Case study: Managing river country for beef cattle production in the Maranoa catchment

Ken Symes manages 'Woodlands' a 30,000ha former sheep property purchased in 2004 for cattle production. Located in the Mulga Lands of south-west Queensland, Woodlands was considerably run down after many years of overgrazing but has great potential for rehabilitation. Ken has extensive experience in the cattle industry and had a good idea of what needed to be done to address issues arising from the previous management. He maintains that to run any property effectively, the manager should initially spend some time observing the land's ecosystems and previous landuse. Using this approach Ken spent some time assessing the situation, identifying his desired outcomes, then developing and implementing a management plan for how best to achieve his goals.

A vision for sustainable and profitable production

With experience in property and catchment planning efforts at local and regional scales, Ken brought to his new property an integrated approach to improving land condition, waterway health and farm productivity. After purchasing the property, Ken was determined to realise its full potential despite years of overgrazing and the extreme drought conditions at the time.

Issues to address included degradation of riverine wetlands and associated lagoons (billabongs), and consequent water quality issues. Specific matters included cross contamination of bore and river/lagoon water, stream bank instability, erosion and weed and woody weed infestation.

Riparian areas were not able to be managed and other land was not fenced to type or for rotational grazing. Most of the existing watering facilities were positioned in riparian areas; one natural lagoon was supplemented by bore water. Moreover, these watering points were largely inadequate for providing stock with ideal access or consumption.

Ken set about planning for the reduction and management of grazing pressure in the riparian zone and other wetland areas by:

- Reviewing existing paddocks and infrastructure.
- Prioritising areas for investment.
- Seeking advice and funding assistance through the Queensland Murray-Darling Committee (QMDC).

About the property:

Property owner: Ken Symes

Location: 90km southeast of Mitchell, Qld. It fronts almost 18km of the Maranoa River.

Size and production: 30,000ha. Beef cattle production.

The Maranoa River runs through Woodlands. Photo: DAFF

Stock grazing in a newly fenced paddock. Photo: DAFF

The environment

The Woodlands cattle enterprise is situated in mulga country but contains diverse ecosystems that include cypress on sandy soils and eucalypts on deep earths. The Maranoa River traverses the property for about 18km and includes some permanent waterholes. However, the river does not flow for most of the year.

The main channel is wide, deep, and relatively straight. Floods tend to damage infrastructure and alter the course of the channel because of the large water volumes which can transport vast quantities of debris.

During major floods, overflow from the main channel fills the Maranoa's anabranches and associated wetlands, reducing water velocity and revitalising the landscape. There are also many flood runners (gullies, gutters) crossing the property, which deliver water from the main channel to fill several palustrine (swamp) wetlands. These wetlands provide a range of beneficial services to the grazing enterprise as well as providing essential refugia for biodiversity during times of drought.

Management approach

The 30,000ha property currently supports an average herd of 2,000 head of cattle. At any time there may be up to 150 steers, 1,000 breeding cows and 750 weaners. Ken's goal is to lift stock weight gain and fertility by 5% to produce a good profit margin.

When Ken purchased Woodlands in 2004, pasture condition was very poor due to overgrazing by sheep and extreme drought conditions. Available nutrition was limited. He knew that, to improve production, he would need to better manage the pastures through strategic fencing, off-stream watering, re-seeding with mixed forage species and a well managed grazing regime.

As well as seeking advice from grazing extension staff from the QMDC, Ken also participated in a Meat and Livestock Australia (MLA) project called 'Cash Cow'. Through these initiatives, he was able to secure funding support from QMDC to undertake property work for best management practice, which could also be used to meet ideal production benchmarks as prescribed by Cash Cow.

When approached by QMDC and the Department of Agriculture, Fisheries and Forestry (DAFF) to assess the economics of making these on ground changes, Ken was happy to get involved as this would help him to further assess and refine his management decisions.

Wildlife abounds in 'Murphys Lagoon' on the property. Photo: DAFF

Management practices implemented

Key elements of management implemented at Woodlands since 2004 are shown below.

Table 1: Management practices implemented at Woodlands

Management issue	Management change	Results
Minimal ground cover leading to low productivity.	Reseeding of the deep grey and brown clayey soils with mixed pasture species such as endemic Mitchell grass. Buffel grass that re-established after the 2010 floods was allowed to continue growing on the lighter soils.	Groundcover is being progressively re-established on more productive soil types. Buffel grass has assisted in maintaining ground cover on some of the more marginal soils during this re-establishment phase.
Fencing and paddock design not strategic or fenced to land type, causing overgrazing and compaction. Cattle camping in riparian areas causing erosion problems. Excessive number of floodgates requiring maintenance.	New fencing according to land type, creating paddocks that allow cattle movement through lanes and into smaller zones for holding. All fencing that crossed the river was removed and a 10.5km section of the Maranoa River was fenced to exclude cattle.	The new fencing layout restricts cattle movement to low-sensitivity zones and improves pasture utilisation. Maintenance and 'clean up' costs after high rainfall events have been reduced. The new system saves on costs of mustering and has freed up considerable time for work on other tasks. The new layout has allowed native grasses, shrubs and trees to recolonise large tracts of the high sloping banks created wide riparian zones along the Maranoa River. Anabranches and small palustrine wetlands are less impacted by grazing, and due to their improved condition contribute more to reducing flow velocity during major floods; they also may provide back-up stock water during times of no flow.
Existing watering points were not strategically located, causing compaction and erosion. A poorly-located bore was releasing water into a natural lagoon, with bore pressure decreasing.	A 'backbone' style pipe layout was established across several paddocks, with a watering point at the end. More watering points will be 'branched' off this central pipe to remaining paddocks. The old bore has been capped.	Availability of water has reduced stock access to waterways Bore pressure has increased and meets the requirements of the new watering set-up, which contributes to evenness of grazing pressure.

