Statement from the Commissioner of Soil and Land Conservation

A report on the Commissioner's operations for 2013/14 is submitted in accordance with Section 25 F of the <u>Soil and Land</u> <u>Conservation Act 1945</u>.

Delegations

The delegation of powers by the Commissioner under Part II of the Act remain in effect with a Regional Manager in the Department of Water (DoW) to negotiate and administer covenants under Part IV A. An officer of DAFWA was delegated duty under section 38 (2). The Commissioner continues to have delegated authority from the Minister for the Environment to issue woodchip permits.

Land clearing assessments

Seventy-one clearing area and purpose permit applications were assessed for land degradation, with advice provided to the Department of Environment Regulation (DER) for agriculture purpose clearing or other agencies for infrastructure development.

Compliance

The Commissioner registered 30 complaints during the year comprising nine soil erosion, four flooding, four clearing, four drainage, four breaches of covenants (clearing), four breaches of soil conservation notices (SCN) and one of eutrophication. Three breaches of SCN and two for covenants remain under investigation and five complaints are pending further investigation or monitoring of compliance with directions given.

Woodchip permits

No woodchip permits were issued.

Agreements to reserve and conservation covenants

The Commissioner registered four irrevocable conservation covenants protecting 74.2ha in perpetuity during the year. A further 13 covenants protecting about 508ha have been negotiated and are pending finalisation. In total, 1801 instruments under the *Soil and Land Conservation Act 1945* are registered on certificates of title protecting 152 658ha of native and planted vegetation.

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Soil conservation notices

Two soil conservation notices were issued during the year and three breaches of soil conservation notices are under investigation. One notice was the subject of an appeal to the State Administrative Tribunal that was subsequently dismissed. The same notice is now a subject of review by the Commissioner's office.

Land drainage

During 2013/14 only two landholders submitted Notices of Intention to Drain (NOI) and one landowner requested a reassessment of an earlier NOI. Two letters advising no objection to proposed works were issued and one NOI remains pending.

Land conservation district committees (LCDCs)

At the beginning of the financial year, 98 Land Conservation Districts (LCDs) remained proclaimed under the *Soil and Land Conservation Act 1945*. However, by the year's close 70 did not have a committee appointed and gazetted. Of these, 36 committees were pending reappointment and 34 were in recess and are in the process of being formally wound up and abolished. All work in that area ceased on 20 December 2013 when the project officer's position was made redundant.

Condition of the resource base

During the year a <u>Report card on</u> <u>sustainable natural resource use in</u> <u>agriculture</u> was released and widely publicised. The key findings are summarised below.

Agricultural region

Agricultural activities are largely confined to the South West Land Division in WA and productivity is dependent upon the condition of the soil resource. These soils are susceptible to salinisation, acidification, soil erosion water repellence and compaction. Inland waterways and wetlands in much of the wheatbelt are also susceptible to acid groundwater discharge. Agriculture affects wetlands, waterways and estuaries by contributing to salinity, nutrient export and sedimentation. The combination of soil constraints, climate variability and increasing production costs is having a significant impact in the marginal districts.

Salinity

Dryland salinity was assessed as a moderate risk and affects both private and public land, water resources and biodiversity; and damages infrastructure. More than one million hectares are severely salt affected in the South West Agricultural Region and further deterioration is expected. The economic impact was estimated to be \$344 million per annum. Although the extent of salinity has not been mapped since the late 1990s, most saline groundwater tables continue to rise in areas cleared and developed for agriculture after 1960.

Soil erosion

Pre-harvest and pre-seeding roadside surveys of more than 4000 sites assessed factors that contribute to wind erosion risk (soil type, ground cover and disturbance/ management). The risk is currently assessed to be low and variable. However, during the period 2009–12, more than half of the agricultural land surveyed had an unacceptable wind erosion hazard rating. The Central Agricultural Region had a very high hazard rating in each of the four years surveyed due to stubble burning and tillage.

Although the extent of water erosion is not known, it was assessed to be a low and stable due to declining rainfall, widespread adoption of reduced cultivation for cropping and associated increased stubble retention.

Although not quantified, the risk of wind erosion on sand plain soils is exacerbated by the increasingly reported use of mouldboard ploughs to manage water repellent soils and herbicide resistant weeds.

Soil acidity

Soil acidity is a serious large-scale and long-term land degradation threat to the state's crop and pasture production. With the exception of the Mid West and Esperance, most agricultural land is in either poor or very poor condition. The application of agricultural lime again increased during the year to 1.6 million tonnes. This is about 60% of the estimated 2.5 million tonnes required to be applied annually over the next 10 years to raise soil pH to desirable levels.

Rivers and wetlands

Diffuse nutrient pollution from agriculture is a serious land degradation problem on the Swan Coastal Plain and the Lake Warden Catchment in Esperance. The resultant algal blooms and eutrophic conditions in waterways and wetlands have significant impacts on the environment and local communities. Farm soil test data indicate that the majority of soil samples have phosphorus levels in excess of production requirements and will continue to be problematic in the coming decades without significant intervention.

Pastoral region

WA's rangelands cover 87% of the state, with pastoral leases covering 35% (874 000km²) and Unallocated Crown Lands (UCL) vested for conservation and Indigenous purposes making up the balance. There are currently 453 registered pastoral stations on 508 pastoral leases. The northern rangelands support 152 stations with 93 in the Kimberley and 59 in the Pilbara, while 292 stations are located in the southern rangelands. Nine stations are located in the South West Land Division.

