 2-4 days. The performance of adjacent set-stocked country is being monitored for comparison. So far the results show that there are no statistical differences in average pasture yields, ground cover or pasture composition emerging between the two grazing systems. Live weight and economic performance has been quite variable depending on wet season rainfall. The trial is funded by the Australian Government until May 2016. More information about this trial can be obtained by contacting jane.douglas@nt.gov.au.

A cell grazing trial has been conducted on improved pastures at the Douglas Daly Research Farm since 2009. The treatments include cell grazing, set stocking at the long-term safe carrying capacity and set stocking at a variable stocking rate equivalent to the effective stocking rate in the cell grazing treatment. Young cattle enter the trial shortly after weaning and remain in it for about one year at which time they are replaced by the next year’s group of weaners. The cattle are rotated around 26, 6ha paddocks while the set stocked animals remain in the same 6ha paddock. Preliminary results indicate that individual animal performance is highest in the set stocking group with the lowest stocking rate; production per hectare is highest in the set stocking group with the highest stocking rate. The same trend has been seen in the four year groups studied so far. More information about this trial can be obtained by contacting tim.schatz@nt.gov.au.

Sustainable Grazing Practices

Three new technical publications summarising current DPIF recommendations for sustainable grazing land management in the VRD, Barkly and Alice Springs regions are available via the DPIF website www.nt.gov.au/dpif.

Several DPIF research and extension projects continue to investigate the land condition, animal production and economic performance of various stocking rate management, pasture spelling, prescribed burning and paddock development practices. Information about these grazing land management projects can be found in recent DPIF Annual Research Achievement Reports in the Technical Publications section of the website www.nt.gov.au/dpif.

In mid-2012, DPIF commenced a three-year project (Climate Clever Beef Phase 2) to assess the viability and practicality of integrating “carbon farming” into northern beef enterprises. The project is working with producers in the Barkly, VRD and Douglas Daly to determine what carbon farming options are relevant, how much carbon might be sequestered, how much methane could be abated and how various carbon farming options perform in terms of their potential impact on land condition, animal productivity and economic performance. The case study results show that some enterprises will have potential for carbon income; however, the implementation of practices that improve herd productivity in cost-effective ways is still the key way to improve profitability. Case studies from this project can be found at <http://futurebeef.com.au/resources/projects/climate-clever-beef/>. More information about this project can be obtained by contacting dionne.walsh@nt.gov.au.

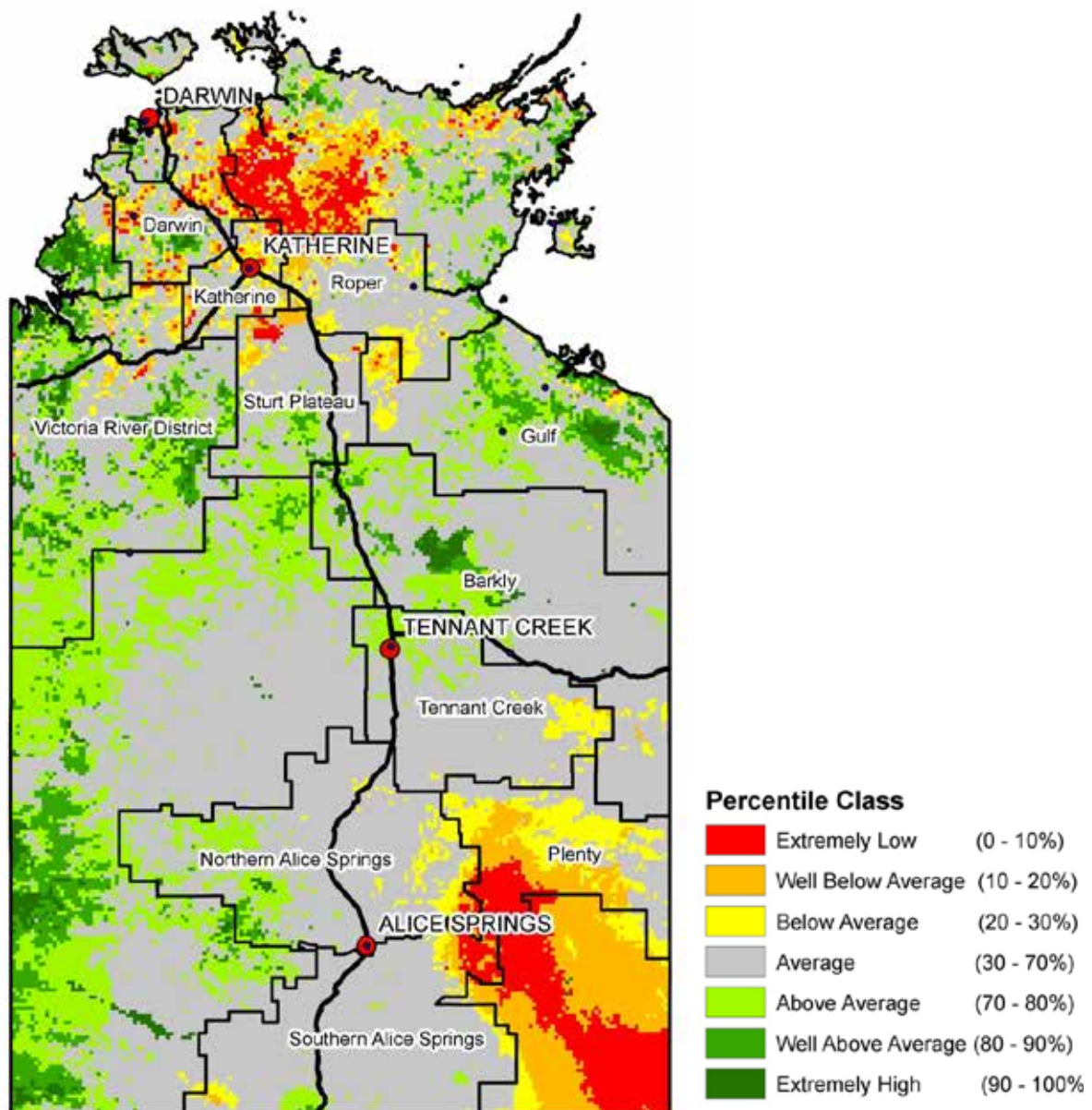
The “Shruburn” experiment at Kidman Springs reached its 21-year milestone in 2014. The experiment has been investigating the impact of fire management on woody vegetation cover and pasture condition. The trial plots are replicated on red and black soil sites, with grazed experimental plots burnt early or later in the dry season, every two, four and six years, and these are compared to unburnt control plots. The findings were recently published in the *Rangeland Journal* (Cowley et al. 2014, *Rangeland Journal* 36(4): 323-345). More information about this experiment can be found at <http://futurebeef.com.au/resources/projects/kidman-springs-fire-experiment-shruburn/> or by contacting robyn.cowley@nt.gov.au.



