# Barcaldine Carbon Action Plan

## Project Business Case

## Clean Growth Choices

Final Version: 25 March 2020

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# Document Development History

## Build Status:

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The Clean Growth Choices Consortium is comprised of experienced practitioners and academics from the University of Southern Queensland (USQ), James Cook University (JCU), CSIRO and The Ecoefficiency Group (TEG). The consortium team would like to acknowledge the strong support we received from the Queensland Department of Environment and Science (DES), especially from Georgine Roodenrys, Matthew Arthur, Sandra Avendano and Rosanna Virzi. Others consulted in the preparation of the business case were:

- Ronald Thompson (Country Asset Management)
- Megan Surawski from the Land Restoration Fund, DES.
- Professor Geoff Cockfield, Institute for Resilient Regions, USQ
- Rafael Wood, Market Advisory Group.

The Clean Growth Choices Consortium is delivering the Communities in Transition (CiT) pilot project with the support of the Queensland Government.

Extensive resources including case studies are available at: https://www.cleangrowthchoices.org/

# Table of Contents

# 1 Executive Summary

The business case proposes a number of opportunities to build local resilience and economic diversification through targeted carbon abatement projects.

A number of steps are proposed to diversify the economy through innovative planning and mapping along with facilitating initial projects with technical assistance where necessary.

The project has considered the potential for a targeted carbon abatement program to assist regional farmers to diversify their income and achieve some on-farm productivity and environmental improvements.

The three options in the project include:

1. Developing a carbon map and strategy
2. Facilitating access to carbon markets for a number of farms
3. Working towards a zero carbon economy or emissions target.

This business case proposes a project which will contribute to achieving the *Queensland Climate Transition Strategy* targets of zero net emissions by 2050.

This business case advances projects that address a number of key government objectives from Our Future State including:

- Creating jobs in a strong economy by creating and maintaining jobs for regional employees in drought-affected communities
- Keeping Queenslanders healthy – by reducing financial pressures on regional families and reducing suicides.

## 1.1 Communities in Transition: Clean Growth Choices

The Communities in Transition (CiT) Pilot Program delivers on the *Queensland Climate Transition Strategy*'s action to build leadership capacity within communities to develop place-based climate transition roadmaps.

These roadmaps, and this business case, identify opportunities for economic and social development and climate resilience in regional Queensland. These range across a number of sectors including agriculture, waste, water supply, tourism, energy, manufacturing, transport and human services.

The multidisciplinary nature of these business cases means that other Queensland Government priorities are indirectly addressed, thus offering an opportunity to leverage efforts across Government.

The CiT Pilot Program contributes to reducing emissions by identifying economic opportunities that support the transition to a low carbon economy, under the *Queensland Climate Transition Strategy.*

Importantly this business case identifies low emissions opportunities and offers economic diversification to build resilience in the Barcaldine economy.

# 2 Introduction/Background

This project has been prioritised by the Barcaldine working groups under a Value Creation pathway. The pathway recognises the potential for carbon abatement opportunities to diversify the regional economy with additional incomes and promote community vitality.

The working group discussed a number of options to diversify farm incomes through carbon offset production or Australian Carbon Credit Unit (ACCU) generation in the region. The most common opportunities are through carbon farming initiatives; either through planting or allowing the regeneration of vegetation, or by sequestering carbon in soils.

This business case focuses on the potential to increase revenues for carbon initiatives such as through generating and selling ACCUs revenues to the region though native vegetation methods.

The *Barcaldine Living Roadmap* provides details on the Clean Growth Choices Pathway development.

# 3 Overview

## 3.1 Vision

Diversify the Barcaldine Region economy by working towards a zero carbon community by 2050.

## 3.2 Organisational Objective

To add diversity to Barcaldine's economy through the development of carbon abatement opportunities.

To establish a regional approach to carbon abatement and sequestration which supports landholders to engage in global carbon markets, bringing additional revenue to the area which may be less dependent on seasonal weather in a way that is;

1. Place sensitive
2. Industry sensitive and
3. Climate sensitive, while
4. Reducing transactional costs.

The project seeks to provide additional revenue from carbon farming in a way that supports traditional agriculture and builds community prosperity.

# 4 The Business Case

## 4.1 Purpose of the Business Case

The purpose of the business case is to identify opportunities to:

1. Outline the potential for the generation of income and jobs from the low carbon economy in Barcaldine
2. Analyse a number of options as proposed by the Clean Growth Choices working group
3. Identify costs, benefits and risks
4. Develop a proposal to proceed with the project, or to identify a funding source for the project.

The business case proposes three project options to achieve the above outcome.

This is a preliminary business case that will provide the working group with:

1. A sound basis for a decision to proceed to implementation
2. The next steps for, and estimated costs of, the project.


**Sustainable Development Goals**

The project aims to achieve sustainable economic development in Barcaldine and in particular, works towards achieving the following of the United Nations Sustainable Development Goals (SDGs).

| Number | Goal | Explanation |
|---|---|---|
| SDG 7 | Affordable and Clean Energy | Focusing on universal access to energy, increased energy efficiency and the increased use of renewable energy through new economic and job opportunities is crucial to creating more sustainable and inclusive communities and resilience to environmental issues like climate change |
| SDG 9 | Industries, Innovation and Infrastructure | Investments in infrastructure – transport, irrigation, energy and information and communication technology – are crucial to achieving sustainable development and empowering communities in many countries. It has long been recognized that growth in |

| | | |
|---|---|---|
| | | productivity and incomes, and improvements in health and education outcomes require investment in infrastructure. |
| SDG 13 | Climate Action | Climate change is now affecting every country on every continent. It is disrupting national economies and affecting lives, costing people, communities and countries dearly today and even more tomorrow. Weather patterns are changing, sea levels are rising, weather events are becoming more extreme and greenhouse gas emissions are now at their highest levels in history. Without action, the world's average surface temperature is likely to surpass 3 degrees centigrade this century. The poorest and most vulnerable people are being affected the most. |
| SDG 17 | Partnerships for the Goals | A successful sustainable development agenda requires partnerships between governments, the private sector and civil society. These inclusive partnerships are built upon principles and values, a shared vision, and shared goals that place people and the planet at the centre, and are needed at the global, regional, national and local level. |

### 4.2 Business Case Sponsor

The Sponsor of the business case is the Queensland Department of Environment and Science (DES).

# 5 Situational Assessment and Problem Statement

This section outlines the benefit to the region for proceeding with one or more of the proposed options and contains:

- A description of the current situation, challenges and opportunities
- An assessment of how the opportunities are currently being met or not met
- An analysis of the gap between the current situation and the stated objective(s).

Landholders in the region may not understand the potential of the carbon market and the specific relevance to their farms. The market is complex and it is difficult to engage with carbon service providers due to terminology, perceived costs and anecdotes from other areas where land has been locked up for carbon forestry with little value retained in local communities.

