

## **Lana Summary Report: Expanded measures of Farm Profit with Natural Capital Accounting**

Description: This case study from wool-growing property Lana, in the Northern Tablelands of NSW, shows how Natural Capital Accounting can be used to measure and expand the perspective of Farm Profit

---

### **Natural Capital Accounting**

Natural capital refers to the natural resources on a farm, including soil, water, diversity of life, vegetation and living things above and below ground.

Natural Capital Accounting considers the different ways in which woolgrowers support their farm's natural ecosystem and how the farms natural capital contributes to the financial performance of the business. It is a new area of farm business management.

The below case study details the natural capital accounting undertaken on the wool-growing property Lana located in the Northern Tablelands of NSW. Through the natural capital accounting process, farm management practices that affect the condition of the farms natural capital have been identified, measured, and discussed.

This process can be used to expand the traditional view of Farm Profit to incorporate changes in natural capital.

### **The purpose of the Natural Capital Accounting Project**

New ways of thinking are changing our view on Farm Profit.

Natural Capital Accounting helps us measure the environmental impacts of farming. It can sit alongside the farms yearly financial analysis to gain an expanded view of profit. It helps us see the relationship between farming practice, ecological health, and financial return and can give management a broader understanding of farm profit.

Natural Capital metrics complement existing farm financial performance measures and give additional information.

Taking this approach means that decisions about investing in improving the condition of natural assets can be based on measurable on-farm results and trends over time, financial *and* ecological. It also makes the benefits of a farm's natural capital evident and gives an indication to future farm productivity.

For Lana, it has also created new income opportunities through direct marketing of their wool.

## Woolgrower Case Study - Lana

Lana shows that healthy natural capital has business benefits.

### The Wrights' management approach

Tim and Suzanne Wright own 'Lana', 22 km west of Uralla on the NSW Northern Tablelands.

On their 3,470-hectare property, which comprises moderately treed granite slopes and open riparian zones adjoining two major creeks, they run Merino sheep and breeding cows.

Their superfine wool is sold directly to Loro Piana.

Since Tim started using Holistic Planned Grazing, carrying capacity has increased from around 8000 DSE to 20,000 DSE. No hay or grain has been fed to the livestock since 1990. The only supplements that have been used are bypass protein supplement during drought and Himalayan salt for its minerals. The grazing system has proved resilient in the face of the current drought, which is the worst the property has ever experienced.

New fencing and water infrastructure were initially funded by the reduction in other costs, such as fertiliser and hay and pasture renovation. Increased production through the ability to lift stocking rates also covered the financing of the infrastructure.

Grazing management has also significantly reduced vegetable matter (VM) in their wool. VM in skirtings has reduced from 9% to 2% since 1982, increasing the main fleece lines and subsequently the overall value of the wool clip. Tim has shifted to shearing every 8-9 months. Production improvements have seen wool staple strength increasing from an average of 40 N/Ktx to 48 N/Ktx. The average fibre diameter has reduced from 17.5 microns to 16 microns. Merino lambing has increased from 80% to 90%; the calving rate has also increased from 80% to 90%.

Larger mobs enable more efficient management and generally require less human input except for key periods such as lambing and shearing. Permanent labour requirements on the farm have reduced from one person per 4,000 DSE in the 1980s to one person per 16,000 DSE today. Importantly, it has also enabled the Wrights to have more time for off-farm social, community and other activities.

## Natural Capital Accounting

The following methodology was undertaken to develop the Natural Capital Accounting report at Lana.

### Defining Ecosystem type

The foundation of Natural Capital Accounting comes from the 'Ecosystem Asset Account'. This is information about the different ecosystem types that exist on Lana. It is prepared in line with published information and uses a State in Transition Model to classify the ecosystem type. This considers factors including inputs, use and history.

The System of Environmental-Economic Accounting (SEEA) is used to prepare this Account to ensure

internationally published methodology standards.

Parts of the property, in the past, had been converted to introduced pastures, but these are being managed back toward native systems. Some 52 % of the landscape is regenerating towards a more diverse natural grassy woodland state, which is reflected in increases in biodiversity, greater tree canopy cover and shelter for livestock. A diverse range of native grass and forb species contributes to a high-quality year-round diet for livestock.

Over the last 13 years, ground cover remained above 90% and peaked at 100%.

A high level of ground cover is an important component of an effective water cycle, carbon cycle, mineral cycle, resilience, weed control and in providing conditions for native plant recruitment. It is a key natural capital metric.

## Ecosystem services

Ecosystem Services are the direct and indirect contributions that come from an ecosystem. They are measured across 12 criteria that fall under three main classifications:

1. Provisioning services: Forage for Livestock (10-year average), Forage for Bees and Timber provision
2. Regulating services: Soil protection and nutrient retention, Water Quality, Carbon Storage, Microclimate Regulation and Pollination/pest control services
3. Habitat services: such as Animal and Vegetation biodiversity protection and cultural services (such as spiritual and aesthetic values) and climate change adaption potential.

Ecosystem services are ranked as 'high', 'medium' or 'low'. At Lana, they measure as 'high' across all criteria.

The grassy woodlands on Lana are healthy and contribute a large range of natural regulating, provisioning, and cultural services, far beyond basic simply forage for livestock (a 'provisioning' ecosystem service).

