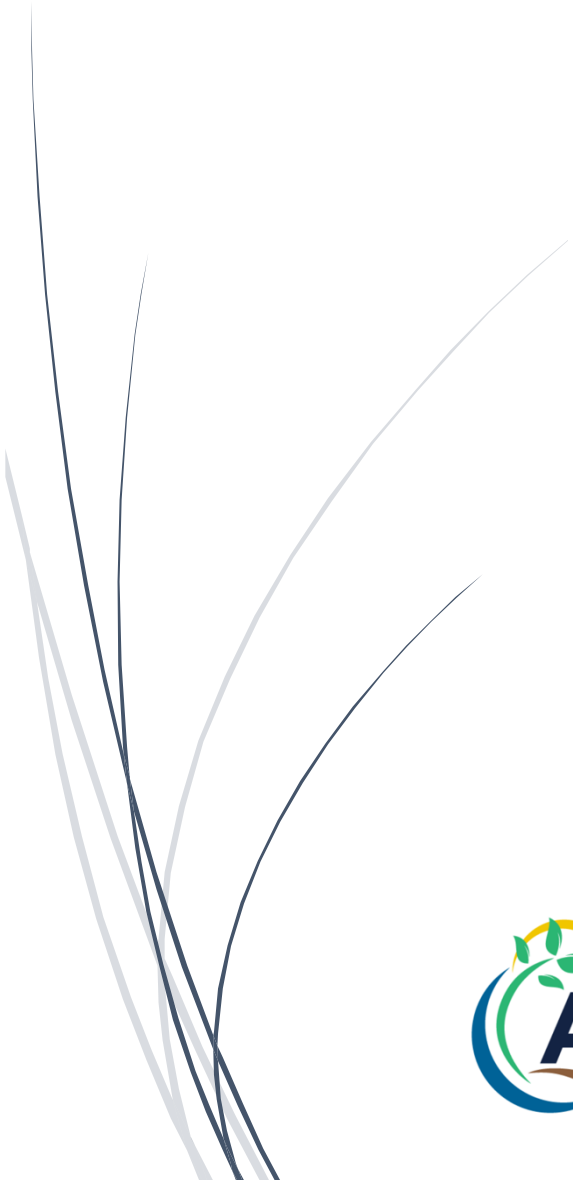
AgCarE Technical Brief

February 2022



AgCarE

THE CARBON HUB

Table of Contents

Executive Summary

AgCarE has been developed by Queensland farmers to quantify natural capital and carbon balance and to benchmark land management activities that enable landholders to access incentives for implementing sustainable on-farm activities. AgCarE is focused on being relevant, accessible and affordable for landholders to enable high uptake and consequently, access to developing natural capital and carbon markets.

AgCarE was created with support from AgForce. In its pilot study, AgCarE has conducted assessment of AgForce participants on of over 584,901 hectares of farmland.

Initially, AgCarE has focussed primarily on Queensland graziers, but its application is gradually being expanded across agricultural commodities and being implemented Australia-wide.

Going forward, AgCarE will improve the accessibility of its tool by creating an online platform and data consolidator. Additionally, the scientific rigour supporting the tool will be improved through oversight from a panel of scientific experts (the AgCarE Reference Panel).

Beyond that, a governance structure will be put in place, whereby AgCarE assessments can be certified. AgCarE aims to be a tool that allows landholders to improve the value of both their physical assets and their commodities at the farm gate, as well as facilitating more sustainable management of Australia's land resources.

The commercial application of AgCarE will have multiple benefits:

- Generating value for farmers in AgCarE certification through farmer access to premium markets and other payments for natural capital condition (such as through linkages with biodiversity of carbon offsets payments).
- Generating value for landowners and brokers in AgCarE certification through increased value of land (land that is proven to have a high quality natural capital condition).
- Generating value for AgForce in facilitating AgCarE certification.
- Generating value for AgForce in providing linkages with commercial buyers of natural capital condition payments (such as retailers, enterprises such as Accounting for Nature, or offsets purchasing entities).