This project, therefore, proposes to increase the uptake of carbon offset market participation in the Barcaldine Region by addressing some of the barriers to uptake identified by Agrifutures (2019)

The working group considered a number of aspects to diversify the Barcaldine economy so as to be important in the development of carbon farming and carbon abatement opportunities in Barcaldine; to provide supplementary income to farmers and the community.

The working group has discussed a number of key principles for projects arising from the business cases including:

- Building drought resilience by developing projects that offer additional revenue streams to landowners
- Building local capacity for production and economic activity
- Reducing carbon emissions per capita
- Focusing on economic uplift in the region to achieve an overall benefit to the region rather than limiting benefit to a small number of individuals.

Projects to develop the carbon economy in Barcaldine offer the community the opportunity to generate additional income that may be less dependent on the weather, earning Australian Carbon Credit Units or other certified units from areas of land that may not be the most productive on-farm or may suit some additional purpose that is complementary to carbon abatement.

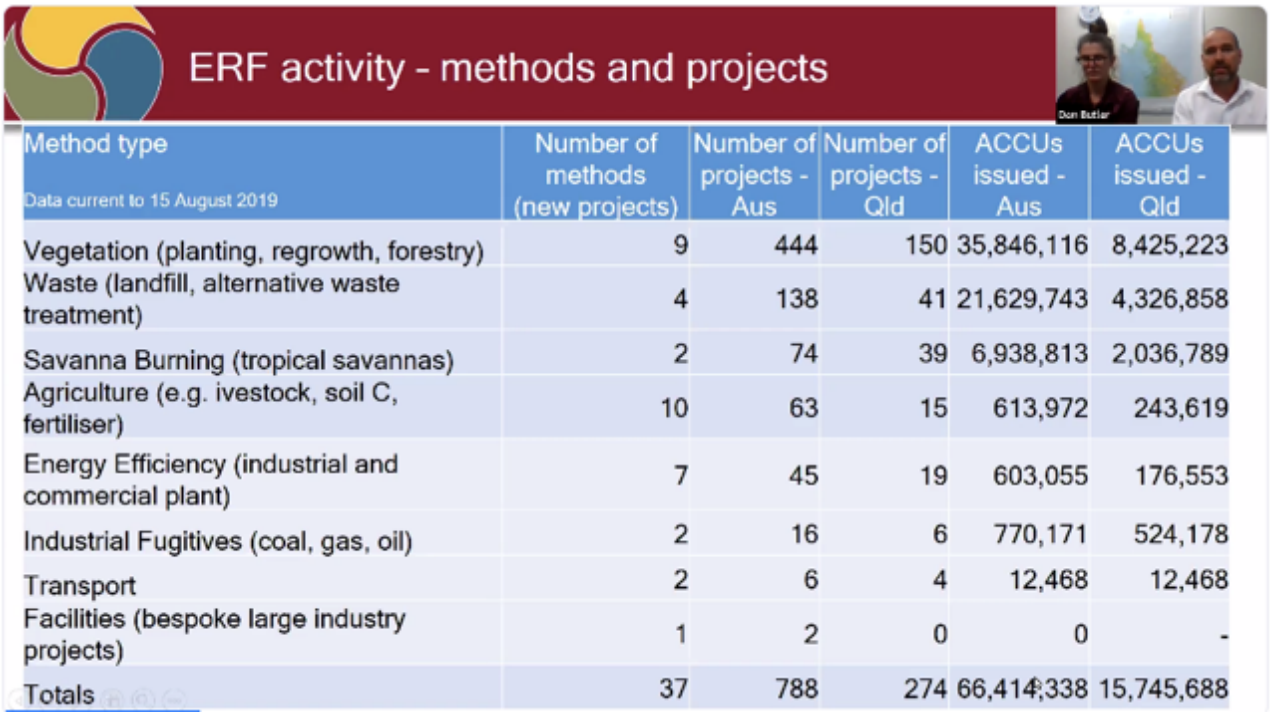
Carbon abatement occurs where actions are taken to avoid the release of greenhouse gases released into the atmosphere or to store or 'sequester' carbon dioxide specifically that already in the atmosphere. Carbon abatement is measured in tonnes of carbon dioxide equivalent (t $CO_2$-e).

Under the Australian Emissions Reduction Fund (ERF), carbon abatement generates an Australian Carbon Credit Unit (ACCU) for each tonne of $CO_2$-e avoided or sequestered in compliance with specific rules known as 'methods'. *Future beef* notes that one ACCU, represents one tonne of $CO_2$ stored for at least 100 years and the informal language of *carbon credit* tends to refer also to 1 $TCO_2$-e.

The Australian Government's Climate Active Standard, formerly knowns as the National Carbon Offset Standard, allows for farmers to undertake carbon offset projects, including The Gold Standard and Verra (previously known as the Verified Carbon Standard). However, these do not have the same regulatory rigour as an ACCU and cannot be used for regulated emission reduction purposes such as under the Safeguard Mechanism.

There are a number of methods for carbon sequestration by farms and there are already 274 Queensland projects generating ACCUs. The number of projects by method is shown in Figure 1.

A key method is the Human Induced Regeneration (HIR) method and there have been 90Mt contracted under this method and there is probably up to that again available across the country. $1.3Bn has been earned by rural landholders through HiR methods.



ERF activity - methods and projects

| Method type<br>Data current to 15 August 2019 | Number of methods (new projects) | Number of projects - Aus | Number of projects - Qld | ACCUs issued - Aus | ACCUs issued - Qld |
|---|---|---|---|---|---|
| Vegetation (planting, regrowth, forestry) | 9 | 444 | 150 | 35,846,116 | 8,425,223 |
| Waste (landfill, alternative waste treatment) | 4 | 138 | 41 | 21,629,743 | 4,326,858 |
| Savanna Burning (tropical savannas) | 2 | 74 | 39 | 6,938,813 | 2,036,789 |
| Agriculture (e.g. ivestock, soil C, fertiliser) | 10 | 63 | 15 | 613,972 | 243,619 |
| Energy Efficiency (industrial and commercial plant) | 7 | 45 | 19 | 603,055 | 176,553 |
| Industrial Fugitives (coal, gas, oil) | 2 | 16 | 6 | 770,171 | 524,178 |
| Transport | 2 | 6 | 4 | 12,468 | 12,468 |
| Facilities (bespoke large industry projects) | 1 | 2 | 0 | 0 | - |
| Totals | 37 | 788 | 274 | 66,414,338 | 15,745,688 |

Figure 1: ACCUs from various methods in Australia and Queensland. Screen Shot from the Clean Growth Choices Carbon Webinar[1]

The Working group expressed a desire to ensure that carbon abatement can be achieved at an economic benefit to the community without impacting the overall community, noting examples where extensive carbon abatement opportunities have left large areas of land no longer available to agriculture, and where the economic benefit leaves the local communities. Other concerns are where large abatement areas may be unmanaged become a refuge for feral species.