Rangeland resource condition

The rangeland condition assessment in the Kimberley and much of the Pilbara is based on the frequency of perennial grasses. The density of perennial shrubs is used to determine condition in the southern rangelands. The Western Australian Rangeland Monitoring System (WARMS) was established between 1993 and 1999 to monitor rangeland condition trend at a regional scale.

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There are 1622 sites, with 633 grassland sites and 989 shrubland sites. Grassland sites are reassessed on a three-year cycle while shrubland sites are reassessed on a five-year cycle. The effect of rainfall and seasonal conditions is considered for each site and assessment period.

In 2013 a total of 441 WARMS sites were assessed on 116 pastoral leases in the Kimberley, Pilbara and southern shrublands.

Last year, all WARMS sites in the Kimberley Region received average or above average seasonal conditions. This continues a run of 19 years of average or above average rainfall.

For the third successive season, 97% of Pilbara WARMS sites experienced average or above average seasonal conditions following the drought years leading up to 2010. The long-term average summer rainfall received in the Pilbara is about one-third of that received in the Kimberley.

Rainfall in the arid southern shrublands is highly variable. In 2013 winter rainfall that promotes establishment and growth of shrubs was better than 2012 with 64% of WARMS sites receiving average or above average seasonal quality (compared with 23% in 2012). In the Gascoyne–Wooramel, Mt Magnet, Shark Bay, Yalgoo and Yilgarn districts, between 75 and 100% of WARMS sites received below average winter rainfall in 2013.

Table A1 Seasonal quality by region for WARMS sites in 2013/14

Region	Above average (%)	Average (%)	Below average (%)
Kimberley	67	33	0
Pilbara	52	45	3
Southern	39	25	36

WARMS site and reported stock data

Grass frequency remains high on Kimberley WARMS sites. With the exception of the North Kimberley, the frequency of all perennial grasses (desirable and undesirable) has increased since 2003. Although desirable perennial grass data is incomplete, positive trends were observed in the Broome and Halls Creek East Kimberley LCDs.

In line with the favourable seasonal conditions, 2013 reported stock numbers were again above assessed Present Carrying Capacity on 87% of leases in the Derby West Kimberley, 53% of Halls Creek East Kimberley, 42% in the North Kimberley and 33% of Broome leases. Stock levels ranged from 170% of Present Carrying Capacity in Derby West Kimberley, 108% in Halls Creek East Kimberley, 93% in Broome and 91% in the North Kimberley LCDs.

The situation is variable in the five Pilbara LCDs. While Roebourne LCD improved in the current assessment cycle with 6.1% increase in desirable grass frequency on WARMS sites, the Ashburton and De Grey LCDs declined 8.6% and 6.5% respectively. The desirable grass frequency in these two districts has continued to decline since 2000 despite the generally favourable seasonal conditions in recent years. Lyndon and East Pilbara were not assessed in the current year. While grassland sites in Lyndon have shown positive trends since 2004, the East Pilbara has continually declined since 2000.

Although reported stock numbers were stable in East Pilbara and increased in the other four LCDs, the majority of leases reported numbers in excess of the estimated Present Carry Capacity (De Grey LCD 86%, Roebourne 71%, East Pilbara 64%, Lyndon 52% and Ashburton 50%).

The continuing decline in desirable grass species observed on Pilbara WARMS sites indicates that the current levels of stocking is impacting on the productive perennial grass species. While the current data raises concerns about the risk of land degradation occurring, a more definitive statement cannot be made as lease-level range condition data is no longer collected.

In the southern rangelands there has been an overall decline in desirable shrub species of 17% between assessment cycles. The loss of shrubs species was greatest (25%) in those districts receiving below average seasonal quality, compared with 14% and 11% losses observed on WARMS sites in districts receiving average and above average seasonal conditions. The ongoing negative trends indicate a steady decline in the carrying capacity of these rangelands.

The year 2013 stocking levels in the shrublands are quite variable, and when aggregated at a district level, most are reporting stock numbers well below the calculated Present Carrying Capacity. However, 33% of the 241 leases reporting stock numbers were above the calculated Present Carrying Capacity with 89% of leases in the Upper Gascoyne and 62% in the Gascoyne Ashburton Headwaters LCDs above the Present Carrying Capacity.

The districts most at risk of land degradation and loss of carrying capacity are Gascoyne Ashburton Headwaters, Upper Gascoyne, Lyndon, Wiluna and Gascoyne–Wooramel (note Lyndon has both grass and shrubland WARMS sites).

Conclusions

As reported in previous years, monitoring data point to a number of critical areas where land degradation is undermining the sustainability of our agricultural industries:

- Salinity continues to expand in the South West Agricultural Region, with more than one million hectares of farmland severely salt affected.
- In 2013 the risk of accelerated soil erosion through loss of groundcover and tillage was assessed to be low and variable. The risk was extreme where tillage such as mouldboard ploughing was carried out on sandplain soils to manage water repellence and herbicide resistant weeds.
- With the exception of the Midwest and Esperance, most agricultural land was assessed to be in poor or very poor condition for subsoil acidity. Therefore, long-term security of access to coastal lime resources remains a high priority for agriculture.
- On-farm nutrient mapping on the Coastal Plain and South West indicates that inappropriate fertiliser management continues to limit

production and cause significant offsite land degradation.

 In the Pilbara and southern rangelands districts, the declining frequency of desirable perennial species occurring on WARMS sites reported in previous years suggests ongoing declining resource condition.

Andrew Watson Commissioner of Soil and Land Conservation