APPENDIX 5

October 2013 to September 2014 pasture growth relative to historical records (1957-2014).

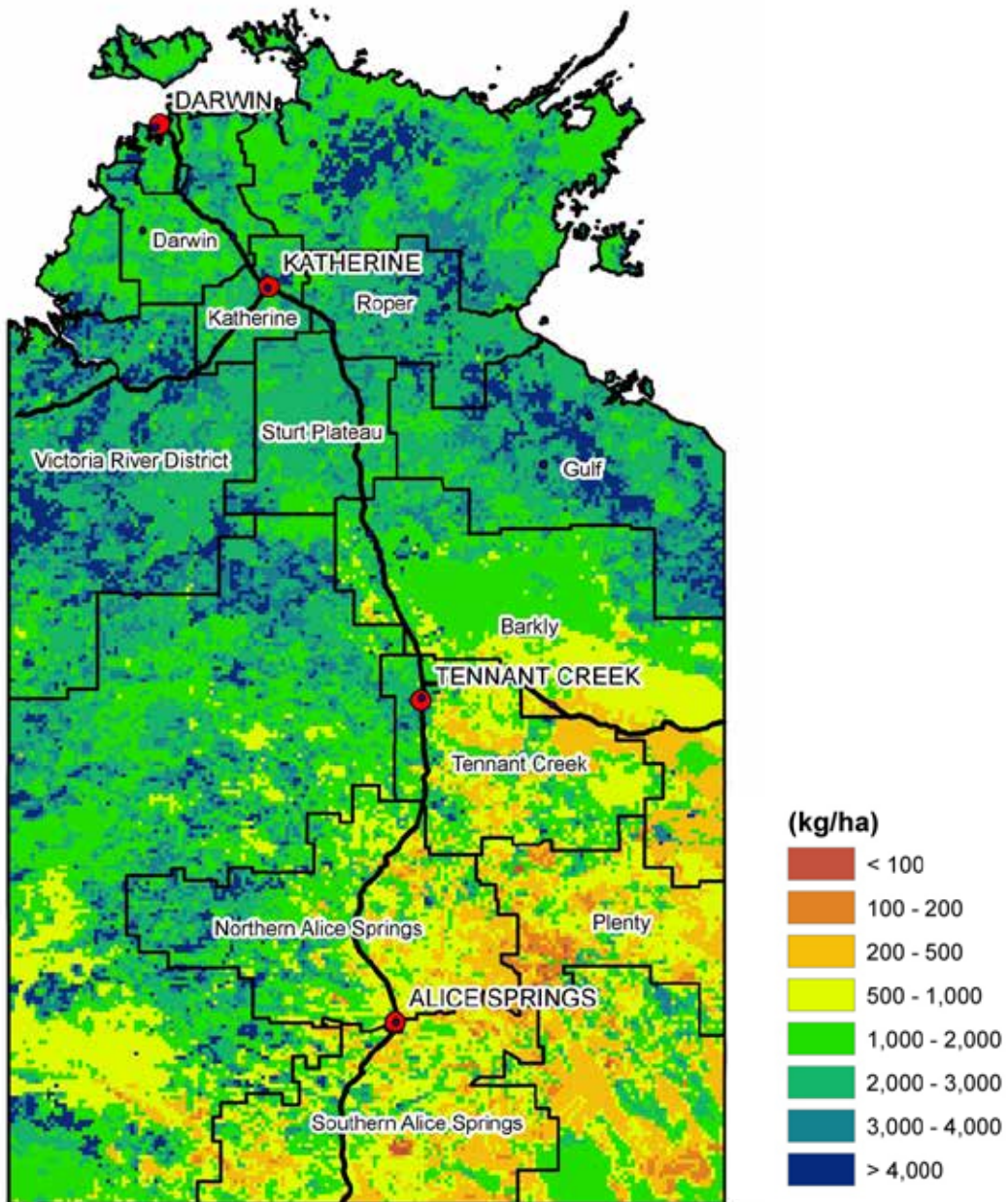
Source: AussieGRASS



APPENDIX 6