The business case provides some guidance on economic matters, but it is noted that there are a number of drivers of efficient and renewable energy and a number of motivators for famers to engage in carbon forestry, including:

- Carbon farming for the purposes of generating ACCUs for sale
- Carbon farming to improve the profitability of an enterprise by improving soil carbon, reducing fertiliser use and efficiency measures, in the absence of generating ACCUs
- Carbon farming for the purposes of achieving carbon neutrality through the Climate Active Standard which does not generate a tradable commodity like an ACCU.

**Revenue and Costs**

1. _____

[1] https://www.cleangrowthchoices.org/webinars

The *Carbon Farming Industry Roadmap*[2] notes that as of 2017, there were $886M (10 years income) in contracted emissions reduction fund projects including approximately ¼ of these in Central Queensland (p. 14). The report identifies that if Australia meets its 2015 Paris Agreement Nationally Determined Contributions (NDCs), around 900Mt$CO_2$-e of abatement will be required with a value of between $4.1 - $10.4 billion, creating 7,875 – 13,750 jobs, with significantly greater opportunities if Australia overachieves its NDCs.

Under this scenario, carbon prices may be in the range of $15 - $29 per tonne, though there are likely to be additional financial benefits through co-benefits.

To put the opportunity in perspective, a hectare of pasture that is transitioned over to a spotted gum pasture[3] would sequester around 34.5 t C/ha or 126.6 t $CO_2$-e over four years. At this rate, a farm would need to be able to commit approximately 64 hectares to be able to achieve the minimum annual threshold of 2,000 $CO_2$-e per year to participate in the ERF. This is consistent with the model below (see Figure 2 which shows potential carbon abatement for avoided clearing of between 48 – 72 t $CO_2$-e/ha). This analysis could be rerun once CSIROs LOOC-C tool is available.

At the approximate Emissions Reduction Fund pricing of $12 per tonne, this would equate to $1519.20 per hectare in emissions reductions at year 4[4].

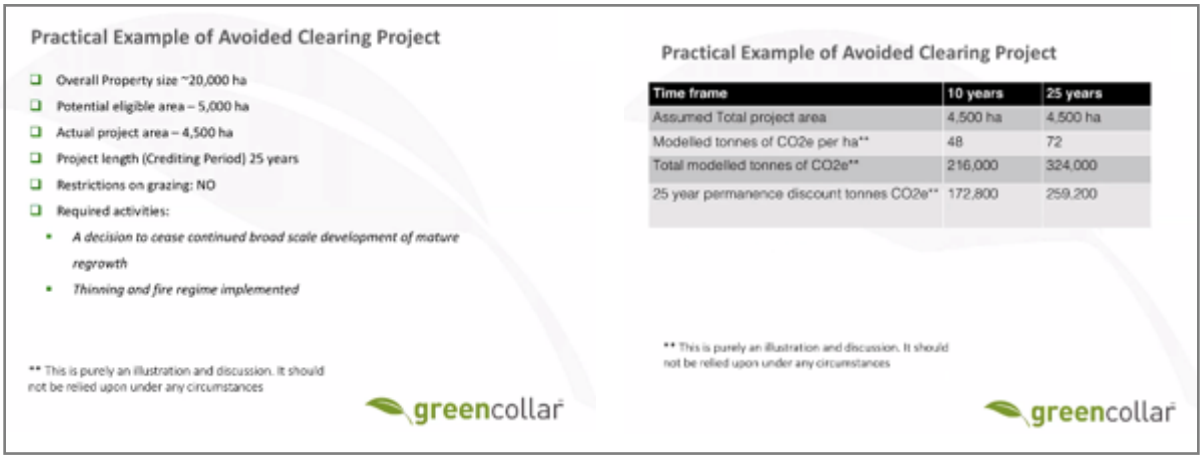



Figure 2: Example potential t$CO_2$-e from avoided clearing as highlighted at a Clean Growth Choices Webinar[5]

Due to the complexity of carbon market reporting and administration, carbon projects are often managed by commercial providers who take up to 30% of the revenue.

1. _____

[2] https://carbonmarketinstitute.org/australias-carbon-farming-industry-roadmap-to-deliver-emissions-reductions-rural-jobs-value-for-regions/
[3] Note: May not be suitable for Barcaldine, but included for illustrative purposes
[4] https://futurebeef.com.au/knowledge-centre/risk-and-returns-of-selling-trees-for-carbon-credits/
[5] https://www.cleangrowthchoices.org/webinars

This percentage of revenue may not be unreasonable as there is some risk associated with developing these projects. For example, for a 30,000Ha Central West property, the capital costs will be significant and include the costs of fencing and watering points. Operational costs (Opex) may be up to $60,000 per annum and include:

| Item | Details | Annual Amount |
|---|---|---|
| Costs | Carbon management costs (offset reports, site visits of 2 persons for 2 days, measurement and verification reports and desktop reports | ($25,000) |
| | Professional fees: Legal, accounting, audit (which includes site visits) minor Insurances, bank fees, etc | ($20,000) |
| | Repairs and maintenance (pests, fences) | ($5,000) |
| | TOTAL | ($60,000) |
| Revenue | 1.5 tonnes per annum at $14 per tonne = $21 per hectare per year | $735,000 |

In the above case, the costs are less than 10% of revenue. However, the annual costs would reduce only marginally if the size is reduced (ie, site visit time may be shortened). For a project of 15,000 ha the revenue would be $315,000, and the costs would now be around 20 per cent of revenue.

Therefore, it may make good sense to develop large projects or combine sites into one management component where the above costs could be shared by a number or landowners.

There is a potential indirect benefit associated with the project in that it may assist in achieving:

- Increased biodiversity and biodiversity corridors
- Additional shade and refuge for livestock
- Increased soil carbon and therefore water holding capacity of the farm
- Farm carrying capacity retention.

*FutureBeef* notes that declining soil organic carbon levels may reduce capital value of the land[6] and improving soil organic carbon levels may, therefore, mitigate against declining land values or even assist in increasing capital values.

If the capital value of the land can be retained or improved through projects that retain or increase the carrying capacity and the condition of the farm, the capital value of the farm can be retained or even improved, potentially even during drought periods.

The Land Restoration Fund will be looking for co-benefits in areas where carbon farming has potential but also where there are other opportunities such as to protect endangered regional ecosystems. In particular, there are areas where ecological biodiversity can be protected and wildlife and waterway corridors can be secured and revegetated. A map has been produced by the Queensland Governent showing the potential for co-benefits (Figure 3).

1.