AgCarE Overview

AgCarE is a holistic agribusiness assessment tool that was created by farmers, for farmers. The tool identifies whole-system *natural capital condition* on a property by benchmarking and assessing on-farm ecological value, carbon sequestration, environmental, social and governance (ESG) measures, commodity-specific benefits, and climate risk and mitigation. By taking a holistic approach and assessing all avenues of on-farm value generation, AgCarE demonstrates the diverse set of benefits available to landholders and commercial entities seeking engagement in the area of natural capital. The assessment provides information so that landholders can prioritise effective action that balances the viability of their primary production enterprises with optimisation of environmental values and recognition of societal demands for sustainability and primary productivity. It also facilitates more appropriately valuing farmland and allows entities seeking engagement in natural capital a tested and standardised holistic assessment of value. The tool allows for improvements in landholder management actions over time, which facilitates longitudinal benchmarking and tracks improvements. AgCarE Assessments are landholder-driven, enabling a cost-effective and efficient assessment of on-farm values.

- AgCarE delivers a flexible and accountable assessment of a farm's sustainable values. sustainability credentials through quantification of *natural capital condition*, including ecological values and carbon balance.
- AgCarE provides an independent and trusted link between landholders and public or private enterprises wishing to engage with landholders for projects that generate environmental value.

The term *natural capital condition* captures those assets within the agricultural production environment ("on-farm"). These values are captured by the modules which AgCarE assesses: **ecological value, carbon balance, environmental, advanced activities (including ESG activities), commodity-specific benefits, and climate risk and mitigation**, as shown in **Figure 1**. The most commercially useful environmental values are through ecological value (such as biodiversity) and carbon (such as through generation of Australian Carbon Credit units), hence the focus of this technical overview is on those areas.

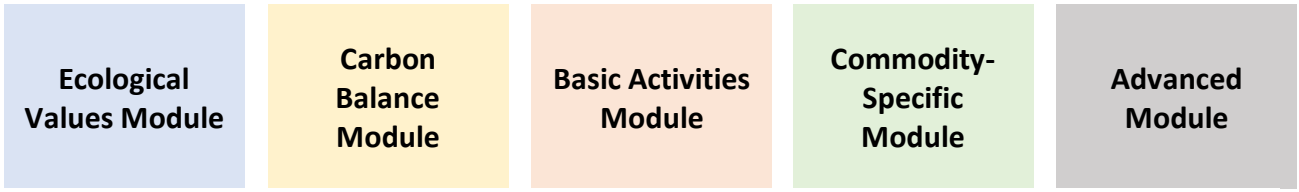


Figure 1. AgCarE modules.

AgCarE's holistic approach addresses all major aspects within the boundary of the on-farm production system. It uses ten key metrics to quantify on-farm environmental value.

1. Sustainable carbon
2. Remnant vegetation
3. Non-remnant vegetation
4. Soil condition
5. Biodiversity
6. Runoff and water quality
7. Stocking and herd management
8. High value agriculture
9. Energy footprint
10. Social education and research

AgCarE Objectives

The AgCarE Framework identifies pathways in which landholders can fulfill environmental value and link landholders to commercial entities interesting in engaging in natural capital. In its current state, the tool collates farm data and provides a series of benchmarks for landholders. On the basis of that benchmarking, AgCarE identifies avenues that may lead to environmental benefits and economic revenue streams for landholders. The tool is backed by a variety of accepted scientific methods and best practices, but is fundamentally farmer-driven, allowing for user-friendly data input that balances rigour and practicality. The overall objective of the tool is to facilitate an approachable and practical way for farmers to understand the environmental benefits available to them, and to link this to further on-farm development of environmentally and economically beneficial practices. Further, a more holistic assessment of on-farm assets will benefit the marketability of land.

The AgCarE model is highly flexible and adaptive. It employs an adaptive management strategy, whereby the tool will improve over time as the science underpinning it advances. This also allows farmers to track on-farm improvements longitudinally. The AgCarE tool uses the most current scientific data and will be updated to ensure scientific relevance in a timely manner.

