Australia's National
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Communities in Transition

Barcaldine: A Living Transitions Roadmap

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BARCALDINE REGIONAL COUNCIL

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

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Summary

This report is a living roadmap designed to support the Barcaldine Region in securing a prosperous and sustainable future. The roadmap is developed as part of the Clean Growth Choices: Communities in Transition (CiT) project through active participation of the Barcaldine Regional Council, community members and a local coordinator. This project is supported by a consortium from the University of Southern Queensland, James Cook University, CSIRO and The Ecoefficiency Group. The Clean Growth Choices project has been funded by the Queensland Government as part of its CiT pilot program.

A three-stage process was implemented in this project:

1. Assessing the current state, risks, challenges and opportunities for the region and identifying broad pathways for the future.
2. Generation and rapid evaluation of innovative ideas and options that enable the development of broad pathways.
3. Putting options and pathways into a transition roadmap and for developing business cases.

Key challenges identified for the region relate to: a) drought and climate vulnerability and the exposure of existing industries, b) population decline and regional economic contraction, c) international economic trends increasing vulnerability in export sectors such as resources, agriculture and tourism, d) reliance on the public sector for employment, skills and regular cash inflow to offset variability in agricultural income (which is a source of vulnerability), e) government regulatory systems impeding the agility and flexibility necessary for entrepreneurship, and f) limited local funds for investment, high commercial vacancy rates and increasing debt. Significant dependence on distant governance is also considered a significant challenge as reduced public employment can become critical for the viability of towns in the region.

Key strengths and opportunities identified for the region include: a) a strong agricultural base, b) a pristine and diverse environment with an abundance of sunshine, c) a laid-back relaxed lifestyle and a unique rural character, d) a friendly and mutually supportive community, and e) a rich Indigenous and non-Indigenous culture and heritage represented in a range of cultural events and sites.

Through a workshop process, the community articulated a set of values, visions, and goals for the future of the region as a great place to live, work, play, learn and invest, both now and in the future. The aim of these is to empower the community, protect, maintain and enhance the natural environment, and support sustainable industry and infrastructure.

Three broad pathways were identified with a set of interventions, mechanisms and outcomes by which the vision and goals would be achieved:

1. Enabling infrastructure, starting with energy and transport.
2. Creating new values and diversification, starting with agriculture and tourism.
3. Building capacity, starting with attraction and retention.

These pathways are complementary and have phases that can be implemented to maintain, modify and transform parts of the region to achieve the community's vision and goals (Figure 1). Cross-cutting interventions that relate to all three pathways are: feasibility studies and research, digital connectivity, physical (transport) connectivity, and decentralised governance and population growth.

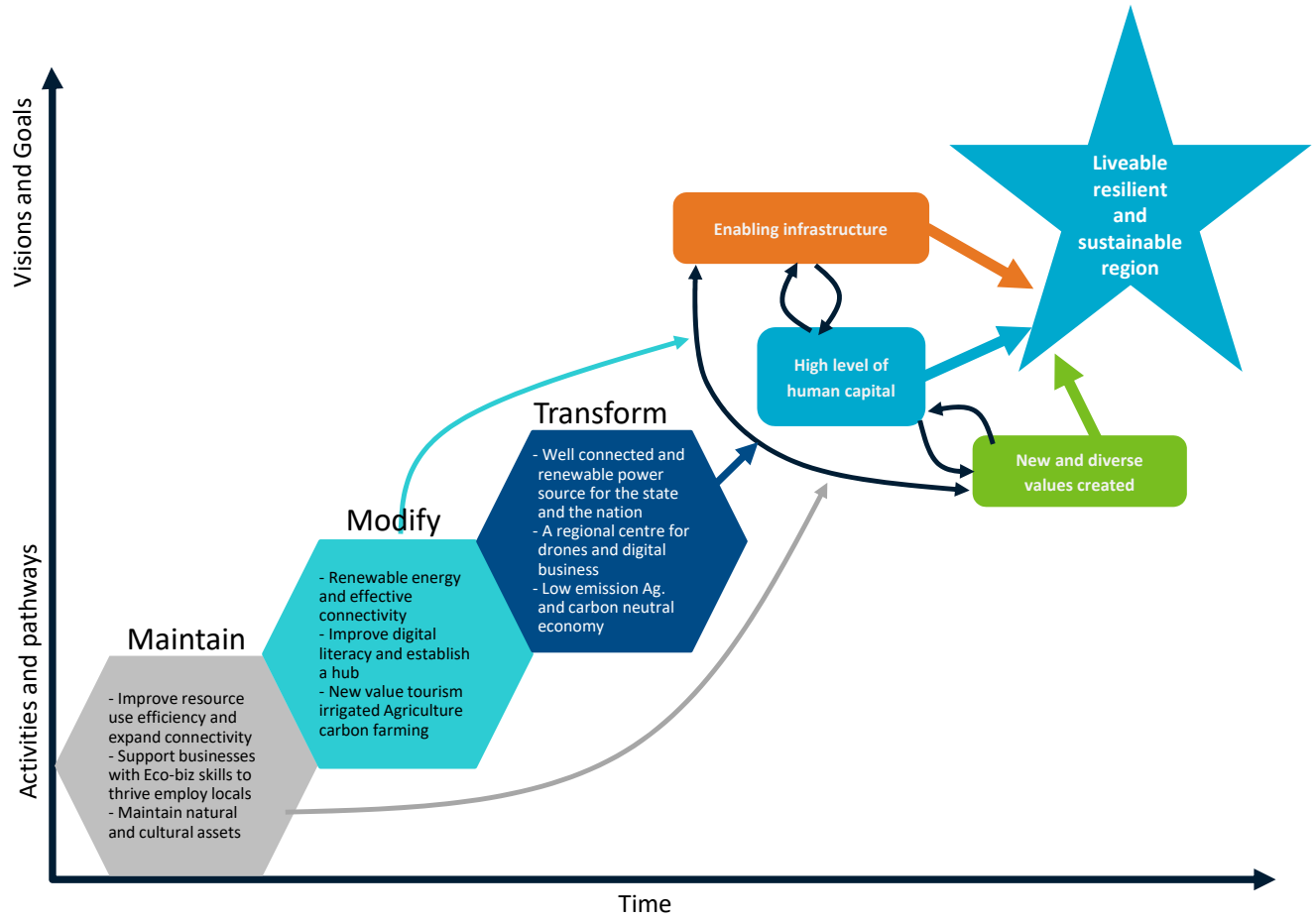

Figure 1. Strategic intervention options that would help to maintain, modify or transform aspects of the region.

Five prefeasibility business cases have been developed in this initial stage to set the living roadmap in motion:

- Clean energy.
- Tourism strategy and implementation.
- Carbon Action Plan.
- Macropod abattoir.
- Motorcross track.

This report is an initial step in developing a dynamic and living roadmap for regional communities in transition. It will require further work to test and refine the details of the proposed pathways. It will also require ongoing monitoring and reviewing at least every two years to ensure that the set of pathways remain appropriate and sufficient to achieve the vision and goals and are robust enough to changes in global and domestic drivers.

1 Background

A team from James Cook University (JCU), University of Southern Queensland (USQ), Commonwealth Scientific and Industrial Research Organisation (CSIRO), and The Ecoefficiency Group (TEG) designed a program of work in response to a Queensland Government tender for the delivery of a pathways approach to its Queensland Climate Transition Strategy, 'Pathways to a clean growth economy', a strategy that focuses on the risks associated with environmental, social and economic changes. The Queensland Government anticipates that the economy will need to keep adjusting to stay in step with the changing global economy. It assumes that Queensland has a competitive advantage that will assist with the transition, and while the transition will likely occur over decades, it should start right away to be most cost-effective. The state government has said that it will assist and guide these processes by:

- Creating an environment for investment shift and innovation.
- Facilitating existing Queensland industries to transition.
- Working with Queensland's regional communities to transition.