[6] https://futurebeef.com.au/knowledge-centre/soil-organic-matter-and-carbon-sequestration-in-pastures/

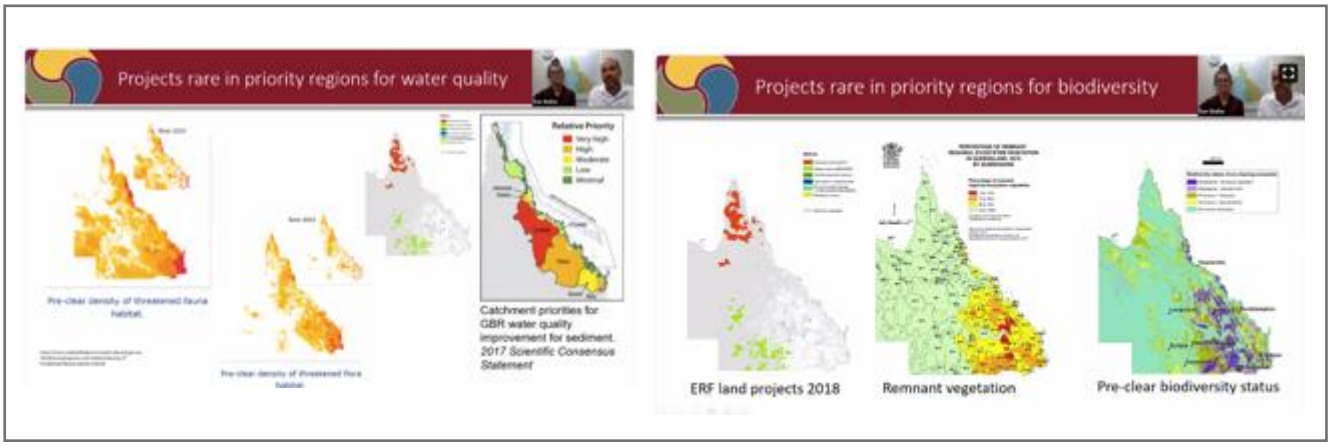



Figure 3: Co-benefits potential in Queensland (from the Clean Growth Choices Carbon Webinar[7])

A greater opportunity might exist to target additional voluntary carbon markets in a coordinated manner to create a Barcaldine or Central West branded carbon product that allows purchasers to identify with the region that generates their carbon abatement.

Carbon Farmers of Australia is a not for profit organization that advises farmers about carbon farming and accessing the Emissions Reduction Fund, including aggregating smaller land holdings to achieve the 2,000 tonne threshold https://carbonfarmersofaustralia.com.au/carbon-farming/small-farm-aggregation/. Carbon Farmers of Australia recommends developing a Carbon Farm Plan commencing with a whole-of-farm carbon audit.

There are also a number of industrial methods that can be added to soil, herd and vegetation management to reach a threshold, such as through energy and fuel efficiencies.

The Department of Environment and Science has produced a *Regrowth Benefits Map*[8], which show areas' suitability for regrowing native forest. The Map provides an indication of where additional benefits may result from carbon abatement projects, which may lead to a greater value of offsets to the landowner. The map has information about:

- Carbon potential
- Threatened species that may benefit from new habitat
- Biodiversity benefits
- Key state government regulations relevant to regrowth management. Should the image to the right be a figure?

**On farm changes to improve soil carbon.**

Nigel Cornish in the Goondiwindi Region in Queensland has made improvements to his farming method to improve fertiliser use efficient and nitrogen uptake on his farm. He has achieved a 0.5% increase in soil carbon while increasing yields from 450ha of irrigated cotton reaching 17 bales a hectare.

Source: Clean Growth Choices, CGC Case study - Nuffield scholar, Nigel Cornish, Goondiwindi – experience provides confidence to question and implement change, www.cleangrowthchoices.org/our-stories

1.

[7] https://www.cleangrowthchoices.org/webinars
[8] https://apps.des.qld.gov.au/regrowth-benefits/

There is one registered Emissions Reduction Fund Project in BRC; a vegetation project by the Catchment Conservation Alliance (Project ERF103448) by Terra Carbon Pty Ltd. Note that it is unclear whether this project has project areas within the Barcaldine region or whether the ACCUs that are being delivered against the ERF contract are from other portfolios being managed by Green Collar.

Under the ERF auction framework, the ACCUs supplied under an ERF contract do not necessarily need to come from areas within the registered project. This is because of the 'make good' provisions. Existing ERF projects are shown on the Clean Energy Regulator's interactive map[9]:

The *Carbon Farming Industry Roadmap*[10] notes a primary action for states to "work with federal government to provide funding for method R&D to prioritise local projects within each jurisdiction" (p, 26), and for farmers to "investigate the opportunity for diversifying revenue streams and investing in carbon projects that lead to greater farm productivity" (p. 28). Energetics (2017) noted that Queensland can generate abatement of $1.4 to $4.7 billion from land and agriculture offsets[11] with additional opportunities if demand increases.

This project addresses one of the recommendations of the Energetics report to assist in investigating ways to reduce transaction costs (p. 22). It achieves this by providing accessible information to landowners and some facilitated initial projects in a way that adds value to the region. It also works towards a number of pillars in the *2030 Roadmap: Australian Agriculture's Plan for a $100 Billion Industry*[12].

Pillar 2: Growing Sustainably:

- The net benefit for ecosystem services is equal to 5% of farm revenue
- Australian agriculture is trending towards carbon neutrality by 2030
- A 20% increase in water use efficiency for irrigated agriculture by 2030.

Pillar 3: Unlocking Innovation:

- Australia becomes a top 20 nation for innovation efficiency
- Australia's farm energy sources are 50% renewable by 2030.

There are a number of potential income sources for carbon abatement projects:

| Source | Income Basis |
|---|---|
| Emissions Reduction Fund (ERF) | Base carbon price per tonne |
| Safeguard method | Base carbon price per tonne |
| Voluntary markets | Global price<br>+ potential premium for a traceability |
| Land Restoration Fund | + value for co-benefits |

1.

[9] http://www.cleanenergyregulator.gov.au/ERF/project-and-contracts-registers/interactive-map
[10] https://carbonmarketinstitute.org/australias-carbon-farming-industry-roadmap-to-deliver-emissions-reductions-rural-jobs-value-for-regions/
[11] https://www.qld.gov.au/environment/climate/climate-change/carbon-farming
[12] https://www.nff.org.au/read/6187/nff-releases-2030-roadmap-guide-industry.html

A number of carbon sequestration considerations identified at the Rural Economies Centre of Excellence (RECoE) 2019 Annual forum[13] and presented by Professor Geoff Cockfield include:

- Carbon sequestration projects are likely to confer higher net financial benefit where opportunity cost is lower – in areas that may already have a low carrying capacity – with projects becoming more marginal in higher carrying capacity areas (ie. where revenue per hectare from grazing or other activities may be higher)
- Where opportunity cost (livestock carrying capacity) is relatively low, there is likely to be a considerable net financial advantage even with a significant increase in meat or wool prices
- Landholders should consider long-term cash flow to ensure the best long-term benefits after initial project payments cease such as, for example, utilising funds from carbon sequestration projects to reduce debts, increase productivity or make off-farm investments. These strategies will also help stabilise income over time
- Great care is needed in making a decision that commits land to a sequestration project for 25 to 100 years. There are many uncertainties, including how this will affect future land values, whether or not there will be new markets for sequestration after government payments cease, and what the future regulatory compliance enforcement regime will be.