AgCarE: To Date

With support from Queensland's Land Restoration Fund (LRF), AgCarE has conducted a pilot study with 21 landowners to assess a total of 37 properties covering 584,901 hectares of land. Of the properties assessed, the total average environmental value rating was 16.5/30, equivalent to a 'silver rating'. The current AgCarE tool was developed with a foundation in verified and widely available scientific data. The initial AgCarE questionnaire assessment was developed in consultation with a diverse group of stakeholders including:

- Four Queensland-based landholders (covering 48,815 hectares of farmland)
- One Queensland-based ecologist
- One Senior Policy Advisor
- Queensland Public Sector Representatives and Networks
- National Representatives/Experts in Natural Capital Networks

Each AgCarE module is supported by key academic and industry literature, which will be detailed in this report.

AgCarE: Looking Ahead

A multi-pronged approach will be employed to advance AgCarE which will facilitate improved accessibility and the scientific validity of the AgCarE product as well as its commercial viability:

1. The AgCarE framework will be digitised so that landowners can participate via an easy-to-use digital platform.
2. A scientific reference panel will review the AgCarE framework and its scientific underpinnings and governance of assessment mechanisms in order to facilitate improvements and enhance the AgCarE product.
3. Linkages with entities seeking engagement in the natural capital valuation space will be further developed for commerciality.

Methodology Overview

AgCarE has taken a modular approach to measure specific on-farm activities and improvements to maximise uptake and flexibility for consumers. There are five targeted modules that address environmental value, including one commodity-specific module. Each module is linked to a questionnaire that landowners fill out based on the level of complexity desired by the landholder as well as landholder objectives. There are ten key metrics measured to determine on-farm environmental value, described in **Table 1**. The answers to each questionnaire are scored, resulting in a quantitative assessment of on-farm performance which are classified as bronze, silver, or gold. Inputs are assessed using a variety of publicly available data such as state vegetation and soil maps.

Table 1. Key metrics of on-farm values that are measured for an AgCarE Assessment.

Key Metric	Description
Sustainable property plan	Property management planning at a +-15 year scale that considers long-term holistic landscape management, business management options and outlines management actions that build natural capital.
Remnant vegetation	Bio-condition scoring of regional ecosystems against known benchmarks and historic evidence of vegetation extent and configuration i.e. pre-clearing or 1788.
Non-remnant vegetation on modified landscapes	Metrics of vegetation on non-remnant grazing farmland.
Soil condition	Recognition of methodologies that measure maintenance and improvement of soil carbon sequestration and soil health attributes.
Biodiversity	Measurement of actions to maintain and restore biodiversity including management of wildlife corridors, nature refuges, pests, weeds and biosecurity.
Runoff and water quality	Measurement of sediment load and suspended loads coming off property.
Stock	Herd management and benchmarking against regional averages that reduce methane emissions, principally through earlier age of turnoff and increased fertility.
High value agriculture	Measurement of carbon sequestration and losses in developed farming operations (including input-output recording of chemical use and harvested material).
Energy footprint	Measurement of energy use and efforts to reduce emission such remote monitoring, solar power, diesel reduction and efficient machinery.
Social education and research	Recognition of landholder participation in capacity building activities and peer interactions. This also includes consideration of social wellbeing and mental health benefits that are generated from healthy landscapes.

Landholders may select how many and which modules to answer given the complexity they are willing to engage with and their desired outcomes (such as the markets they wish to access). The various models AgCarE consumers can participate in are demonstrated in **Figure 2**.