The dynamics of transition is complex and challenging. Transition needs to be led by the communities themselves in ways that are socially acceptable and build collective agency in shaping the future.

This report focuses on the development of an initial living transition roadmap for the Barcaldine Region as part of the Clean Growth Choices: Communities in Transition (CiT) pilot program. The program is an active community capacity building process for strengthening regional leadership and resilience in dealing with economic, social and environmental change. It is helping Queensland regional communities to organise and process what is involved in transitioning over the intermediate to long term to achieve a more sustainable economy by:

- Referring to values, visions and plans to guide each community.
- Drawing on existing networks, knowledge, skills and capabilities.
- Canvassing current pressures, opportunities and future scenarios and visions.
- Identifying broad pathways and multiple options for transitioning and achieving the goals.
- Developing dynamic and future-focused roadmaps and identifying an initial set of business cases that set the roadmap in motion.

The project team is drawn from a collaborative consortium comprised of experts who help communities, businesses and governments develop community resilience strategies. The project team includes, The Institute for Resilient Regions at USQ, The Cairns Institute at JCU, CSIRO Sustainability Pathways Program and The Ecoefficiency Group.

With advice from the Barcaldine Regional Council, the project team worked closely with community members to develop an initial transition roadmap and a few business case proposals. With more detailed work, a fully developed roadmap will assist the community with navigating future uncertainties and changes.

2 Developing transition roadmaps

The Communities in Transition (CiT) program provides a framework for communities to create roadmaps, set their own directions, navigate their own pathways, and design interventions conceived and implemented by the participants themselves. The roadmap development process was informed by the Resilience Adaptation Pathways and Transformation Approach (RAPTA) (version 1) (O'Connell et al. 2016). This is a design approach to bring best practice in the formulation of programs, projects and other interventions so that they have the desired outcomes. It was modified to suit this context (Maru et al. 2018) and summarised in a three-stage process (Figure 2).

Stage 1: (Sept – Dec 2018) Assessing the broad pathways to the future

The process started with an assessment of each region's current state, reflecting on community values, heritage and aspirations, and tabling future opportunities and risks. This phase ended with the Broad Pathways Workshop which discussed the region's past, present and future. Participants examined the regional profile as well as key challenges and opportunities prepared by the project team and explored and identified preferred and possible broad pathways forward.

Stage 2: (Jan – Jun 2019) Focused working groups for innovative ideas and options

Working groups were formed around the domains of focus and broad pathways identified in Stage 1. As part of this stage, the consortium helped the teams draw on some of the new techniques to rapidly evaluate the real potential of the ideas as well as the enablers needed to overcome barriers and increase chances of success. At the end of this stage, each team had scoped a range of new ideas, settled on the ones that were most likely to be successful, and planned a staged implementation (a 'pathway') including actions to address related enablers and barriers.

Stage 3: (Jun – Oct 2019) Creating transition roadmaps and building business cases

Results from the focused working groups within each community were brought together into a single regional community 'roadmap' of steps/projects. The consortium assisted the regional teams to identify pathways of interdependent actions, plan the timing of these actions and identify 'trigger points' – things to monitor over time that should stimulate a review of the roadmap and potentially a change in action. The consortium also supported community teams to scope short-term priorities and prepare a few initial business cases that set the roadmap in motion.

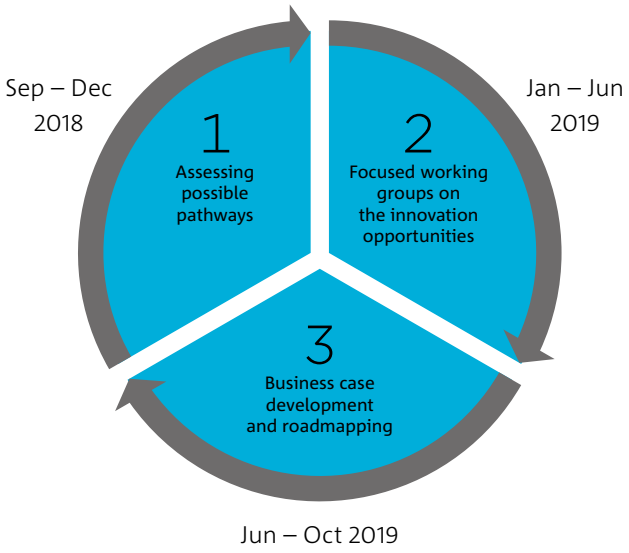

Figure 2. The three stages of the transition planning process.

The three-stage process was carried out through a series of meetings, workshops, webinars and other activities with Barcaldine Regional Council leaders and community members (Figure 3).

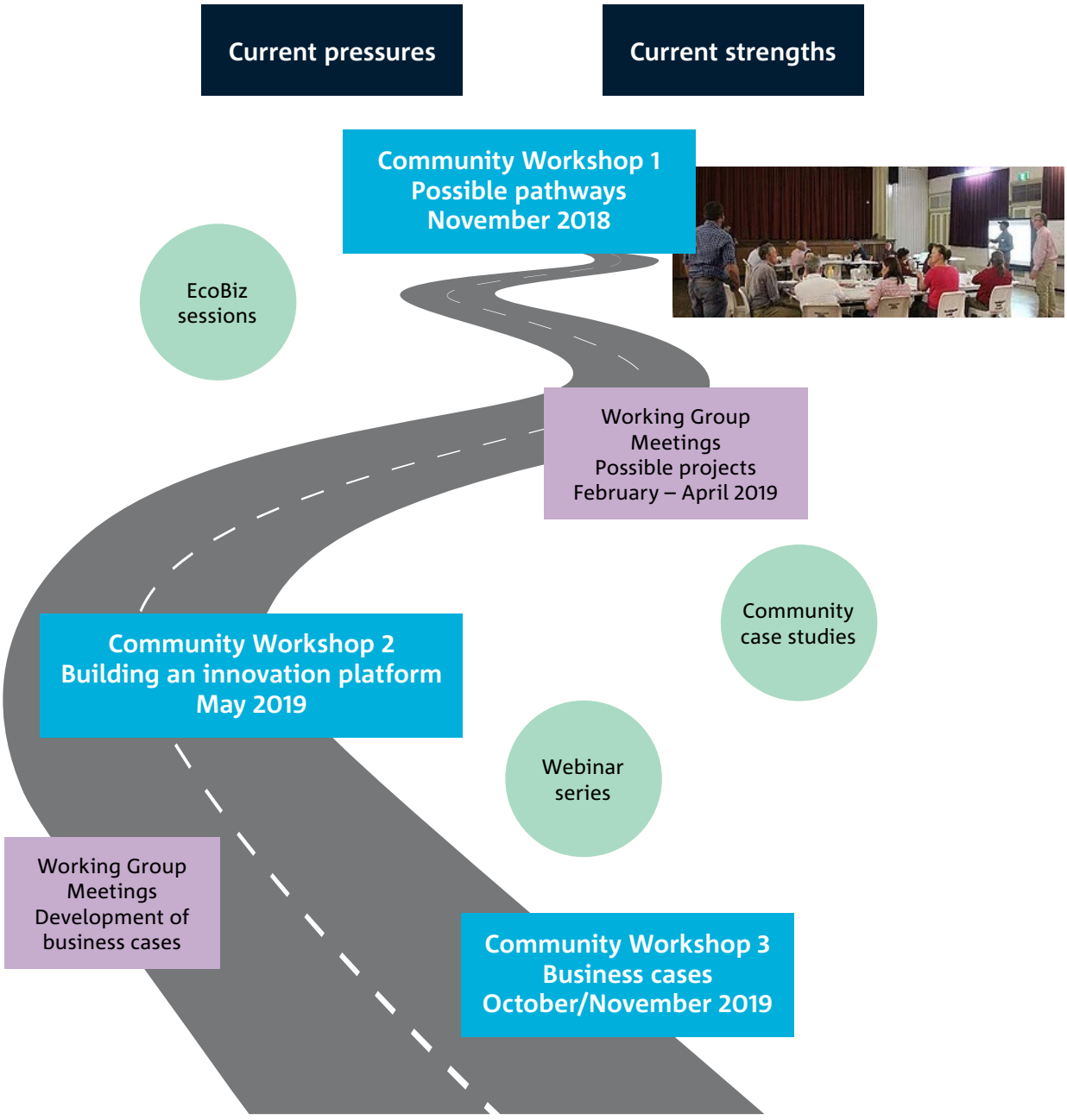

Figure 3. The stages of the program leading to development of the roadmap and business cases.