The environment is a highly functional and diverse ecosystem that produces a range of ecosystem services as well as being a sound basis for the commercial wool growing business through the production of quality and diverse forage.

Over time, new markets for ecosystem services may develop. If so, Lana will be well placed to benefit from these.

## Ecosystem capacity

This is the measure that shows how the assessed Ecosystem Type impacts the performance of the farming business. The grasses, forbs and other forage produced on Lana are considered as inputs into the grazing operation. The quality of this input indicates the quality and persistence of pastures, the level of groundcover and the proportion of palatable, perennial, and persistent species. It is assessed on a scale

using established industry criteria; Very Good, Good, Fair, Poor and Very Poor.

79% of Lana can be classified as being in Very Good condition for livestock grazing, with 21% classified as being in Good condition. This gives a strong base for the wool production business and is an important metric that can be monitored over time.

## Carbon storage

Although these figures cannot be used to trade carbon or used in a formal carbon sequestration project, the storage of carbon at Lana has been estimated using industry models and can be used for farm management purposes.

These calculations include conservative estimates of carbon stored on the farm. Carbon sequestration estimates include the above and below ground biomass of the trees as well as coarse woody debris. It does not include any sequestration associated with soil or pasture.

Carbon emission estimates include on-farm emissions (fossil fuel use, fertiliser application, livestock emissions, leaching and runoff), electricity use, and pre-farm emissions where relevant (production and transport of fossil fuels, production and transport of purchased inputs including livestock, fodder, grain and amendments).

Using these conservative figures, while the farm activities emitted an average of 2,473 tCO<sub>2</sub>e/year, it was estimated that the farm activities also captured 1,1925 tCO<sub>2</sub>e/year. On average Lana captures and stores around 9,452 tCO<sub>2</sub>e/year (Net).

In effect, Lana captures and stores more carbon than it emits.

Farms with high storage of carbon are usually in better ecological condition than those without - meaning they will likely have better ground cover, higher tree cover, more biodiversity and greater resilience. Lana's net carbon storage is high and provides an excellent metric for tracking the impact of different farming practices and interventions over time.

It may also give a guide to future productivity.

## Environmental Profit and Loss summary

An Environmental Profit & Loss (EP & L) analysis is another component of the Natural Capital Accounting assessment. It is a way of assessing the impact that a business has on the environment. This approach has been developed by Kering, an internationally recognised leading retail group, to help their business understand their environmental impacts.

EP & L is a novel approach for individual farm businesses to take. The EP&L measures the resources consumed across the supply-chain such as water and land, as well as the outputs such as water pollution, air pollution and waste. In the past EP & L has been calculated for industry, using general/generic information.

The Kering methodology with input information specific to Lana has been used to assess the impact of

wool production on the environment at Lana.

Some findings in the key EP&L metrics are:

- Lana produces negligible air pollution, water pollution or waste.
- Concerning greenhouse gas emissions EP&L analysis suggests Lana generates approximately 28.4kg of greenhouse gases per kg of Greasy Wool which is about 56% of the amount estimated by Kering for greenhouse gas emissions from the Kering regenerated landscapes classification contained in their EP &L, and 30% of emissions from their conventional landscape's classification contained in their EP &L.
- A conservative estimate of the natural capital value affected by Lana's operation suggests that it has impacted the ecosystem services by up to 26-29%, and this is not permanent. This is less than the industry estimates contained in the Kering Environmental Profit and Loss, which indicates land use impacts are at 80% from their conventional classifications.

## What does this mean:

The analysis done on Lana has shown that natural capital metrics can be easily calculated.

Less Grower's time is required for natural capital analysis than is needed for traditional Farm Financial Benchmarking activities. An on-farm assessment by a trained ecologist is required, with additional desktop analysis and reporting time needed. Over time and with increasing demand, this could become a commercially viable service.

Natural capital metrics can be used for farm management purposes to complement existing farm production and financial metrics, to enhance the overall view of Farm Profit. This information can be used by growers in their wool marketing. Sustainability conscious brands wanting to source wool with known environmental characteristics are a growing segment in the industry and are keenly interested in these metrics.

Measuring a farm's natural capital will give the farm owners an indication as to the possibilities of developing new income streams for their business. It can support with evidence farm-based marketing initiatives based around regenerative production and allow them to assess the potential for environmental payments.

This report shows there are practical natural capital measures that growers can use to complement their existing farm financial measures to broaden their understanding of farm performance and to better inform their management decisions.

If Natural Capital can be better measured through practical measures such as outlined, it can be better managed.

This work is in its early stages. Over time the impacts of management decisions on the natural capital of

the farm can be tracked in a similar way to farm production and financial performance. Doing this will give a more informed view of overall profit. The relationship of the farms natural capital to farm profit is one area that will emerge with more years of measurement. Some measures of natural capital may give a guide to future financial performance, risk, and resilience.

Natural Capital Accounting is a new way in which growers can start to use to measure and monitor the impact of their decisions on the current and future productivity of their farm business.

**Acknowledgements:**

This project was funded by Australian Wool Innovation and represents one of a series of case studies on Natural Capital on commercial wool-growing properties. The authors would like to thank Mr Angus Ireland and Mr Sam Ropert from Australian Wool Innovation for their assistance. We would also like to acknowledge and thank Dr Steve Wiedemann, Integrity Ag and Environment, for his technical review and input.