

Carbon Opportunity Fact Sheet

Meat Sheep

Background – the potential of Carbon Markets for pastoralists

As Australia seeks to reduce Greenhouse Gas (GHG) emissions and increase carbon sequestration, pastoralists have the opportunity to participate in domestic and global carbon farming markets. Carbon farming projects may result in additional revenue streams which can provide investment for station development and management interventions to rejuvenate land.

To understand the economic and financial benefit carbon farming may contribute to a pastoral business in the SA rangelands, two elements require consideration: the potential of the land to sequester (store) carbon and the financial performance of the pastoral business currently being operating on that land.

This fact sheet serves as an indicator of the potential impact on a pastoral business should a landholder undertake appropriate carbon projects and participate in the carbon farming markets.

This fact sheet assesses the Human Induced Regeneration (HIR) method of carbon sequestration only.

Case Study Scenario : Meat Sheep Station

Three overarching assumptions are made prior to undertaking the case study:

1. carbon sequestration is permitted under the Pastoral Land Management and Conservation Act 1989 and all consents are in place
2. the carbon credits generated are owned by the lessee, and
3. pastoral production is the primary purpose of each station.

This case study examines the current performance (business as usual – BAU) of a 90,000 ha meat sheep enterprise on the Roopena land system in the SA rangelands, then compares this to adding a HIR project on a portion of the station.



Scenario modelling approach

- BAU is modelled over 25 years (the usual timeframe of a HIR project), including livestock numbers, production, cash flow, and profitability
- The impact of seasonal variability is applied to carrying capacity, productivity, management, prices and costs, with these kept constant within each seasonal definition for the 25 years
- BAU business performance is then compared with HIR projects on 10% (9,000 ha), 20% (18,000 ha) and 30% (27,000ha) of the station

Assumptions

- The carbon sequestration potential of the Roopena land system averages 1.75 tonnes of carbon dioxide equivalents (CO₂e) over the 25 years, is negligible for the first 5-6 years and peaks in years 16 & 17 at 2.68 tonnes per ha
- Fire is a risk, however no allowance has been made for the loss of sequestered carbon as a result of fire during the project period
- Carrying capacity in a 'fair' year assumed to be 10,000 DSEs or 9.0 DSE per ha
- HIR project area requires a reduction in stocking rate to 20% of current capacity in years 1-5, increasing to 60% between years 6 and 15, then remaining at 60% for the balance of the project.
- Any value associated with a HIR project has not been reflected in land values. Sheep value fluctuates with seasonal influence on numbers, weights and prices.
- The cash flow does not include development costs required to implement a HIR project, e.g. fencing and waters
- The current market price of \$16.50 per ACCU (Australian Carbon Credit Unit; 1 ACCU = 1 tonne CO₂e) was assumed, with the landholder credited 70% of this gross income (30% being the project proponent's fee for full management, reporting and project risk). A range of prices should be considered by landholders

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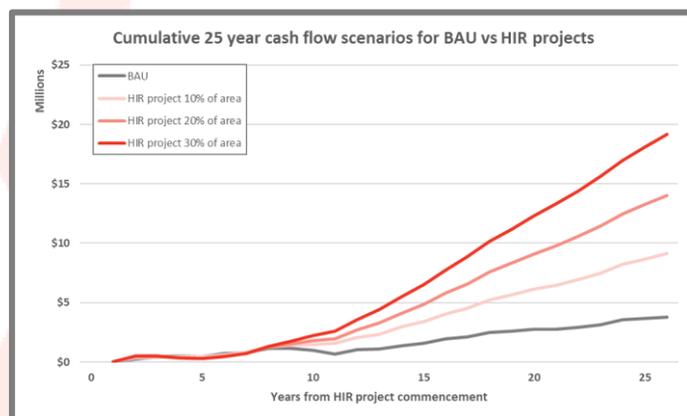
Meat Sheep



Case Study Outcomes

Output of 90,000 ha enterprise (avg pa across 25 years)	BAU	10% HIR project 9,000ha	20% HIR project 18,000ha	30% HIR project 27,000ha
DSE per year	9,327	8,800	8,308	7,814
Gross Margin per ha – Meat sheep	\$2.94	\$2.78	\$2.62	\$2.47
Net Carbon income per ha	-	\$2.02	\$4.04	\$6.06
Annual Cash Surplus	\$146,792	\$347,335	\$530,020	\$722,881
Difference in annual cash flow from BAU	-	\$200,543	\$383,228	\$576,089
Profit (EBIT) per ha	\$2.69	\$4.89	\$6.90	\$9.01
Return on Capital Managed	4.99%	6.76%	7.86%	8.58%

- Net Carbon income on the HIR project area is \$20.21 per ha. Actual income will depend on the area designated for the carbon project.
- The average annual cash surplus for BAU is \$146,792, increasing to \$347,335 with 10% of the station under a HIR project and to \$722,881 with 30% of the station under a HIR project. This does not include any station development costs which may be required.
- Profit (EBIT - Earnings before interest and tax) increases from \$2.69 per ha for BAU to \$4.89 per ha and \$9.01 per ha when 10% and 30%, respectively, of the station area is a HIR project.



Economic analysis of HIR

This case study provides the basis for pastoralists, running an extensive meat sheep enterprise in the SA pastoral rangelands, to form an initial opinion as to the applicability of a HIR carbon project on their station.

To be in a position to assess the viability of a HIR carbon project on a particular station, it is essential for the landholder to fully understand the current performance of their business (BAU) under a range of seasonal conditions. With this understanding of BAU, it is then possible to compare the financial impacts of various management and diversification alternatives such as the implementation of a HIR project, including the ability of the business to finance any station development required.

With an understanding of current business performance together with the predicted carbon yield for the applicable land systems, it is possible for pastoralists to form a view as to the carbon price above which implementing a HIR project may become viable. The table below shows income per ha of a HIR project area for the Roopena land system at a range of prices.*

ACCU Price Estimate	Gross \$ per ACCU	Net carbon income per ha at yield of 1.75 t/ha/yr
50% fall in current price	\$8.25	\$10.11
Current market price	\$16.50	\$20.21
Forecast price 2025	\$26.98	\$33.05
Forecast price 2030	\$32.42	\$39.71

* Forecast prices published in Market Advisory Group's Oct 2020 Newsletter