3 Regional profile

The Barcaldine Region is located in central western Queensland approximately 1 070 km north-west of Brisbane. The region has five towns, Alpha, Aramac, Barcaldine, Jericho and Muttaburra, that are the residential and service towns for the region (Figure 4). Barcaldine Regional Council was formed in 2008 through the amalgamation of the former Barcaldine, Aramac and Jericho Shires. The region is located inland from Rockhampton and is bordered by the seven neighbouring regional council areas of Isaac, Charters Towers, Longreach, Blackall/Tambo, Flinders, Winton and Central Highlands.

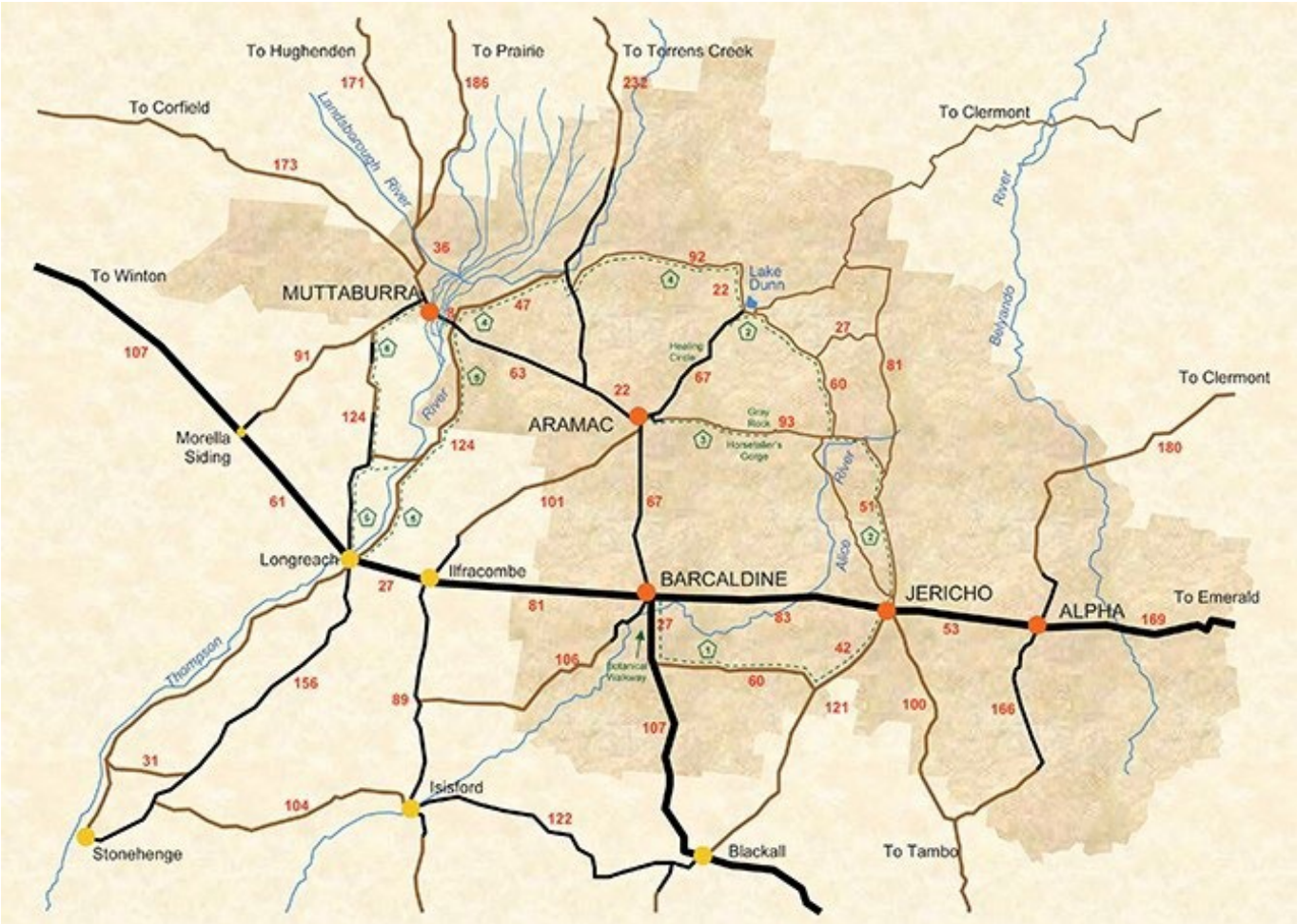

Figure 4: Barcaldine Region showing towns and major routes (Source: Barcaldine Regional Council).

Population composition and dynamics

Barcaldine Region recorded a resident population of 2852 people in 2018, but the population has been declining at an average annual rate of -2.5% over the previous five years (QGSO 2019). The population is projected to be 2239 persons in 2041, a decline of 1% per year over 25 years. A total of 19% of the population are older than 65 years, which is higher than the state average of 14.7% (in 2018). In the 2016 census, 5.9% of people identified as Aboriginal and Torres Strait Islander while 85.8% of people were born in Australia (ABS 2017).

Landscapes and livelihoods

Barcaldine is one of the largest cattle producing regions in Central Western Queensland but also has productive industries in sheep, wool and macropod harvesting (QGSO 2019). At the time of the 2016 Census, 32% of the population were employed in agriculture. Barcaldine Regional Council and the health sector are also major employers.

Regional challenges

To develop a transition roadmap, it is important to recognise some of the challenges that the region faces. Some of the key challenges identified in the Barcaldine Region are:

- The drought, climate vulnerability and exposure of existing industries.
- Population decline arising from the drought and related regional economic contraction.
- International economic trends and increasing vulnerability in export sectors such as resources, agriculture and overseas tourism.
- Vulnerability from the reliance on the public sector for employment, skills and regular cash inflow to offset variability in agricultural income.
- Government regulatory systems impeding the agility and flexibility necessary for entrepreneurship.
- Limited local funds for investment, high commercial vacancy rates and increasing debt.

Economic trends

Global and national shifts in demand and supply will present challenges for the Barcaldine Region, but will also create opportunities to sell new products and services to new markets. Some of the economic shifts and opportunities for growth over coming years are outlined below.

Investors are gradually shifting towards investing in carbon-neutral and more environmentally sustainable businesses and initiatives like renewable energy and divesting from more emissions-intensive and resource-intensive ventures. Diversification of the energy mix in Australia and in the Asia-Pacific is seeing growth in the renewable energy sector (Naughtin et al. 2017). This diversification in the energy mix will assist workers in translating their skills within the industry to low-carbon jobs.

Queensland is in a good position to meet emerging consumer demands from Asia's expanding middle class, given its geographical location and capacity in areas such as tourism, health, education and food (Naughtin et al. 2017). Opportunities for producers to respond proactively to consumer demands include the potential for increased exports to overseas consumers wanting access to healthy food. Barcaldine can take advantage of this with premium produce and the counter-seasonality to northern hemisphere producers. There is increased international demand for protein-rich food (e.g. beef, seafood, chickpeas), horticultural products (e.g. exotic fruits), and healthy food products from a 'clean green' environment (Hogan 2018). There is also international and domestic demand for sustainably harvested kangaroo meat (RIRDC 2014).