Costs and benefits: assessing the bottom line

An economic assessment of the infrastructure investments indicates that Ken has reduced his costs by $29,344 per year, predominantly due to reductions in mustering labour, repairs and maintenance of the floodgates (Table 1). There have been some minor gains in animal health related areas such as improved weight gain from cleaner water and less distance for stock to access water as well as losses due to injury.

However, restricting stock access to the riparian zone has reduced the available grazing area by about 100 hectares which costs Ken $7,553 annually. Along with some maintenance of the fencing and water infrastructure, this adds up to $12,464 per year in total costs.

Nonetheless, Ken remains in front by $16,880 per year as a result of his investment and support from QMDC.

Although Ken received funding support through QMDC to undertake some of the on-ground work as explained in this case study, he maintains that he would have done the same work regardless of financial assistance and had already started related work prior to applying. The assistance helped him to reach his goals more quickly, but this and past experience in trialing similar work has proven to him that this kind of work is beneficial not only in terms of Natural Resource Management outcomes, but also of business sustainability and productivity.

An example of one of several palustrine wetlands on the property.

Table 2: Annual profit and loss

Gains		Profit		Notes
Increased income	Improved stock health	$1,134.32		improved water supply and cleanliness
Decreased costs	Easier mustering	$13,500.00		reduced labour, quad bike and helicopter usage
	Reduced stock loss	$150.00		reduced rate of injury to stock from traversing creek bank
	Infrastructure savings	$14,560.00		reduced maintenance of flood gates/fences
Total gain		$29,344.32		
Losses				
Decreased income	Reduced grazing area		$7,553.00	eliminated stock from riparian area
Increased costs	Fencing infrastructure		$3,169.45	maintenance of additional fencing
	Off-stream watering		$1,741.60	maintenance of water infrastructure
Total Loss			$12,464.05	
NET POSITION (annual)			**$16,880.27**	

Working with wetlands

In addition to the riparian zone in which Ken undertook rehabilitation, there are several other areas of the property which have distinctive wetland systems. One of these is a significant lacustrine wetland called 'Murphys Lagoon', which along with 100ha of land surrounding the lagoon, has been voluntarily designated under the 'Land for Wildlife' scheme. This lagoon is semi-permanent and provides an excellent refuge for both stock and wildlife.

The property retains several palustrine wetlands in the form of grassy swamps and swales which are not permanently inundated. Very few wetlands of the semi-arid regions can be considered truly permanent. Nonetheless, Ken states that these wetlands helped support his production during recent drought and he values these landscape elements.

If managed well, areas with wetlands can produce benefits for both the producer and the environment. Landholder experience shows that strategic fencing, off-stream watering and vegetation regeneration combined with spelling of pastures under carefully planned rotational grazing, can deliver many benefits:

- slowing of overland flows after local rain and settling and trapping of sediment, nutrients and other contaminants before water enters the river channel
- stabilisation and reinforcement of river-bank soil, preventing cracking and slumping, and reduction of bare ground and stock tracks in riparian areas
- mitigation of water fouling and possible stock disease transmission, resulting in fatter, healthier stock
- restored natural levels of light intensity and water temperature in river pools, which supports healthy in-stream ecosystems and may increase stocks of edible fish or crustaceans
- habitat for wildlife, including animals that are beneficial to agriculture such as pollinators and pest control
- improved windbreaks, which help reduce loss of soil moisture
- improved aesthetic and recreational values.

In addition to advantages for individual enterprises, there are also many flow-on benefits for the wider community within a given catchment. Benefits can increase markedly if community members are working together to manage cross-boundary issues such as water resources or overland flow.

The future

Ken decided to take part in an assessment of his property for this case study as it further allows him to refine and enhance his enterprise options. Ken says that, when undertaking intensive rehabilitation options, landholders understand that they are not necessarily always going to generate a profit. However, Ken believes that, by considering a range of management scenarios, he can generate a profit through achieving improved management of the overall property.

Ken is an advocate of working with different stakeholder groups and organisations, such as DAFF or QMDC when the opportunity presents. He also believes that 'it is good to mix with people who don't always share the same ideas as oneself as it allows you to consider new views and opportunities that often result in valuable concepts you can take with you'.

Ken resting in an old river gum beside the 'Land for Wildlife' lacustrine wetland.

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The Queensland Wetlands Program supports projects and activities that result in long-term benefits to the sustainable management, wise use and protection of wetlands in Queensland. The tools developed by the Program help wetlands landholders, managers and decision makers in government and industry. The Program is a joint initiative of the Australian and Queensland governments.

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