Standing biomass (kg dry matter) in April 2014

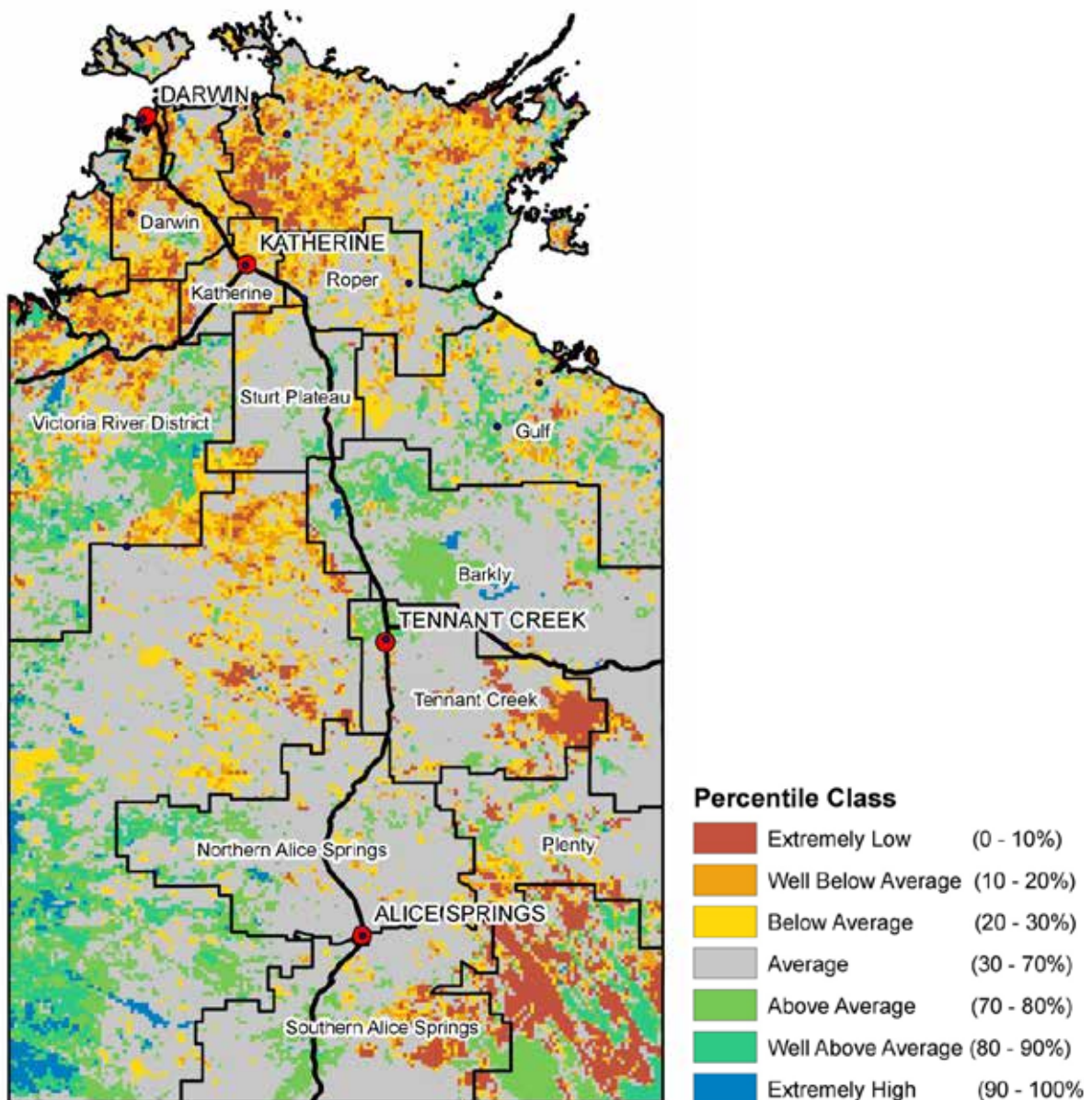
Source: AussieGRASS



APPENDIX 7

Standing biomass (kg dry matter) in April 2014 relative to historical records (1957-2014).