The availability of online shopping is shifting consumer choice away from the traditional marketplace but can also provide new markets for sellers from rural areas who traditionally compete with shops in urban areas. Challenges can be reduced by showcasing products to promote online sales, using local e-commerce to target overseas markets to meet demands for high-quality healthy food products, and offering a more personalised service, individualised consumer offers and free expert advice to in-store shoppers (Aussie Broadband 2018).

Digital technologies have the potential to enable consumers to track the origin of food, inform decision-making, and to match consumer demand for products to produce more valuable crops (Perry 2017). For example, the growing use of drones in precision agriculture and logistics are examples where new technologies are creating jobs in drone development, training and application.

While mobile phone coverage is limited outside towns, coverage is improving, and new telecommunications services are providing access to a wider range of services (e.g. telehealth) (Bradford et al. 2015). Communication technologies rely on a certain level of infrastructure and equipment (e.g. internet, computer, videoconferencing systems), but these can be expensive and poorly maintained in remote locations. In Barcaldine, this could affect the resilience and competitiveness of businesses and the attractiveness to new industries, including tourism which is highly reliant on good mobile and internet services.

The cost and quality of energy services can affect the attractiveness of setting up new businesses. Renewables are an option, and Barcaldine is a participant in the Remote Area Planning and Development Board (RAPAD) Renewable Energy Forum (RAPAD 2018). Barcaldine was an area investigated as part of the Queensland Government's Large Scale Solar Thermal Feasibility Study in 2009/2010 and found to have strong potential for long-term solar thermal development that would achieve a positive net present value at a large scale while incorporating the cost of connecting to the national grid.

4 Values, vision and goals

Values

Barcaldine is ready and willing to reinvent itself as one of the most resilient communities in Australia. People love living in the Barcaldine Region because it is safe, great for families and the community is friendly and vibrant. Residents value the opportunities that the region offers and the family ties to the region that have been built up over many generations.

Aspects of the region and community that were valued by participants include a strong agricultural base, a friendly and mutually supportive community and a pristine, diverse environment. In addition, residents appreciate the outback and Indigenous culture and heritage that is represented in a range of cultural events and attractions.

Specific values identified from conversations with the Barcaldine community include:

- A strong primary industry base which is perceived as a 'blank canvas' providing plenty of opportunities.
- A community spirit with energy and a diverse, genuine and resilient community that does what they can for each other and are concerned about the future. 'People care about each other and how their towns look.'
- Liveability is valued highly. There is no peak hour traffic and the region is walkable, peaceful, quiet and safe yet interconnected with other places. 'It's like living in 2018 and 1960 at the same time.'
- Both family and history are important; a friendly, relaxed and safe community, many of whom have ties to the land over many generations.
- Accessible services that are highly valued, such as schools, sport and health. 'Everything is here – community gardens, any sport you want to play, and a good hospital.'
- Affordability of housing and services are valued.
- The region is beautiful and sustainable. There is a clean, pristine environment, wide open spaces and a high diversity of landscapes that can be enjoyed. The challenge and sense of adventure of living in a remote region is valued.

Vision

The vision for the region outlined in the Barcaldine Regional Council Corporate Plan 2015–2019 is for 'cohesive communities with exceptional lifestyle, opportunity, facilities and services' (BRC 2014). In 2018, the report Approaching 2030, Barcaldine Regional Council, Economic and Community Development Strategy outlined a vision to 'build a prosperous and resilient region, shaped and strengthened by a growing economy and collaborative action' based on six pillars; unleashing potential, growing population, dynamic industries, thriving towns, real outback, and an agile Council (BRC 2018).

Broad directions the community wanted to take (as outlined in the workshop), include:

- Dynamic industries and a more diversified economic base, including less reliance on industries that are tied to the weather.
- The community and Council supporting the creation of new businesses in priority industries.
- Communities that are better leveraged to develop industries and enhance the liveability of the region, as well as increased productivity and available opportunities that enable people to remain in the region.
- It is important to the community pursue opportunities to attract industry and investment into the region, although gradually rather than through rapid growth.

Goals

The values and visions were discussed among participants to develop a goal and the means by which the community can achieve and sustain that goal. The goal developed can be described as 'building a prosperous, resilient and liveable region with a bright future for future generations.'

5 Priorities and pathways

From discussions of possible future opportunities, workshop participants identified three focus areas to achieve the vision and goals of the region (Figure 5). These were:

1. Enabling Infrastructure: renewable energy, digital and aviation.
2. Value Creation: in agriculture, water systems, diversification and new industries.
3. Building Capacity: development of the services sector, start-ups, digitally enabled professional services and opportunities in health care and education.

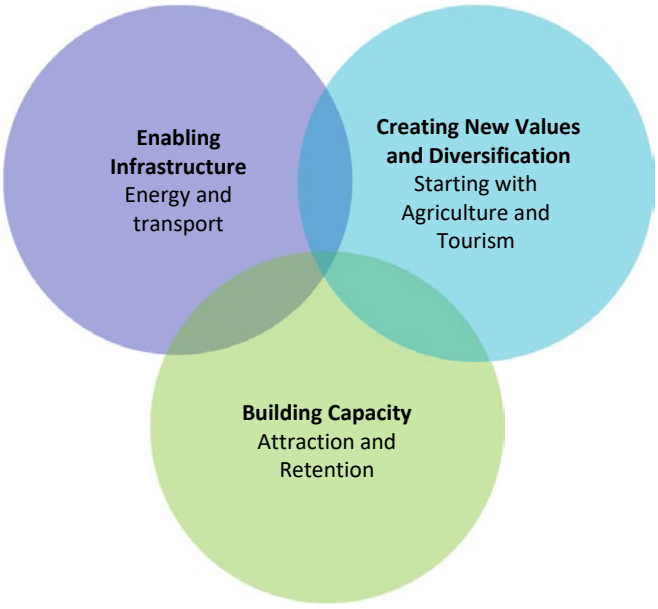

Figure 5. Three areas of focus towards building a prosperous, sustainable and equitable region.

Broad Pathways

To transition the region towards the desired future, each focus area will need an ensemble of intervention options (investment, policies, programs, projects and practice change) that are prioritised, sequenced and implemented. The pathways will also require mechanisms by which the challenges and opportunities can be addressed. The pathways need to be broad, alternative and complementary to allow for flexibility in addressing the uncertainty around how the challenges and opportunities may unfold in the future.

Each of the three broad pathways will need a feasible and effective set of interventions such as those described below:

1. Enabling Infrastructure (energy and transport)

This pathway focuses on opportunities for renewable energy development, especially solar and its transformative potential for other industries, due to the competitive advantages of the region. Barcaldine could be the first town with a fully renewable energy supply, which could attract attention and bring investment into the region in addition to reducing costs to residents, businesses and agencies. The region could supply renewable energy into the electricity grid, which in turn facilitates transformative economic and social benefits for the region, while becoming an important provider of low-carbon energy. However, participants noted that so far, the large-scale solar farms in Barcaldine and Longreach are not helping to lower regional electricity prices or provide new sustainable jobs. The participants formed a working group to explore options that realise low prices and reliable and renewable energy for the region with capacity to generate sustainable employment for locals.

2. Creating new value and diversification (starting with agriculture and tourism)

Agriculture and tourism were the two industries discussed for creating new value and diversification. Dryland agriculture is the backbone of the economy for revenue and of employment in the region. Consecutive droughts since 2013 have substantially reduced agricultural production and overall income, with significant negative impacts on local businesses and employment opportunities forcing a decline in population. Projected climate change may intensify the frequency and magnitude of extreme weather events in the future. It is essential to build the resilience of agriculture if it is to continue to be viable and grow in the region. The regional councils in central western Queensland, including Barcaldine, have been calling for discussions on regulating water use from the Great Artesian Basin and Lake Eyre Basin for irrigated agriculture to produce high-value produce. Complementary ideas to build resilience included expanding carbon farming both to generate income from sequestering carbon and to capture water through increasing vegetation cover.

