Department of Agriculture, Fisheries and Forestry

Carbon offset project assessment on *Trafalgar Station*, *Charters Towers, Queensland*

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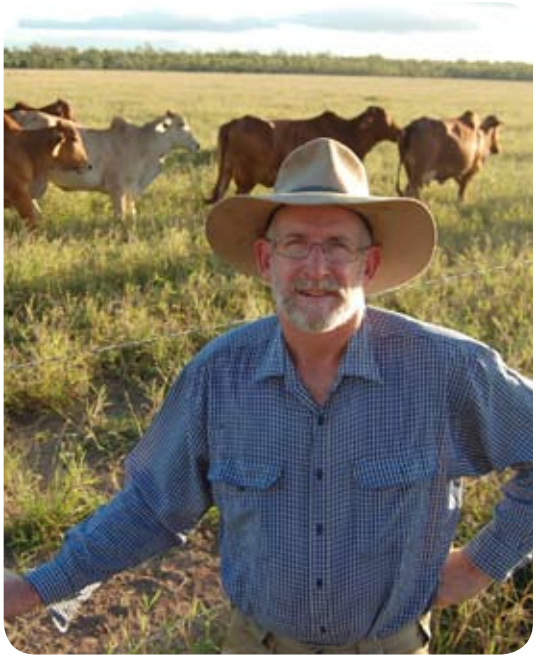
Overview

Trafalgar Station is a 33,000 ha pastoral property located 56 km to the south-west of Charters Towers in north Queensland. It is situated in the northern extremity of the Desert Uplands region in the Burdekin River catchment.

Trafalgar Station has been owned by three generations of the Landsberg family since 1913. The property enterprise is primarily a commercial beef breeding/fattening operation, although a small Brahman stud is also maintained, making a sustainable total herd number of 3500–4000 adult equivalents (AEs). The long term rainfall mean for *Trafalgar* is 647 mm, but is highly variable within and between years.

The business plan is focused on managing a profitable grazing enterprise while encompassing high conservation values. New technologies, opportunities and threats are comprehensively assessed to determine the potential benefits or impacts for the family business.



Roger Landsberg from Trafalgar Station

Current management

Conservative stocking, wet season spelling and the use of fire are the cornerstones of the grazing strategy at Trafalgar. Pasture is assessed at the end of the wet season and stocking rates are adjusted or planned so that an average of 20–30% utilisation of standing feed is achieved. Twenty percent of the property is wet season spelled every year to maintain and improve pasture condition.

Strategic tree clearing of eucalypt and acacia species occurred between the mid 1960s and 1988 resulting in 11% of the property or 3630 hectares of the property developed to more productive pastures. These areas are re-cleared (chained) of regrowth every eight years.

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Carbon farming

The Australian governments Carbon Farming Initiative (CFI) may provide an opportunity for *Trafalgar Station* to diversify the income stream.

However, at the date of this case study (May 2012) significant uncertainty exists on how a carbon farming project may be implemented on-ground in rangeland grazing areas. Additionally, the magnitude of the expenses and processes of risk management are also unknown. This assessment has attempted to be consistent with the principles of the Carbon Farming Initiative.

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Scenario development

The assessment investigated the difference between the emissions/sequestration of the current management (2011) (assumed to be the baseline) versus an alternative management incorporating a 'carbon farming' project. Proposed management changes include:

1. Reduce stocking rates
- 50% reduction in herd numbers
- 10% increase in growth rates and 20% increase in branding rate due to lower stocking rates.
- 100% increase in savanna burning due to increased need for wildfire mitigation. Assumed no additional fire impact on tree biomass.

2. Regrowth retention
- 2000 ha of 5 year-old regrowth is not recleared and allowed to grow to maturity and retained for 100 years.

Four scenarios were assessed

1. Current management (2011) (assumed to be the baseline).
2. Reduce stocking rates and regrowth retention.
3. Reduce stocking rates only.
4. Regrowth retention only (livestock stocking rate was reduced by 10% over 20 years to match reduction in livestock carrying capacity. Change in livestock emissions was not included).

The analysis was run over 20 years and did not contain year to year variability. Emissions were calculated using the FarmGAS model for livestock and savanna burning. Regrowth sequestration was calculated using the eucalypt growth models from Donaghy et al. 2009.

The financial impact was assessed by calculating the net present value (NPV) of the changes using a discount rate of 4.5%. Cattle income was calculated using a net price after expenses of $1.23 per kilogram of beef sold and 'carbon' income using a range of net prices after expenses (including risk management costs). The breakeven carbon price was calculated to match the baseline income to the alternative management income.

Emissions and sequestration results

Reducing stocking rates halved livestock emissions saving 3677 tCO_2-e per year while savanna burning emissions doubled increasing emissions by 487 tCO_2-e per year.

Regrowth sequestration on the 2000 ha was 177,900 tCO_2-e over 20 years to average 8896 tCO_2-e per year.

Financial results

Annual cattle income was reduced by nearly 50% with the halving of stocking rates. The NPV with reduced stocking rates and regrowth retention had a breakeven net carbon price (carbon price minus expenses) of $11.84 per tCO_2-e (see table). When reduced stocking rate and regrowth retention are considered separately, regrowth retention appears to have potential to be profitable with a breakeven net price of $1.51 per tCO_2-e, while a project only reducing stocking rate is less likely to be profitable with a breakeven net price of $44.52 per tCO_2-e.

Eucalypt regrowth which is traditionally re-cleared by chaining every eight years.

Wet season spelling and conservative stocking rates maintain pasture and cattle condition and productivity.

Table: Net Present Value ($) and breakeven price of the current business (baseline) and alternative carbon farming project options at four net carbon prices (carbon price minus expenses).

Scenario	Net carbon price $ per t CO_2e				
	$5	$10	$20	$40	Breakeven price $
Current /Baseline (cattle income only)	4,465,661	4,465,661	4,465,661	4,465,661	
Reduce stock and regrowth (cattle and carbon income)	3,304,831	4,153,548	5,850,982	9,245,851	11.84
Reduce stock only (cattle and carbon income)	2,681,796	2,907,477	3,358,841	4,261,569	44.52
Regrowth only (cattle and carbon income)	4,900,984	5,524,057	6,770,203	9,262,495	1.51

Future carbon price fluctuations will be a key risk in the financial outcome of a 'carbon farming' project as the projects span many years, particularly where the breakeven price is high.

Factors that should be considered with regrowth retention over the long term are that carbon sequestration will reduce over time as tree growth slows as they reach maturity. The regrowth needs to be retained and protected (e.g. from wildfire) for 100 years reducing future management options and requiring ongoing risk management.

"Need to analyse business impact and risks of carbon projects carefully"

Summary

This assessment has indicated that a 'carbon farming' project based on regrowth retention has potential to be financially viable depending on the net carbon price received which will be dependent on administration, measurement, verification and risk management costs.

A project based on halving stocking rates is unlikely to be financially viable unless the net carbon price is greater than $45 per tCO_2-e. This scenario also has considerable impact on beef industry productivity, but may be useful for improving land condition on some properties.

For more information or enquiries contact

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http://www.futurebeef.com.au/resources/projects/climate-clever-beef/

Donaghy et al. 2009. https://rirdc.infoservices.com.au/items/09-140

FarmGAS http://www.farminstitute.org.au/calculators/farm-gas-calculator