It should be noted that opportunity cost calculations should be reviewed regularly as commodity prices change and carbon prices will change. For example, if carbon prices increase from current level of $12 - $14 per $tCO_2$-e abated, to $25 per $tCO_2$-e abated by 2025, the opportunity cost is halved.

Potential cost reductions through a broker or local cooperative to establish a Circular Carbon Model are:

- Broker facilitates project with farmer and manages reporting and compliance
- Project's target co-benefits to develop contiguous regeneration areas along waterway corridors or contiguous with other bushland areas
- A local Indigenous group takes on land management role contract
- If the land manager is from an Indigenous group, they may also utilise the carbon sequestration area to produce bush tucker and medicines, with a share of revenue provided to the landholder
- A proportion of revenue is paid by the farmer to the broker who in turn pays the land managers and contributes to a wider community fund
- Proportion of revenue taken by the broker is less than commercial providers with more funds available to engage other sectors of the community.

A variation of this model is offered under Other Opportunities (Section 8.4).

# 6 Assumptions and Constraints

The business case provides a pre-feasibility level assessment of the project. It has been prepared by the Clean Growth Choices team under the direction of the Clean Growth Choices working Group. The working group largely consists of volunteers who provide guidance and input.

1.

[13] https://www.ruraleconomies.org.au/top/annual-forum-public-lecture/

# 7 Identification and Analysis of Options

This is a high-level analysis of the possible alternatives that could be employed to bridge the gap between the current situation and what is proposed, as outlined in Section 4.

## 7.1 Identification of Options

Various options are available to the working group:

- Option 1: Barcaldine Carbon Action Plan
- Option 2: Catalyst Carbon Abatement Project
- Option 3: Zero Carbon Barcaldine.

### 7.1.1 Option 1: Barcaldine Carbon Action Plan

This option would be to develop a bespoke Barcaldine Carbon Farming Plan to guide landholders with specific advice to assist in participating in carbon abatement initiatives including:

1. Identification of opportunities available
2. Identification of easier to access options
3. Identification of means of access.

The plan would increase the diversity of regional income through participation in carbon markets. The project would provide a plan for generating certified carbon abatement credits (Australia Carbon Credit Units) through a range of existing methods including:

- Environmental plantings and human induced regeneration
- Soil carbon in grazing and other farmlands
- Grazing methods
- Potential industrial methods such as energy efficiency.

The plan might develop a model for facilitated establishment of carbon abatement projects to ensure as much return as possible is retained in the local community,

The project will develop a map and step-by-step action plan for landholders and involve the potential following steps:

1. Identify vegetation types in the Region with a carbon map (noting that some commercial aggregators may have approached landholders and done this already)
2. Consider existing Emission Reduction Fund methods:
    - Environmental plantings
    - Human induced regeneration
    - Avoided deforestation
    - Grazing methods
    - Industrial methods.
3. Determine the potential for abatement in Barcaldine using existing methods

4. Identify other dominant vegetation types in the Region that are not covered by existing methods
5. Determine potential for other abatement in these other vegetation types
6. Consider the potential to develop other methods suited to the area
7. Consider potential to aggregate farms with the same method – streamline the aggregation processes similar to a cluster-fencing model
8. Advise on establishing branded carbon products which could be worth more to landholders. For example, Central West Carbon Credits and target major corporates
9. Seek pricing from the market for the above strategy
10. Determine whether the potential revenue would be sufficient to justify a Carbon Abatement Officer being based in the Barcaldine Regional Council or RAPAD. Such a person would have sufficient expertise to facilitate landholders' participation in carbon abatement programs
11. Develop a revenue model for a temporary Carbon Abatement Officer to establish projects, manage aggregation and reporting.

### 7.1.2 Option 2: Catalyst Carbon Abatement Project

This option follows on from Option 1 to directly facilitate a number of initial farmer-led carbon abatement projects:

- Using the above action plan, identify target areas where a significant return could be realised
- Identify initial projects to demonstrate the potential from the above assessment in Barcaldine
- Call for volunteer from the community to participate, ie. to include areas of their property in a trial
- Engage a suitably qualified person to develop the project
- Develop a Carbon Farm Plan for participating farms.

### 7.1.3 Option 3: Zero Carbon Barcaldine

Develop a plan to have Barcaldine recognised as a zero net carbon town (possibly a first), taking into consideration:

- Solar power projects
- Potential for carbon abatement
- Other initiatives such as fuel efficiency and energy efficiency
- Potential to consider using the new Climate Active program.

This option involves:

1. Developing a carbon footprint for the Region, including:
   - Emissions from fuels consumed in the region
   - Emissions from electricity consumed in the region
   - Credits for renewable energy generated in the region (LRECS surrendered?)
   - Credits for carbon abatement

2. Development of a strategy to reduce emissions to zero
3. Marketing and branding.

Option 3 involves a comprehensive carbon accounting exercise to determine the current carbon balance in the region.

The community will need to determine whether certification is desired or required and, if so, determine the most suitable methodology:

- National Carbon Offset Standard (NCOS)
- National Greenhouse and Energy Reporting (NGER) Tool.

A number of Australian local authorities and their communities are participating in Zero Emissions Communities Programs including:

1. Zero Emissions Noosa: Assisting the Noosa Shire Community to become net zero greenhouse gas emissions by 2026, with targets and strategies for residential, business and transport emissions - https://www.noosa.qld.gov.au/environment-waste/environment/zero-emissions-noosa
2. Zero Emissions Byron Bay: *Net Zero Emissions Strategy for Council Operations 2025* - www.byron.nsw.gov.au/files/assets/public/hptrim/environmental-management-planning-plan-development-emissions-reduction-strategy/draft-net-zero-emissions-strategy-for-council-operations-2025-version-for-public-exhibition-february-2019.pdf
3. Zero Emissions Tweed
4. Z-net Uralla
5. Zero Carbon Emissions by 2050 City of Greater Geelong - www.geelongaustralia.com.au/zerocarbon/article/item/8d490835f445982.aspx
6. Zero Carbon Moreland: *Zero Carbon Moreland Action Plan 2020/21 – 2024/25* moreland.vic.gov.au/about-us/have-your-say/consultations/zero-carbon-moreland--action-plan-202021--202425-draft/
7. Georges River Council's zero carbon emissions question - www.theleader.com.au/story/6088314/georges-river-councils-zero-carbon-emissions-question/
8. Brisbane City Council: Carbon Neutral Council - www.brisbane.qld.gov.au/about-council/governance-and-strategy/vision-and-strategy/reducing-brisbanes-emissions/carbon-neutral-council
9. City of Melbourne: Zero net emissions by 2020 - www.melbourne.vic.gov.au/SiteCollectionDocuments/zero-net-emissions-update-2014.pdf
10. Maribyrnong City Council –www.maribyrnong.vic.gov.au/files/assets/public/council-plans-reports-and-publications/zero-carbon-emissions/disclosure-statement-zero-carbon-emissions-1-july-2017-to-30-june-2018.pdf
11. Yarra City Council: Victoria's first carbon neutral council - www.yarracity.vic.gov.au/about-us/sustainability-initiatives/victorias-first-carbon-neutral-council.