Tourism has been a source of income and employment for some businesses in the region that have been relatively less affected by the drought. However, tourism is largely seasonal, primarily during the mild and pleasant winter season. With projected changes in average temperatures, it may become increasingly challenging to attract tourists in summer. Tourists currently spend limited time in the region. To increase revenue and employment opportunities, it was proposed developing a tourism development strategy and investment that aims at increasing the number of domestic and international tourists and the number of days that they stay in different parts of the region. The strategy would need to consider expanding and developing amenities as well as big and unique events and promoting a network of different attractive natural, cultural, historical, food and agricultural trails and experiences.

3. Building capacity (attraction and retention)

This pathway focuses on stabilising and growing population numbers and retaining and attracting businesses and a skilled workforce. The population of the region has declined in recent years, and most of the outmigration has been youth and working age people primarily moving for education purposes, or people who have lost their jobs in agriculture and other local businesses as a result of the prolonged drought. A reduction in the number of employees in the public sector has also led to loss of capacity, income spent locally and population decline. Declining population is threatening some of the towns in the region, schools are closing from not having the critical minimum number of students required to keep them open.

Generating new employment opportunities and developing the skills required locally is essential to retain and stabilise population numbers in the region. The Queensland Government, through its *Regional Skills Investment Strategy*, has a $9 million initiative over four years to support selected regional communities, including Barcaldine, to identify current and emerging jobs in key industries and provide appropriate training to ensure there is a supply of skilled local people to meet this demand. Further work is required to attract new skilled people and their families to settle in the region. Workshop participants discussed creating policies to encourage new settlement in the region supported by improved amenities and health and education services to attract more people from urban centres. However, the key for attracting and retaining people and encouraging young people to return to the region is creating new employment and business opportunities.

The capacity building pathway also extends to engaging with digital technology and promoting innovation as a key area of focus. Wide and effective use of digital technologies will require reliable and fast connectivity, establishing value propositions and data privacy for farmers, businesses and community stakeholders as well as building digital literacy among potential users. Because of its harsh and dry environment, Barcaldine could also be a development and testing centre for new digital agriculture technology. Participants proposed exploring the feasibility of establishing a drone and sensor centre of excellence in Barcaldine. This could enable the building of robust digital technologies for use in Australia and elsewhere. The application of these technologies could also help with the prevention or reduction of agricultural losses from weeds, pests and diseases and more effective and efficient use of water for sustainable and low resource use and low emissions agriculture in the region.

6 Project Ideas and Options

Generating ideas and options

Workshop participants initially suggested over 40 project ideas that could help with realising their vision for the future of the region. Participants were then invited to add their views on the project ideas or propose new ideas. Table 1 shows the ideas categorised under the three broad pathways.

One of the ideas listed in the category 'Building Capacity: attraction and retention', was 'Develop a local cohort who are supporters of ideas.' This was consistent with the approach of this project; forming focused working groups to develop innovative ideas and assess the options. Working groups were formed around project ideas of interest.

Table 1. Ideas generated by community members and organised under the three broad pathways.

Creating new value and diversification Starting with agriculture and tourism	**Building capacity** Attraction and retention	**Enabling infrastructure** Energy and transport
• Events – Have a Barcaldine Open? • Geocaching app • A celebration of the agricultural industry, particularly wool/mutton • Indigenous tourism opportunities • International tourism • Arid Lands Botanic Gardens • Largest Australian flag • Lookout platform on town water towers • Community Centres • Lake Dunn Sculpture Trail Night Experience • Outback Experience/Activities • Aramac Plant Nursery • Macropod abattoir • Carbon credits • Irrigation for Western Queensland • Bee farming • Large-scale irrigation program on the Burdekin Catchment along with an enhanced water harvesting scheme for Alpha • Agtech • Small-scale irrigation using each town's wastewater • Flow-on farming structure (aquaponics – where you have an integrated system of ponds, cropping, high-value horticulture etc.)	• Bringing in Immigrant Families into our small communities (eg. Muttaburra and Jericho) = instant population boost • Holiday visa working immigrant opportunities • The Council could explore options through the Federal Government Designated Area Migration Agreement (DAMA) • Promotional video of the region • Encouraging youth to return to live and work in the region • Horse block developments in towns/ town commons • Bowling alley in movie theatre and movies on the holidays • TAFE • Access to more computers and multimedia options in local libraries • WANPA-RDA Matilda Outback Education Centre • Day-care in the region (outside of Barcaldine) • Develop a local cohort who are 'supporters of ideas' • Initiate a Council sustainability project fund • Restore government positions back into the region	• Improved electricity supply in remote areas • High speed train from Brisbane, through the outback up to Cairns • Torrens Creek Road upgrade • Roller skating rink • Updated skate park • Motor bike track • Microsatellite launching facility • Autonomous vehicle testing facility • Drone Centre of Excellence

7 Development of prefeasibility business cases

Focused working groups

The project ideas were discussed in depth and rationalised into four priority project ideas. School students, supported by their teacher, joined the workshop and identified a motocross track as a potential fifth priority project. The working groups reorganised around each of the five priority project ideas and explored different options that could be developed into business cases. A visual representation of the process, from broad pathways to prefeasibility business cases is shown in Figure 6.

Details of the five projects selected for development of prefeasibility business cases are outlined below. For a more complete description, see the Barcaldine Prefeasibility Business Case reports for each of the projects.

