

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

Description: This case study from wool-growing property Winona, in the Central Tablelands of NSW, shows how Natural Capital Accounting measures can be used to expand the view of Farm Profit

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### **Winona: a diverse business based on natural capital**

#### **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 Winona located in the Central 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 gives 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 of future farm productivity.

## The Seis' management approach

Colin Seis and his son Nick run 3,500 Merinos, grow cereal crops, and harvest native grass seed on the family's 840 ha property 'Winona' 20km north of Gulgong in the Central Tablelands of NSW. The property runs the 'Winona' Merino stud and is also one of the largest breeders of Kelpie dogs in Australia.

The Seis family has farmed at Winona since the 1860s. Ranging from valley floors and gentle slopes rising to granite outcrops on hilltops and ridges, the predominant soils on Winona are well-drained coarse and fine sands derived from granite.

From the 1930s to 1980, the farm was used for wheat, oats, wool and sheep production. To sustain agricultural productivity, it was necessary to apply high rates of fertiliser during the 1950s and 1960s. In 1979 a devastating bushfire ran through the property, destroying the farm's infrastructure and livestock, which meant that a lack of income prevented the re-establishment of the previous high input cost cropping method.

During the next 20 years, Colin and his neighbour Daryl Cluff developed a new technique they call 'pasture cropping' that involves sowing crops into living perennial pastures and growing them in combination so that the cropping and grazing benefit each other. With pasture cropping, there is no need to kill competing ground cover vegetation, and yet adequate productivity can still be achieved.

Groundcover is maintained, which makes the paddocks more resilient to drought, wind, and water erosion. Input requirements are a fraction of those used in traditional crop production methods. Pasture cropping also stimulates a diverse variety of perennial grass seedlings from seed dormant in the soil. This produces more stock feed after the crop is harvested and eliminates the need to re-sow pastures. Now only small amounts of liquid organic fertiliser are added at the time of sowing.

Colin recognises that trees provide stock with shelter and so has planted more than 2,000 single paddock trees, aiming to restore the original 1860s cover, estimated to be about two trees a hectare. Tree health has improved, and the remaining naturally established trees are regenerating. In addition, around 15,000 local native trees and shrubs have been planted in belts to form wildlife corridors and to link areas of remnant native vegetation.

There are many ways in which natural capital can be measured, the following overviews some of the ways used on Winona.

### 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 Winona. 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 compliance with internationally published methodology standards.

While operating as a successful commercial wool growing operation, Winona has 80% of its landscape transitioning towards a moderately diverse and derived native grassland with few trees. Some 9% of the landscape is a diverse woodland with a high diversity of native species. Some are transitioning to more diverse states is evident.

Over the last 13 years, ground cover remained above 75% and peaked at 97%. This is a good result for a farm that crops a significant percentage of its land each year and shows the benefits of pasture cropping.

## 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.

The Ecosystem Services provided by Winona are rated as Moderate across most criteria, with the Regulating Criteria scoring High. Forage for bees and timber provision scored low.

These services are produced from the diverse and highly functional grassy woodlands that occupy a large percentage of Winona.

It is important to note that a highly functional and diverse ecosystem produces a range of ecosystem services as well as providing a sound basis for the commercial wool growing business through the production of quality and diverse forage.

## 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 Winona 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.

Using standard industry classifications, 99% of Winona can be classified as being in Good condition for livestock grazing. This provides a sound basis for good levels of both pasture crop and animal production.

## Carbon storage

Although these figures cannot be used to trade carbon or used in a formal carbon sequestration project, the storage of carbon at Winona 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 781 tCO<sub>2</sub>e/year, it was estimated that the farm activities also captured 1,266 tCO<sub>2</sub>e/year. On average, Winona captures and stores around 485 tCO<sub>2</sub>e/year (Net).

In effect, Winona 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'll likely have better ground cover, higher tree cover, more biodiversity and greater resilience. Winona'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 a way of assessing the impact that a business has on the environment. This approach has been developed by Kering, a leading retail group, to help their business understand their supply chain's environmental impacts. In the past, EP & L has been calculated for industry, using general/generic information.

The Kering methodology with input information specific to Winona has been used to assess the impact of wool production on the environment at Winona.

Key findings in the EP&L metrics include:

- Winona produces negligible air pollution, water pollution or waste.
- Concerning greenhouse gas emissions, EP&L analysis suggests Winona generates approximately

22.7 kg of greenhouse gases per kg of Greasy Wool which is only 45% of the amount estimated by the Kering regenerated landscapes classification contained in their EP &L and 24% of emissions from their conventional landscapes classification contained in their E& L.

- A conservative estimate of the natural capital value affected by Winona's operation suggests that it has impacted the ecosystem services by up to 42%. This is less than the estimates contained in the Kering Environmental Profit and Loss, which indicates land use impacts are at 80% from their conventional landscape classification.

## What's next.

The analysis done on Winona 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 of the potential to develop 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 profit 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 financial profit is one area that will emerge with more years of measurement.

Measures of natural capital may give a guide to future financial performance, risk, and resilience.

The Seis family will now be able to track these natural capital measures at Winona and use these figures to make farm business decisions. With their current model, they will continue to operate a diverse

commercial wool growing and pasture cropping enterprise and, at the same time, conserve and protect the high-value native grasslands and woodlands on Winona. In doing so, they are contributing to a healthy environment for their livestock and crops. This benefit can now be measured using natural capital accounting

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

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