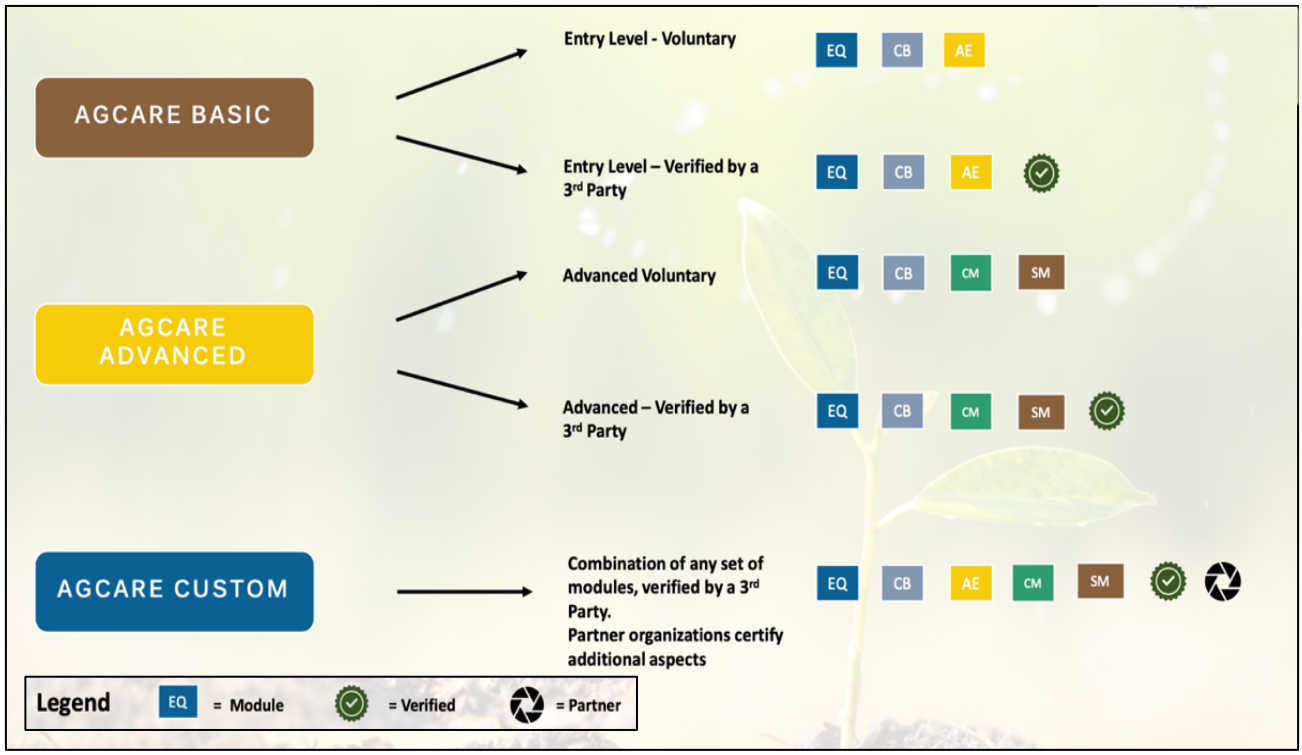


Figure 2. AgCarE pathways.

Landholder questionnaires have been developed and authenticated to meet scientific, government and industry best practices and standards. Each module-specific methodology is substantiated in this report. A conceptual diagram of the AgCarE framework is shown on the next page in **Figure 3**.

