

Cattle, carbon, critters and culture – building a new rangelands

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Abstract

The ESRM process is being used to develop an indigenous Pilbara cattle station as a pilot to demonstrate a new vision of land use that creates value from cattle, carbon offsets, biodiversity, horticulture and indigenous culture. New rangelands tenures post 2015 may allow a wide range of land uses (DOLA 2011) including livestock production, carbon offsets, horticulture and biodiversity offsets. The challenge is to integrate new land uses in ways that strengthen economic, environmental and social resilience.

The ESRM process was used to develop a property plan for Peedamulla Station in the Pilbara. Once implemented, Peedamulla will be a pilot to demonstrate a new vision of land use that creates value from cattle, carbon, critters and indigenous culture. Peedamulla will also have a live-in training centre for aboriginal people where they can develop their skills and knowledge through implementing projects identified in the plan.

Key words

ESRM planning, integrated land use

Introduction

Much of the low rainfall rangelands of Western Australia (WA) are managed under pastoral leases which are only for the purpose of grazing livestock. New tenures for the WA rangelands post 2015 may allow a wider range of land uses (Department of Regional Development and Lands 2011). Some of the tenure options may allow for income from carbon offsets and biodiversity offsets as well as livestock production.

The WA rangelands have social and economic significance for indigenous people. The land looks after the people and the people have obligations to look after the land. To be socially sustainable, land use systems must also protect the sites that have cultural and heritage value to aboriginal people. To achieve these social goals indigenous people must be involved in planning the management of the land.

The challenge for rangelands managers will be to integrate these new land uses into pastoral properties so as to capture the synergies from multiple enterprises in ways that strengthens the economic, environmental and social resilience of the rangelands.

Peedamulla station is a pastoral lease on the Pilbara coast adjoining the town of Onslow. Peedamulla has been managed by an aboriginal couple, Trevor and Doris Parker, and their family for 30 years. The Parkers have developed a joint venture with the Ashburton Aboriginal Corporation (AAC) to develop Peedamulla further as a robust business based on diversified land uses and as a live-in training centre for aboriginal people of the Pilbara.

The joint venturers aim is to maintain a viable cattle business, develop new land based enterprises whilst protecting natural assets and respecting cultural traditions. Other aboriginal people will be able to develop skills and qualifications whilst implementing projects within the new plan.

ESRM planning for Peedamulla

Biota Environmental Science Australia Pty Ltd was contracted to run the Ecologically Sustainable Rangelands Management (ESRM) process to plan the redevelopment of Peedamulla. The ESRM process has been used previously to plan for sustainable grazing in the WA rangelands. The Peedamulla ESRM planning is the first to incorporate a much wider variety of enterprises along with indigenous land uses.

The aim for Peedamulla was to integrate cattle production, carbon offsets, nature conservation, erosion control, river management, protection site of aboriginal significance, biofuels production and horticulture. Five major management zones have been identified and mapped on Peedamulla (Figure 1). Smaller management zones for cultural practices and intensive rehabilitation have been identified. These zones are based on land systems and production capacity, erosion risks, river function, infrastructure options / limitations and traditional knowledge.

The management zones are:

- 1) Intensified grazing on fertile cracking clays which should increase soil carbon as well as produce more beef
- 2) River delta country with a focus on water management / erosion control including some earth works, with controlled strategic grazing and habitat regeneration
- 3) River wetlands for rehabilitation, indigenous heritage and nature conservation only
- 4) Traditional breeding country with improvements in fencing and water points
- 5) Coastal marsh country with occasional grazing and potential for algae biofuel ponds
- 6) Degraded areas needing rehabilitation
- 7) Cultural sites (e.g. law ground, graves, recreational areas)
- 8) Total destocking of west of highway for conservation and carbon offsets only

The next phase of the ESRM planning is to develop more detailed management plans for each zone. This will include the precise location of new enterprises, grazing strategies and conservation earth works.