Beyond Zero Emissions provides information on many Zero Emission Communities around Australia - bze.org.au/.

## 7.2 Comparison of Options

A summary of the benefits, disbenefits, costs, risks and issues is provided in the following table.

| Criteria | Option 1: Barcaldine Carbon Action Plan | Option 2: Catalyst Carbon Abatement Project | Option 3: Zero Carbon Barcaldine |
|---|---|---|---|
| Benefits:<br>• Farmers<br>• Other landholders<br>• Barcaldine residents | New revenue source<br>Potential to increase Net Primary Productivity (through increase in carbon retained on farm)<br>Potential for indirect benefits such as biodiversity, soil water holding capacity improvements | Facilitated projects leading to direct outcomes<br>Biodiversity improvements<br>Potential whole of farm productivity benefits<br>Potential for a diversified income during drought periods | Increase in value of carbon abatement with branded carbon products |
| Disbenefits:<br>• Farmers<br>• Other landholders<br>• Barcaldine residents | Potential to lock up agricultural land with reduced benefit to the community | Time taken<br>Some restriction on land use | Time taken<br>Potential for a larger project with indefinite outcomes |
| Costs:<br>• Direct<br>• Indirect<br>• Recurrent | Cost of the strategy preparation | Facilitator/Project Manager cost | Consultancy cost |

## 7.3 Recommended Option

The working group has recommended the following based on the previous analysis:

Priority: Options 1 and 2

# 8 Risks and Benefits

## 8.1 Matters to be considered

There are a number of issues that projects will need to consider including perceptions from other areas where carbon farming has replaced traditional agricultural production on family farms. In some cases families have moved away (ie. potential to reduce local economic activity). In the Paroo Shire in South West Queensland 1/3 of the land mass is committed to carbon sequestration projects with up to ½ of this area having absentee landowners[14]. This could be mitigated by requiring active land management (eg. weed management and biodiversity mapping) and adding this to the value of a credit in the voluntary market. It may also be that these activities are cost effective enough to include in an ERF auction bid.

ACCUs are financial products, so people advising on them and trading them must have an Australian Financial Services Licence (AFSL). There are some exemptions so further advice is required.

It will be necessary to keep dealings with landholders confidential until they are ready to have details shared.

## 8.2 Risks

A number of risks have been identified at Appendix B. A key risk will be whether farmers will be engaged due to concerns about opportunity costs of the project. That is, would carbon farming return as much as livestock on a $/HA basis? There are several potential answers to this question that would need to be considered in developing the action plan:

1. If the land proposed is to be taken out of agricultural production to allow one or more vegetation methods, the project will have an opportunity cost and the landowner will need to compare the potential revenue, including the relative risks of achieving the revenue
2. If the land is currently not utilised for agriculture, or set aside for a buffer or wildlife corridor and one or more of the vegetation methods is chosen, the income could be additional to agricultural income
3. If a soil method or grazing method is chosen, then the income could be additional to agricultural income.

## 8.3 Potential Benefits

Below is a list of benefits that may result from the project. They have been classified into direct and indirect.

| No | Topic | Direct/ | Details |
|---|---|---|---|
| 1. | | | |

[14] https://www.abc.net.au/news/rural/2018-03-06/carbon-farming-killing-the-community-or-saving-the-world/9515836

| Indirect | | | |
|---|---|---|---|
| 1 | Diversified revenue for regional land holders | Direct | Landholders including farmers may earn additional revenue from carbon abatement. Income from the sale of carbon offsets from participating farms. |
| 2 | New business opportunities | Indirect | The potential to earn additional income from carbon credits through increasing soil health and for wider income for other Barcaldine residents and businesses. |
| 3 | More revenue stays in Barcaldine | Direct | The potential for a partnership method that means that a greater proportion of revenue stays with the landholders and the local community. |
| 4 | Strategy and how-to guide | Direct | Step-by-step guide for carbon management. |
| 5 | Skills for future jobs | Direct | Developing skills in occupations relating to the carbon economy such as accounting and land management. |
| 6 | Increased shade cover | Direct | CSIRO advises that 30- 40% tree cover on a grazing property is optimum for shading. |

Futher benefits are identified at Appendix A: Benefit Analysis.

## 8.4 Other Opportunities

There are a number of potential ideas to incorporate into the project. There are also a number of industrial methods that can be added to soil, herd management or vegetation methods to reach a threshold, such as through energy and fuel efficiency.

**An Integrated Local Delivery Model**

The project could be designed so as to develop skills so that a local team can be assembled to do the audit reports, management, site visits and maintenance. The team could be trained in ecology and compliance, developing them into industry specialists. The team could then offer additional services such as research through a university partner to do fauna surveys.

**Additional Services to Landholders**

The scheme can offer a number of levels of service for landholders. It could provide the basic compliance and audit functions for a percentage share of the to total revenue It could then offer a number of additional services to the landholder. For example, a traditional land management practice could be incorporated which would attract a premium on the sale of the carbon abatement units. For example, savanna burning currently trades at $20 - $22/tonne because it is a traditional Indigenous fire stick regime. Companies seeking carbon sequestration projects may pay a premium for communities getting time on country and revenue and additional funds are raised and kept in the community.

**An embedded expert**

Rather than engage an expert to act as an advisor locally, the project could seek the funds to embed a professional to train and mentor local people to deliver projects. For example, an expert could be embedded in Barcaldine for one week in three for six months to build local capability to the point that local experts could deliver the project, with less out-of-town support.

# 9 Implementation Strategy

## 9.1 Project Title

Barcaldine Carbon Action Plan

## 9.2 Target Outcomes

The outcomes of the project would be:

1. Option 1: A plan detailing specific areas and actions to assist land owners, including the Council, to deliver carbon abatement
2. Option 2: A number of properties with carbon abatement agreements or contracts in place earning revenue
3. Option 3: Either:
    a. Details of further actions required to achieve zero carbon
    b. Zero carbon certification.

## 9.3 Outputs

The project outputs are:

**Option 1:**

- A Carbon Action Plan detailing:
    - An assessment of the general suitability of areas in the Barcaldine Region for:
        - Carbon abatement projects under existing methods or where accredited carbon abatement could occur
        - Carbon abatement where new methods may be required in order to gain accredited carbon abatement methods
    - A map of areas suitable for carbon abatement
    - A strategy for aggregating farm emissions
    - A how-to guide detailing specific actions to assist land owners, including the Council, to deliver carbon abatement
    - A series of engagement activities for local landholders on carbon farming methods and opportunities.

**Option 2:**

- A process to recruit a number of farmers to engage in the project based on the opportunity areas identified above

- A facilitator and trusted advisor to assist farmers step through the process until contracts are signed for carbon abatement
- A local workshop for the facilitator and participating landholders to advise others on the process
- Tangible contracted project(s).

**Option 3:**

- A Zero Carbon Barcaldine proposal including:
  - Calculations of the existing carbon footprint of the region
  - A community plan to achieve zero carbon in the region.