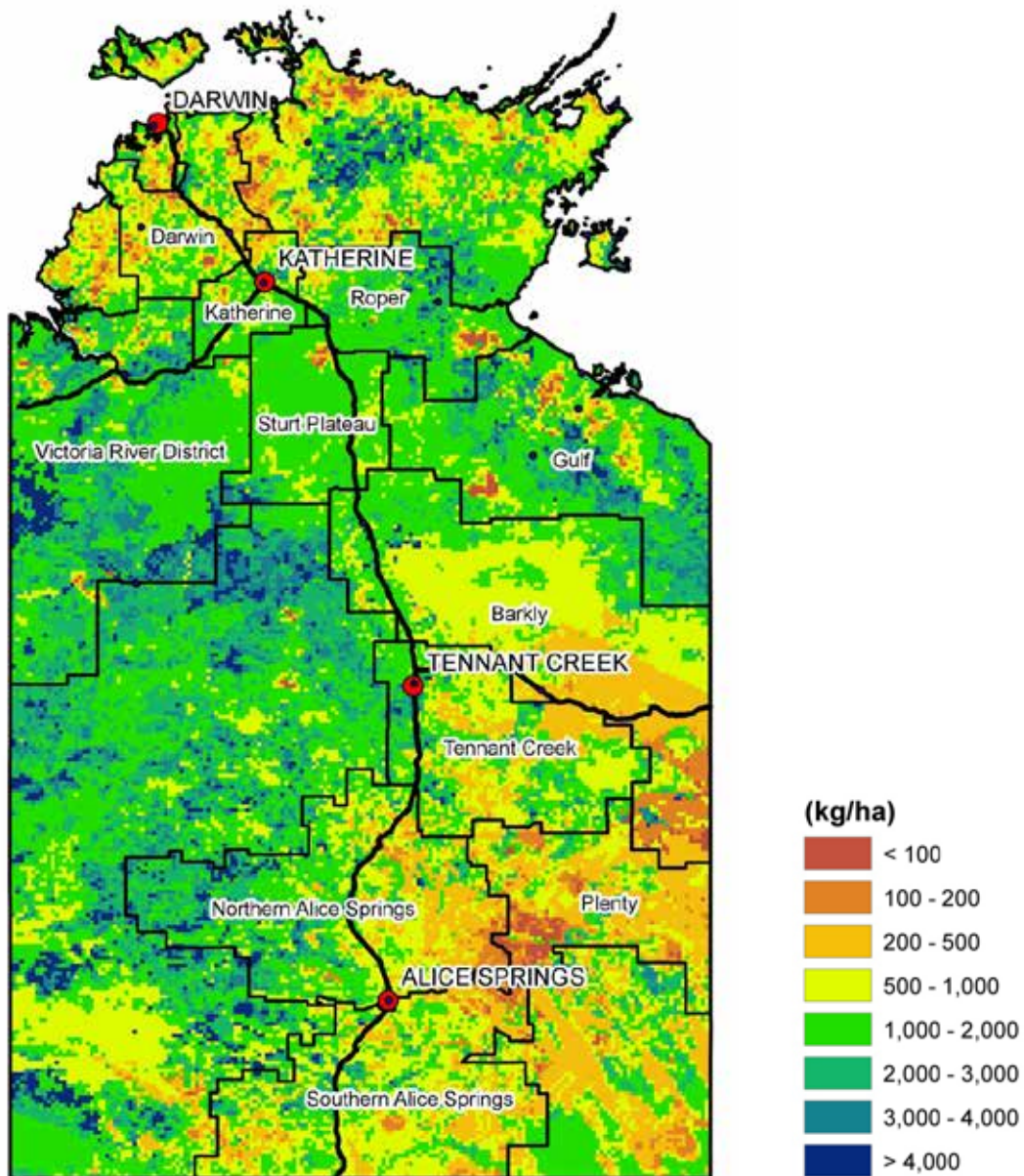
Source: AussieGRASS



APPENDIX 8

Standing biomass (kg dry matter) in September 2014.

Source: AussieGRASS



APPENDIX 9

Standing biomass (kg dry matter) in September 2014 relative to historical records (1957-2014).

Source: AussieGRASS