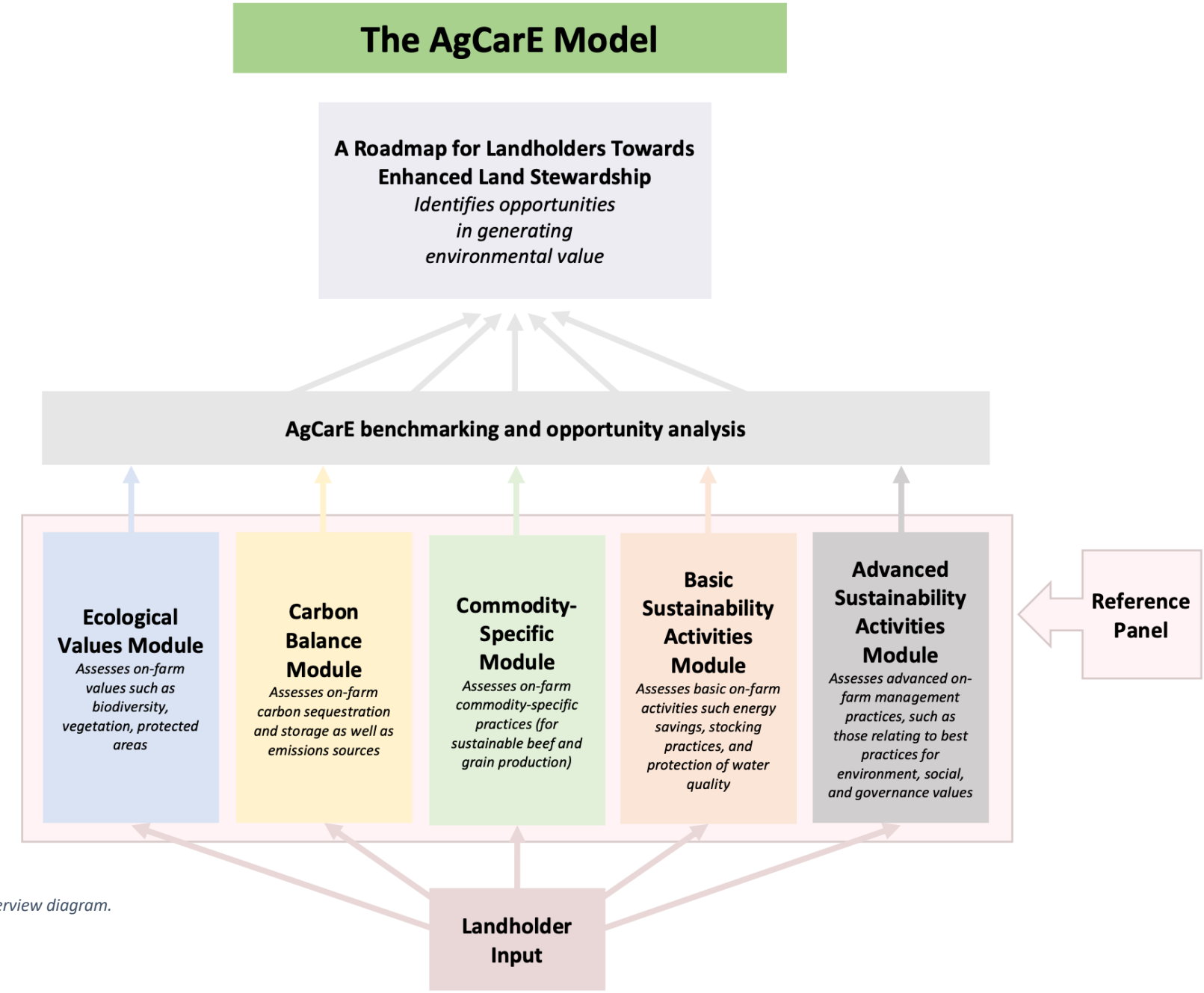


Figure 3. AgCarE overview diagram.

AgCarE Technical Modules

AgCarE covers several technical modules that measure natural capital condition in accordance with accepted science and industry best practices. The AgCarE Reference Panel are actively assessing and providing improvements for the technical components of AgCarE, which by design, will adapt and improve over time with scientific advances.

A preliminary gap analysis was conducted ahead of the AgCarE Reference panel. It found that the AgCarE framework is adequately rigorous, fit-for-purpose, and aligned with the best practices and principles across the literature regarding ecosystem valuation, carbon balance, grain and beef sustainable practices, and ESG components. Further consultation will advance the AgCarE framework, particularly relating to carbon accounting for remnant vegetation.

Conclusion

AgCarE has the technical strength and existing landholder engagement to be a widely available and practical tool for valuing natural capital and linking landholders with entities seeking to engage in that natural capital value. Engagement with the AgCarE tool continues to be high: various stakeholders from commercial, academic, and landholder backgrounds are pursing use of and further advancement of the AgCarE tool. With continued development of AgCare, there are numerous commercial applications and further opportunities to grow AgCarE in Australia.

This document was produced in partnership with The Carbon Hub.
https://thecarbonhub.org/
February 2022