Consider reviewing the *Sustainability Victoria* and *Ironbark Sustainability* webinar series on carbon accounting for councils through Victoria's Local Government Energy Saver Program[15].

## 9.4 Work Plan

Further Work Required to implement the strategy based on progression through Options 1 and 2:

| | Consultation | Gain support for the concept |
|---|---|---|
| 1 | Market research | Initial discussions with large purchasers of carbon offsets including large corporations with regional Queensland presence (Qantas, Suncorp, BHP).<br><br>Initial discussions with landholders to determine interest. |
| 2 | Vegetation map | Identify vegetation types in the Region with a carbon map collating existing information sources with some ground truthing (noting that some commercial aggregators may have already approached landowners and done this). |
| 3 | Existing Emission Reduction Fund methods | Determine the potential for abatement in Barcaldine using existing methods.<br>• Identify other dominant vegetation types in the Region that are not covered by existing methods<br>• Determine potential for other abatement in these other vegetation types<br><br>Consider the potential to develop other methods suited to the area. |
| 4 | Revenue Model | Determine whether the potential revenue would be sufficient to justify a Carbon Abatement Officer being based in Barcaldine Regional Council or RAPAD. Such a person would have sufficient expertise to facilitate landholders' participation in carbon abatement programs. |

1. _____

[15] https://www.sustainability.vic.gov.au/Grants-and-funding/Local-Government-energy-saver-program

| | | |
|---|---|---|
| | | Develop a revenue model for a temporary Carbon Abatement Officer to establish projects, manage aggregation, report. |

## 9.5 Budget

Below is an indicative project budget based on discussion with a number of industry experts.

Options 1 and 2:

| Item | Est Cost |
|---|---|
| Survey of vegetation types in Barcaldine Region (Option) | $100,000 - **$200,000** |
| Survey of vegetation types for RAPAD Region (Option) | ($100,000 - $200,000) |
| Create Opportunities Map:<br>• Link to potential value of different vegetation types per unit area | (Included in above costs) |
| Develop Process Map and Action Plan:<br>• Step-by-step plan for landholders | $25,000 |
| Develop role description and scope for facilitator or trusted advisor | $5,000 |
| 12 month position for a Carbon Economy Facilitator | $150,000 |
| TOTAL (Barcaldine vegetation survey only) | $280,000 - 380,000 |

Option 3:

| Zero Carbon Barcaldine. Modelling, Action Plan and Calculations | Cost |
|---|---|
| TOTAL | $100,000 |

## 9.6 Other Resources

Resources available that could facilitate or offer funding for the programs include:

- Building Better Regions Fund with two streams for ‘Infrastructure Projects’ and for ‘Community Investments’ - https://www.business.gov.au/assistance/building-better-regions-fund

- Land Restoration Fund (LRF) The project appears to meet the criteria for the Kickstarting the Market Grants program under the fund although the program appeared to be closed to applications at the time of writing. The Kickstarting the Market Fund - https://www.qld.gov.au/environment/climate/climate-change/land-restoration-fund/pilot-projects/market-grants

- Potential to access funds through the Queensland Land Restoration Fund (LRF). A $500M fund that will build a pipeline of land-based carbon abatement projects in Queensland, but will also look to achieve other benefits such as biodiversity. There may be potential to fund Options 1 and 2 through the Catalysing action grants program, with grants of up to $750,000 per project - https://www.qld.gov.au/environment/climate/climate-change/land-restoration-fund/pilot-projects/action-grants

- There may be potential to fund the local Carbon Facilitator out of the Expert in Residence Program - https://www.business.gov.au/assistance/entrepreneurs-programme/incubator-support-expert-in-residence

- National Environmental Accounting Methodology: To achieve genuine benefits for regional environmental assets, the projects should consider reporting in accordance with the National Environmental Accounts - https://wentworthgroup.org/programs/environmental-accounts/

- Statewide Landcover and Trees Study (SLATS) - https://www.qld.gov.au/environment/land/management/mapping/statewide-monitoring/slats

- VegMachine: A free online tool using satellite imagery to summarise change in Australia's grazing lands - https://vegmachine.net/

- CiboLabs: A business providing remote sensing services to determine a number of indicators for the landowners, including biomass estimation, land condition and other analytics - https://www.cibolabs.com.au/services

- Digital Agriculture Services: Web resource utilising CSIRO satellite technology to map Total Primary Productivity - https://digitalagriculturereservices.com/

- Regional Development Australia Fitzroy and Central West facilitates economic development opportunities for the region by collaborating with government, community and business. A number of funding opportunities are available from time to time, and might be suitable for the project - https://rdafcw.com.au/funding/
- Emissions Reduction Fund Methods - https://www.environment.gov.au/climate-change/government/emissions-reduction-fund/methods

- Queensland Government Offsets Policy and document - https://www.qld.gov.au/environment/pollution/management/offsets

# 10 Project Management Framework

## 10.1 Governance

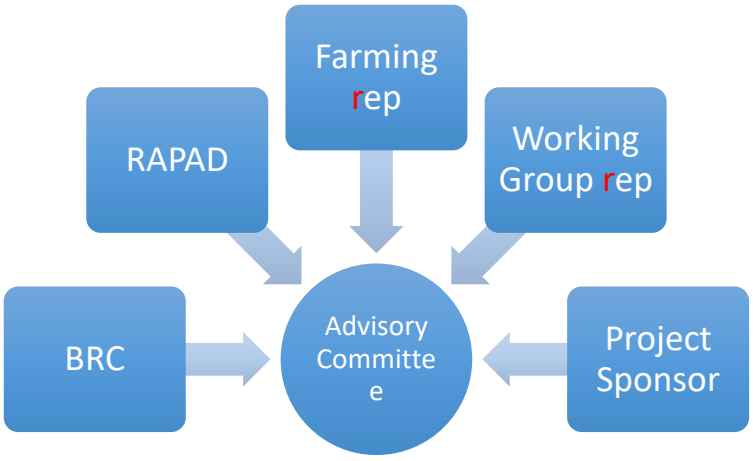
The governance system is proposed to deliver the business case as follows, with the exact representation to be determined at the commencement of the project:

- Advisory Committee: Responsible for the delivery of the project to meet its objectives on time within budget. The Steering Committee members will also consult strategically with external stakeholders to ensure the project has the support of a wider network
- Working Group: Responsible for advising the Project Manager on technical and operational aspects of the project and will meet to advise the project manager
- Project Manager: Reporting to the Advisory Committee. The Project Manager should sit within the RAPAD or BRC structures and have access to relevant expertise, including through regular meetings of the Working Group.