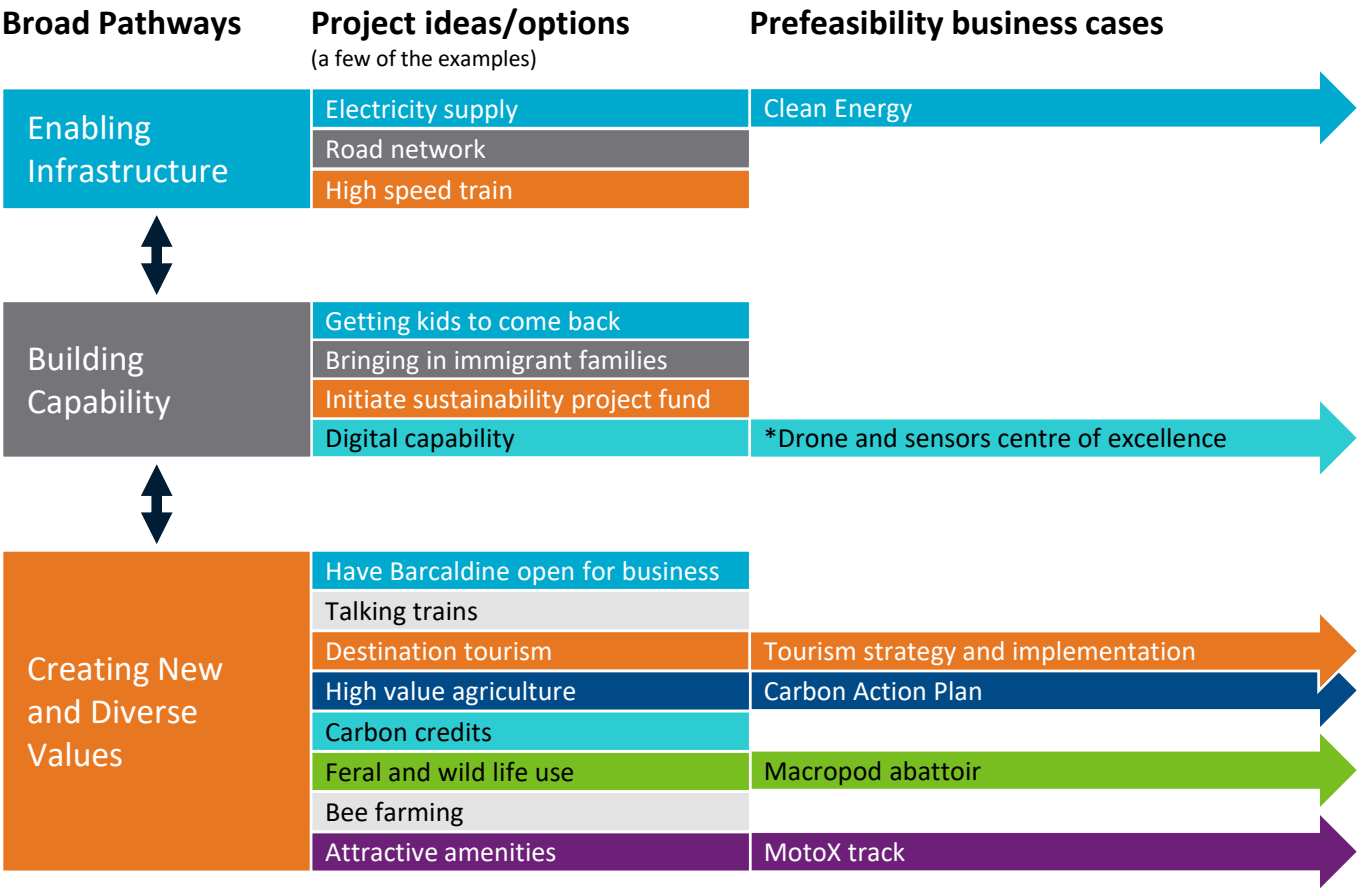

Figure 6. The process of development from broad pathways, to project ideas/options (only a few are shown as an example), to prefeasibility business cases.
***A project idea noted as important to the pathway but is already being pursued by the Barcaldine Regional Council.**

1. Clean Energy

This project was prioritised under the 'Enabling Infrastructure' pathway, which recognises the importance of robust infrastructure to underpin economic and social resilience and prosperity. Electricity pricing and network reliability is a constraint to resilience and competitiveness of businesses in the region and a barrier for growth and sustainable development. At a time when businesses are facing pressure due to a declining population, they are also facing increasing power prices despite recent large-scale solar developments in the region. Therefore, this project idea is to address the question, 'What new models of energy supply and distribution could reduce costs and add economic opportunity to Barcaldine, and how to secure reliable and affordable access to energy which is critical to sustainable development of the region?'

The project explored three options:

Community Renewable Energy

This option involves establishing the conditions for a community-owned renewable energy project in Barcaldine where local community members invested in the generation and supply of electricity to local consumers via a retailer. The project would offer the opportunity for participants to purchase the power from a local generator at a reduced consumption rate, although there would continue to be network costs as the energy would still be delivered through the network.

Ergon Energy have been trialling small in-front-of-meter battery energy storage solutions to provide grid support/stabilisation services.

Virtual Power Plant (VPP) or Microgrid

This option is about acquiring a portion of the electricity grid in the region under local management, with one of the region's towns as a test case for this. Initially, the project would involve metering to test the concept. In this step, a number of houses or properties in a community can be connected with suitable real-time metering and software for analysis and study of power flows to understand consumption and existing generation. Then, existing solar panels could be retrofitted with VPP-enabled inverters and batteries and additional devices could be installed at optimum locations.

This operation may provide valuable data for the Network Operator to understand local power flows to and within these communities. It may also lead to a conversation about relative costs of connecting networks to remote communities and consideration of selective islanding or disconnecting from the national energy market where a net benefit can be demonstrated, similar to the way in which Horizon are doing in Western Australia (Renew Economy 2019) and with consideration of potential integrated economic and other regional benefits.

Link to a major project

This option involves jointly developing a new project that requires a stable renewable energy supply where the generation and consumption profiles match. This option is primarily geared at providing renewable, reliable and affordable energy to add value to existing businesses and enable the development of new industries in the region (e.g. breweries and small-scale manufacturing).

The business case on clean energy provides details on the steps required to deliver this option and how a partnership with the Council and the community can create the conditions required for investment by proponents.

2. Carbon Action Plan

This project idea was informed by requests from Councils in the RAPAD region for well-regulated release of water for irrigated agriculture and horticulture of high-value crops and animal products. The project idea initially tied this request for the release of water from the basins with the carbon capture program. The idea is to develop a business case to release a certain amount of water for agricultural uses, offset by an allocation of land to be dedicated for carbon sequestration, in effect, water for carbon trading. It was also suggested that the carbon capture program could expand to carbon farming opportunities in Barcaldine to provide supplementary income to farmers and the community, reduce emissions and diversify the regional economy.

After consideration by the working groups, it was decided that the carbon farming component should be progressed independently of seeking additional water allocations as they were considered to be two separate projects.

The working group considered three options on carbon abatement for the prefeasibility study. For more details see the Carbon Action Plan Prefeasibility Business Case.

The three options considered were:

Option 1: Barcaldine Carbon Action Plan

This option is to develop a bespoke Barcaldine carbon farming plan to guide landholders with specific advice to assist in participating in carbon abatement initiatives. These initiatives include mapping the opportunities available, which ones are easier to access and how to access them. This option is expected to increase the diversity of regional income through participation in carbon markets.

Option 2: Catalyst Carbon Abatement Project

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

- Identifying target areas where a significant return could be realised.
- Identifying initial projects to demonstrate the potential in Barcaldine.
- Calling for volunteers from the community to participate by including areas of their property in a trial.
- Engaging a suitably qualified person to develop the project.
- Developing a Carbon Farm Plan for participating farms.

Option 3: Zero Carbon Barcaldine

This option is to develop and implement a plan for Barcaldine to be recognised as a zero net carbon town, taking into consideration solar power projects, the potential for carbon abatement, and other initiatives such as fuel and energy efficiency.

The first two options, 'Barcaldine Carbon Action Plan' and 'Catalyst Carbon Abatement Project' were considered the most preferred options. For more details see the Carbon Action Plan Business Case.

3. Macropod Abattoir

This proposal is to add diversity to Barcaldine's economy through the development of a facility in Aramac to process kangaroos and freeze them for shipping to markets. This would involve building a small abattoir plant to process 500–800 kangaroos per week, blast freeze the meat, and have a local transport company deliver the frozen meat to Townsville or Brisbane ports. When a macropod harvester brings in a load, the animals would be weighed, skinned, vet checked, boned and frozen. Touched by few people, the kangaroos would stay in a cold environment for the entire process, limiting the chance of contamination.

If the macropod abattoir diversified into other small animals such as goats and sheep, not only would further jobs be created but regional graziers would benefit as transport costs would be reduced. Currently, these animals need to be transported to Charleville to be processed.

Currently, the macropod industry in the region creates jobs for 14 licensed macropod harvesters in Aramac, 22 in Barcaldine and a further two in Muttaburra. The establishment of a macropod abattoir would create 4–6 immediate jobs for local people. If the abattoir diversified into other small animals such as goats and sheep, a further 8–10 jobs could be created locally. In addition, other services in the area such as transport companies, electricians, fuel suppliers and plumbers would be needed to deliver the product and maintain the abattoir.

In its research development and extension plan for 2013–2018 for animal industries (new, developing and maturing) (RIRDC 2014), the Rural Industries Research and Development Corporation (RIRDC) noted that the annual turnover of the macropod industry was around $100 million (2014 figures), with significantly less than the quota being harvested (1.7 million of a quota of 5.4 million) and listed the growth prospects as neutral. Other potential areas of diversity include a tannery and sale of skins.