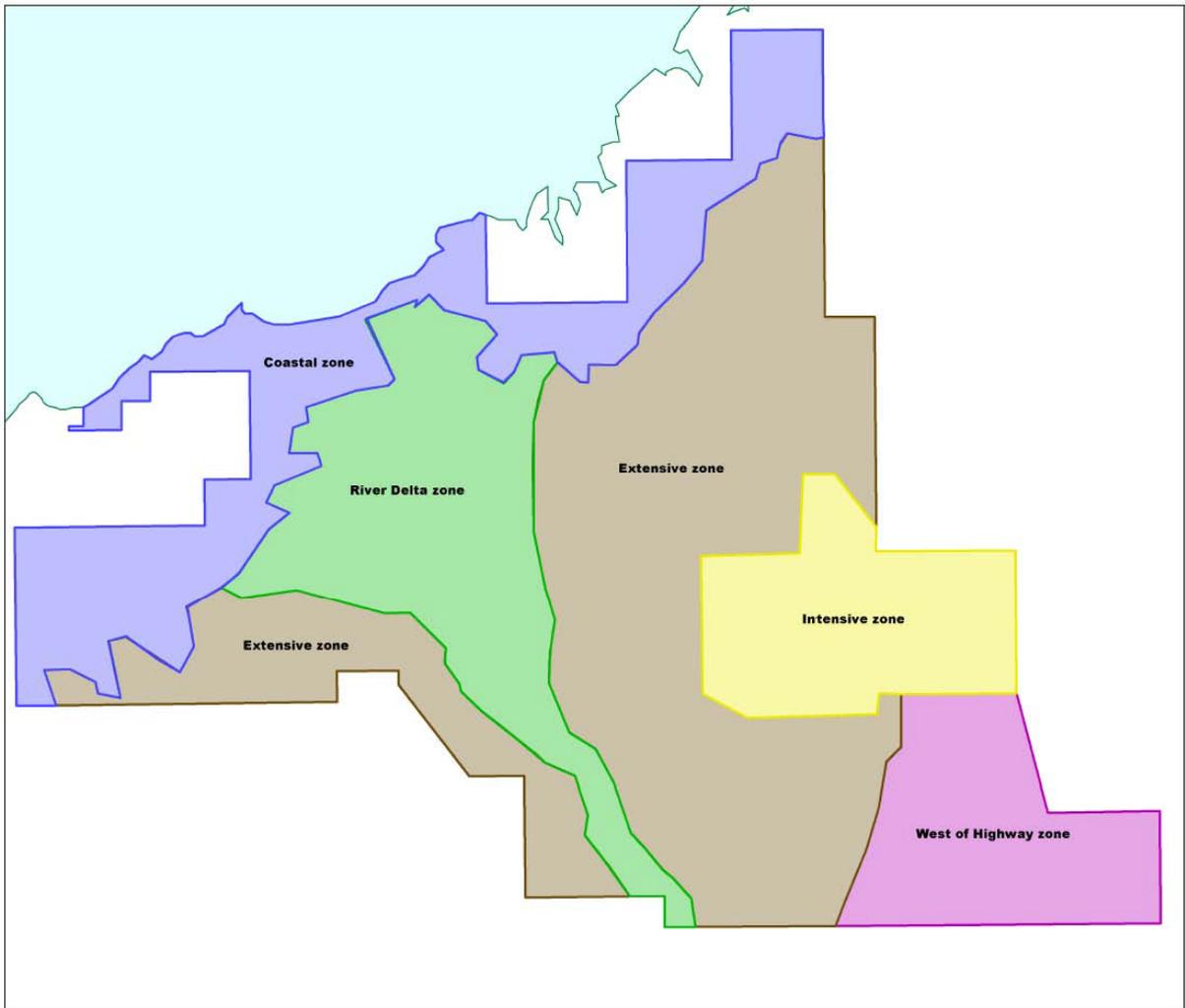


Figure 1; Management zones of the Peedamulla ESRM plan

Intensified grazing on the crack clays

There are extensive areas of cracking clays on the east side of Peedamulla. These are naturally extremely fertile soils. By subdividing this area and rotationally grazing it should be possible to significantly lift the cattle production and improve the diversity of native grasses. This soil has the most potential to store soil carbon (Alchin 2010). Recent field sampling at Yalleen station by Dr Peter Russell, DAFWA (pers. com.) and Century modelling by Prof Bill Parton, Colorado University (pers.com.) found that destocking of a cracking clay, grass land would lead to an increase in soil carbon. However a rest based grazing rotation could store soil carbon at twice the rate of total destocking. This research was part of the reason for planning for an intensive grazing rotation on the cracking clays of Peedamulla.

River delta management

The river delta of the Cane River has been degraded from over grazing. Most of the damage occurred prior to 1970 when Peedamulla ran up to 100,000 head of sheep. Currently there is severe soil erosion in patches of the floodplain and the catchment areas of the river. This is causing siltation of the river which adversely affects how the river functions. Restoring the river would improve the habitat for native animals and fish. Regeneration of the vegetation could also potentially deliver carbon and environmental offsets. New fencing will allow the river delta to be destocked to enable plant regeneration. Once regeneration has occurred the country could be grazed again strategically in seasons when adequate feed is available. The bottom reaches of the river may be managed solely for conservation and cultural benefits. This area includes wetlands with high biodiversity values.

Extensive zone

This is the largest zone on Peedamulla by area and is dominated by Spinifex. Management will be focussed on strategic placement of water and improving fencing. This infrastructure will allow stocking rates to be adjusted to reflect seasonal conditions. This zone will mostly be used for breeding cattle but there will also be opportunities for trade cattle in favourable seasons.

Coastal zones

The coast marsh zone is currently used for grazing. Unfortunately fences don't last due to the salt so there is limited control on grazing. The plan is to develop trap yards on water points. In good seasons the coastal marsh will be used for grazing breeders, but will be destocked when feed is short. Conservative stocking will assist in improving biodiversity of this zone. This zone also has the potential for algae ponds for biodiesel. Detailed planning will be required to identify potential pond sites.

Localised Degraded areas

Small areas have been identified that are suffering from severe erosion. Rehabilitation plans will be developed for these sites. Indigenous trainees will require a range of skills from working on these sites.

Cultural sites

Peedamulla contains a law ground and a law camping sites. Management plans for these sites will be developed in consultations with the traditional elders. There are also some pioneer grave sites and heritage sites on Peedamulla that will be protected.

Horticulture

An artesian aquifer is available for irrigation. A small irrigation project will be set up by Ashburton AC near the homestead as a training resource and for preliminary research into irrigation crop options. Horticulture will be expanded when there is a better understanding of the aquifer and commercial crop options. This might include *Moringa oleifera* which is a potential source of oil for biodiesel, human food and as an irrigated fodder shrub for livestock.

Carbon offsets

Research is required to identify the best places for carbon offsets. All zones should have some potential for carbon offsets. More field measurements, modelling and economic analysis is required to identify areas where carbon offsets are a viable land use. Indigenous trainees will be involved in benchmarking carbon stocks on the property.

Acknowledgements

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