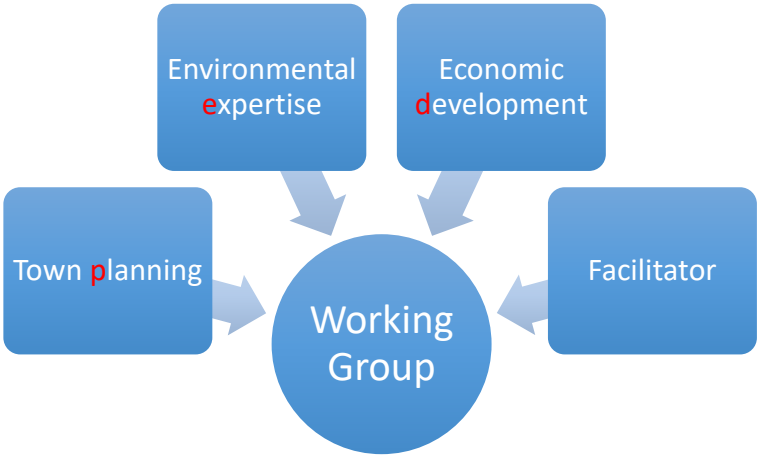
The Project Manager will be responsible for the delivery of the project.

The Advisory Committee should be established with representatives from the Barcaldine Regional Council, RAPAD and industry representatives. The Project Sponsor should be represented, particularly if funding is provided. For example, if the Land Restoration Fund provides funding for the project, a member of the LRF team may be asked to fulfil the Project Sponsor Role on the Committee.

Suggested Project Advisory Committee structure: Consider replacing “Rep” with “representative”




Suggested Project Working Group structure:




The business case should be progressed by an second half of sentence missing

## 10.2 Project and Quality Management

A detailed project plan will need to be prepared incorporating a number of factors including:

1. Organisational Impact: How the work undertaken during the project will impact on the organisation and how these impacts will be addressed
2. Outcome Realisation: How outputs will be managed once they are delivered, and who will be accountable. This may change as the project evolves
3. Quality Management: Define suitable standards, requirements and best practices for the project to deliver against, and the internal quality requirements
4. Post-project Review: How the group will capture the lessons learnt throughout the project and what review will be done to assess whether the initiative delivered the intended benefits.

The Project Manager will need to ensure that the final project developed is robust and based on sound science. Methodologies for calculating carbon abatement should be recognised and calculations should be accredited, or conducted by an accredited person. Financial analysis should be sufficiently robust to allow decision-making, so initial consultation should occur with potential funders and financiers about the level of detail required.

# Appendix A: Benefit Analysis

This table assesses how each key stakeholder group (or individual stakeholders) may be impacted by the project and how they may impact on the project. The impacts may be positive or negative.

**Option 1: Carbon Farming Map**

| Stakeholder | Positive Impact | Negative Impact | Overall |
|---|---|---|---|
| Farmers | Clear advice on potential – able to make clear decisions | Perception of areas of land locked up for extended periods.<br>Time taken to participate in project, in some cases with no return | Positive |
| Other Barcaldine businesses | Indirect business through the use of contractors and other services visiting Barcaldine and addition revenue for landholders | | Positive |
| Council | Greater value of revenue being earned by regional businesses<br>Contributes towards possible increased rateable value of lands | | Positive |
| Community | Feeling of greater certainty about economy with additional income<br>Feeling that Barcaldine is doing its bit<br>Potential reduced carbon footprint of the Region | Potentially Additional indirect revenues | Positive |

**Option 2: Carbon Farming Projects**

| Stakeholder | Positive Impact | Negative Impact | Overall |
|---|---|---|---|
| Directly engaged farmers | Greater certainty about projects<br>Potential for assistance to develop a project<br>Longer-term diversified revenue | Time Taken<br>Opportunity cost | Positive |
| Other farmers | Local case studies to | Missed opportunity for | Positive |

| | | | |
|---|---|---|---|
| | demonstrate the success | participating in early program | |
| Council | Security of additional incomes for some farmers | Not all farms can benefit | Positive |
| Community | Reduced carbon footprint of the Region | | Positive |

**Option 3: Zero Carbon Barcaldine**

| Stakeholder | Positive Impact | Negative Impact | Overall |
|---|---|---|---|
| Businesses | Guidance provided | | Positive |
| Council | Knowledge of current carbon footprint and steps community can make | | Positive |
| Community | Community benefit in a zero carbon community | | Positive |

# Appendix B: Risk Analysis

As a pre-feasibility level business case, this is an initial consideration of risks, and the strategies that can be put in place, or investigations into further work can mitigate these risks.

Option 1:

| Major Risk and what does it do to the project | Mitigation Strategy |
|---|---|
| Insufficient opportunities identified | This would have prevented landowners from risking scarce funds to identify opportunities. |
| Project costs exceed estimates | The project will need to be suitably scoped to ensure that expectations can be met within expected costs. |
| Project timing exceeds estimated time | The project will need to be suitably scoped to ensure that expectations can be met within anticipated time. |
| Potential partners not willing, program undersubscribed or no landholders are interested in participating | Communications strategy to formulate clear information for landholders including specific opportunities rather than generalisations. The program is intended to engage with landowners who have been identified as having an opportunity on their land. |
| State leasehold land eligibility | Consult with the Department of Natural Resources, Mines and Energy to determine if a lessee on state land can enter into an agreement for carbon abatement on leasehold land. |

Option 2:

| Major Risk and what does it do to the project | Mitigation Strategy |
|---|---|
| Insufficient number of landholders interested | Communicate realistic expectations and opportunities along with effort required and timeframes to provide a realistic summary of the process and potential benefits. |
| Potential benefits to farms do not materialise: Sufficient workable carbon abatement opportunities do not materialise | Mapping exercise to be undertaken prior to committing other resources to manage this risk. Suitable expectation management to be undertaken. An informal survey or consultation could be undertaken at the time of the mapping exercise to advise of that potential. |
| Over-subscription: Too much interest from farms | A suitable process should be developed to select a suitable number of landholders for the program and communicate effectively with them. The project may lead to a sustainable financial model where a number of additional farmers can be incorporated in time. |
| Biosecurity**:** Risk of engaging external parties to manage carbon abatement areas for a | This is not a critical element of the program, and it is not essential that farmers engage an external party to manage carbon areas. The opportunity may be suitable for some |

| | |
|---|---|
| number of reasons including:<br>• Biosecurity risk<br>• Tracking peoples' access to controlled areas<br>• Space and privacy (allowing others on to family farms) | farmers. |
| Unwillingness to participate: Stigma of participating in a 'green' project | Potential to ask landowners during Stage 1 to identify those likely to participate. If a number are willing to participate, it will allow the project to proceed and may demonstrate benefit to others. |
| Trust: Farmers can not engage with the program or facilitator | Any persons engaged in the program will need to be suitably qualified and experienced. |
| Not 100% drought proof: Trees need to grow on carbon sequestered land | |

Option 3: Zero Carbon Barcaldine

| Major Risk and what does it do to the project | Mitigation Strategy |
|---|---|
| Difficult to achieve | The target may be difficult to achieve if solar farms and carbon abatement are selling credits rather than retiring carbon units (LRECs or ACCUs). |
| Priorities | The community may not consider it a high priority in times of drought. |