4. Tourism strategy and implementation

Making Barcaldine a destination for outback tourism is part of the 'Value Creation' pathway. Outback tourism could benefit from a central coordinated strategy to establish the region as an 'Outback Adventure Capital.' This strategy would tie in with the vision to diversify the regional economy, as outlined in the document Approaching 2030, Barcaldine Regional Council, Economic and Community Development Strategy (BRC 2018). The strategy sets a goal where each community is recognised as a destination and highlights potential signature projects using the vast and open spaces in the region to provide a diverse 'extreme outback experience.' The Council will consider the potential and feasibility of developing unique events or festivals that leverage the region's outback brand such as a 4x4 or motorbike rally, extreme running/marathon and an Outback Arts Festival as well as other whole-of-region experiences as people journey from town to town. Tourism can diversify and build the resilience of the Barcaldine Region economy through a comprehensive long-term strategy that focuses on bringing more people to the region, encouraging them to stay longer, and to spend more while they are there.

The working group on this prefeasibility business case considered the development of new experiences to build a critical mass of attractions to achieve the above outcomes, including the following:

- Option 1 – Flag and monument at the geographical centre of Queensland
- Option 2 – Smart Phone App for Barcaldine tourism destinations
- Option 3 – Sunset viewing platforms
- Option 4 – Experience Building Program.

The working group considered 'Option 4 – Experience Building Program' as a priority option as it could be a catalyst for the development of a wider Barcaldine tourism economy and provide a mechanism for developing the other options. For further details see the Barcaldine Tourism Business Case.

5. MotoX track

Four options were considered in developing a prefeasibility business case:

- Option 1 – build a Motocross Track at the Ski Park Site
- Option 2 – build a Motocross Track at an alternative site
- Option 3 – Motocross Red Derby Track
- Option 4 – BMX Track

Options 3 – Motocross Red Derby Track was considered the most feasible based on the successful Blue Derby Pods Ride in Tasmania. Red Derby will encourage trail riders and motorbike enthusiasts and their families from across Queensland with a focus on metropolitan areas which have high numbers of motorbike owners all within a day's drive of Barcaldine (e.g. Townsville, Rockhampton, Brisbane). It is becoming increasingly difficult and expensive to ride motorbikes recreationally as a result of concerns about the environment and excessive noise from irresponsible or unregulated use. However, these issues can be addressed through appropriate land use and facility management such as the construction of purpose-built facilities like the proposed Red Derby Trails network. Detailed options are further discussed in the Barcaldine Motocross Business Case.

8 Dynamic transition roadmap for the future

Types of change pathways

Each pathway will build and enhance existing resource use and livelihood systems in the region in the short term, modifying some aspects gradually and even transforming other aspects by radically changing and/or adding some significant new components into the regional economy.

Therefore, it is possible to envisage each proposed pathway as having different stages or aspects to maintain, modify and transform the region that will require different types of interventions. Table 2 is an example of how possible interventions for each of the three focus areas could be implemented to maintain, modify or transform aspects of the region without precluding work that could be initiated for the other stages as part of the dynamic roadmap.

Table 2. Three proposed pathways and potential intervention options that would maintain, modify and transform aspects of the region to realise the vision and goals.

BROAD PATHWAY	MAINTAIN	MODIFY	TRANSFORM
Enabling Infrastructure – energy	Maintain and improve efficiency and cost of current energy resources and expand public infrastructure including national and state roads to improve services and connectivity and retain and attract new employees.	Expand affordable and reliable renewable resource models for the region.	Making the region a provider of solar power for the state and the nation.
Creating new values – starting with agriculture and tourism	IImprove water, energy and input use efficiency of businesses, agencies and sectors. Take stock and reinforce current tourism events built on heritage and diverse cultural and natural resources.	Irrigated high-value crops and agribusiness. Carbon capture for water and expanded carbon farming. Expand amenities and tourist experiences to increase tourist numbers and days spent in the region.	New low to zero emission and low-input agriculture, horticultural product lines and value chains. Add new and unique events and a network of digitally supported unique experiences and amenities to change drive-through tourism to destination tourism.
Building capacity (human capital)	Support and train current businesses with ecoBiz and other business skills to assist them to thrive and create employment opportunities. Explore state and federal immigration and settlement polices and regional incentives to attract new skilled families to the region.	Improve digital literacy and use to improve productivity and competitiveness of industries and businesses	Diversify with new businesses and economic sectors and provide new opportunities for learning, working and living in the area. Make Barcaldine a drone and sensor development and testing centre for building digital capability with wide and distributed digital technology adoption and establishment of new digital businesses.

To aid visualisation of the broad pathways, Figure 7 shows sets of strategic intervention options that would maintain, modify and transform aspects of the region to realise the vision and goals.

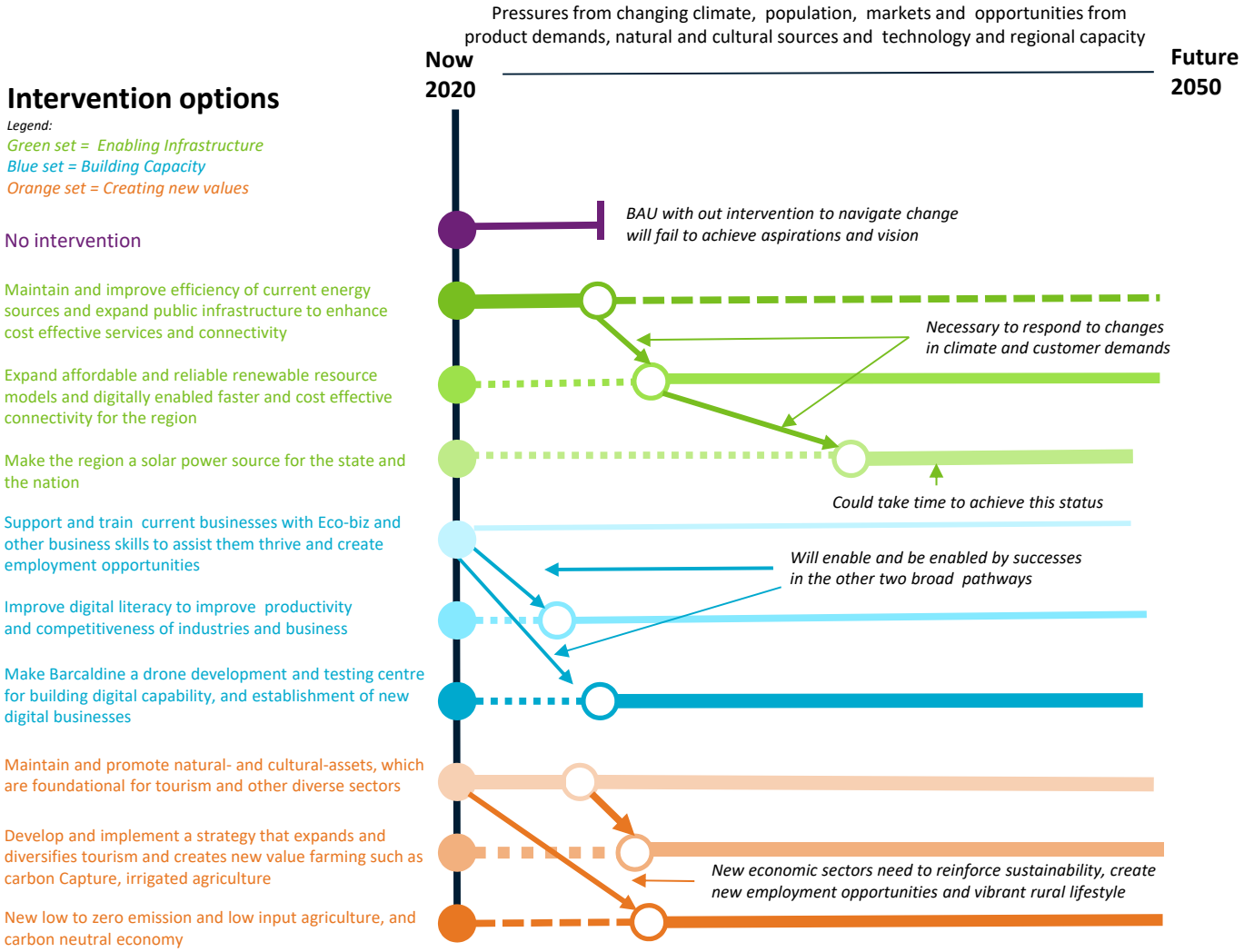

Figure 7. Sets of intervention options for each of the three broad pathways and their interdependence.

Interventions useful across pathways

Four cross-cutting intervention domains were identified in the workshops and working group discussions that could enable the realisation of the three broad pathways. These are:

1. Feasibility studies and research

Prefeasibility studies have been prepared for selected project ideas that will form the basis of business case proposals. Building on these prefeasibility studies, it will be essential to undertake thorough feasibility studies to develop business cases for investment that sets the foundations of this roadmap in motion. This roadmap is a living and dynamic document to allow for learning from trials and innovation. As more information is gathered, more developed feasibility studies can be prepared that include new innovative ideas and robust options for achieving the vison and goals of the region.

2. Digital and physical transport connectivity

Well-distributed digital and physical transport connectivity to towns, farms and other businesses across the region is a key driver and enabler of change across the three pathways. It will also be essential for efficient and effective provision of health, education, social and administrative services for residents, for transporting agricultural inputs and high-value produce, as well as providing access and services for tourism and a diversified regional economy. The Approaching 2030: Barcaldine Regional Council, Economic and Community Development Strategy (BRC 2018), identifies the need for investing in digital and physical infrastructure and services to: a) enable connectivity to coastal and metropolitan centres for community accessibility and commerce, b) gain local business leverage and benefit from the digital economy and c) effectively meet future needs and enable economic opportunities. The Council is committed to work with state and federal governments to establish business innovation and accelerator programs that support the development of new business models for existing, new and emerging industries. This will commit resources to provide mentoring and support through a structured program that ensures businesses are more resilient and have lower rates of failure.

3. Decentralised governance

Governments at different levels were recognised as critical to the region for running public services, building and maintaining infrastructure and for providing local employment. Given failing markets in rural regions, workshop participants acknowledged the need for higher levels of support from governments in providing services. However, they also noted that high levels of dependence on distant governments, particularly when much of the decision-making and resource allocation is centralised, makes the region vulnerable. For example, when a decision is made to reduce the number of publicly funded employees, it results in a disproportionately higher impact on the capacity, number of residents and economy of small regional towns. However, a decentralised governance system (e.g. subsidiarity) is one where decisions are made, and matters handled, by a competent, legitimate authority close to the community served. This type of system can produce effective and sustainable outcomes when government authorities operate at a scale that matches resources and rights with the responsibility of carrying out the function of serving the community. The participants noted that they will partner with other shires and use their current alliance networks to realise this desire of decentralised governance.

4. Population growth

The prolonged drought and in some instances withdrawal of government services has resulted in some residents seeking employment outside the region. Reversing the current declining population trend and growing the population numbers within the region will not only support economic sustainability but will also increase the Council's ability to fund and deliver services and infrastructure. The activities identified to assist with population growth include developing: a) a population growth strategy and a workforce strategy that determines and guides the talent needs of a future for the region, b) a future-focused Council that attracts, upskills and retains a range of talent capabilities, c) working with federal and state governments to attract immigrants to the region through a Designated Area Migration Agreement and advertisements targeting people and promoting the region, d) creating an enabling environment and incentives for new and unique investment opportunities, and e) providing quality amenities, access to a variety of services, transport facilities and community events to improve the liveability and attractiveness of the region as a destination to live, work or start a business, especially for young professionals and families through creative campaigns. One idea is for local schools to partner with local businesses to give students regular work experience or provide scholarships that build loyalty with the aim of getting young people to return to the region after they complete their studies elsewhere.

Table 3 is a matrix of the cross-cutting interventions and the three broad pathways.

Other initiatives

Other initiatives in the region that are under development were discussed by workshop participants. These projects will also help the region to transition towards a more prosperous and sustainable future, and include:

- The Barcaldine Regional Council has identified the need for a future skills strategy to 'focus on addressing talent shortfalls and ensuring that the next generation of skills and capabilities is developed locally to meet future needs' (BRC 2018).
- Outback WiFi is a network of access points for public WiFi connectivity that is being established across regional towns (RAPAD n.d.a). This will benefit local communities, business and tourists.
- RAPAD is partnering with the Queensland Government as part of the Regional Skills Investment Strategy to identify current and emerging jobs in key industries and ensure there is a supply of skilled local people to meet this demand. The focus for Central West Queensland is on Agriculture (sheep and wool), Tourism and Hospitality, and Community Services (RAPAD n.d.b).
- Barcaldine sewerage treatment plant does not have the population to maintain the facilities and has no electricity to power the pump. This was identified in 2017 as a priority for RAPAD (RAI 2018). However, the large scale of the ponds allows for longer residence times which enables the waste to settle out.
- The Outback Queensland Tourism Association is developing a data analytics strategy to address the tourism data gap. This includes enabling an infrastructure audit, digital infrastructure, tourism data exchange and a prioritisation assessment tool (RAPAD 2019).

Table 3. A matrix of the project ideas with the cross-cutting interventions.

CROSS-CUTTING INTERVENTIONS	BROAD PATHWAYS Enabling Infrastructure Energy and transport	Building capacity	Creating Value – Agriculture, Tourism and innovation
Feasibility studies and research	Research/explore: • models of energy supply and network grid connection that generate affordable, renewable energy for regional use and for generating revenue • what would be required to achieve world-class sustainable agriculture that builds on existing regional agriculture and innovation.	Take stock of existing and potential workforce requirements to make Barcaldine attractive for youth to stay or return after their studies and to attract professionals and entrepreneurs and their families.	Research which sustainable economic diversification options are feasible for the region, in addition to making it a tourism destination of choice.
Digital connectivity well distributed in the region	Build digital infrastructure to: • support greater efficiencies and effectiveness in energy and transport infrastructure • make businesses connected and competitive in domestic and global markets • attract new investors and entrepreneurs to test their new digital technology for a fee. Explore the feasibility of building a drone development and testing centre which also hosts drone shows and competition events that attract investors, entrepreneurs and enthusiasts to the region.	Accessible e-health and education – making the region attractive for healthy living, e-learning and building human capital.	Support digital agriculture and value chains; enabling blockchain and provenance of produce. Support digitally enabled tourism agribusiness and other businesses and diverse economic activities.
Physical transport connectivity	Rural road building, maintenance and rehabilitation of blackspots.	Reduce business cost increases and provide opportunities for new businesses.	Create employment opportunities and skill development during construction and maintenance.
Decentralised governance	Increase local decision-making on the type of new infrastructure, services and resource use.	Have greater input into state and national restructuring of the workforce that disproportionately impacts the region's diverse sources of income and develop less dependence on the centralised government. Support and promote the innovation working groups to continue and invite others in the community to work together to shift ideas into business and employment opportunities for the region.	Promote local governance to reduce red tape and promote diverse sources and types of investment that enables new value creation and entrepreneurships. Initiate a Council sustainability project fund to provide a budget each year for idea investigation and implementation to incentivise change.
Population growth	Provide quality infrastructure and affordable services and opportunities for local residents to stay in the region and attract new professionals and their families to work in the region.	Explore immigration and settlement polices and regional incentives to attract skilled professionals and their families to the region.	New value creation generates new employment opportunities crucial for attracting new people with skills into the region.

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