Australian Government

**National Drought and North Queensland
Flood Response and Recovery Agency**

# 2019 Queensland Monsoon Trough

## After the flood:
## A strategy for long-term recovery

Locally led | Locally understood | Locally implemented

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## After the flood:
## A strategy for long-term recovery



drought and flood
RESPONSE & RECOVERY

*Lawn Hill Gorge in Burke Shire.*

# Contents

*Spring Creek Barramundi Farm in Gumlow*

# Foreword

Following the wide spread flood event experienced in North Queensland in early 2019 I was asked by the Prime Minister to coordinate the immediate response to make sure individuals, businesses and communities were receiving the support they needed. During our extensive travel in the flood zone, my Agency staff and I witnessed the devastation but also the enduring strength of the people who lived through the experience.

After our initial efforts to ensure immediate support on the ground, the Agency shifted its focus to developing a strategy for the regions' long-term recovery and future prosperity. These Queensland regions know that out of this challenging event comes an opportunity to forge a thriving and sustainable future. I am encouraged by the way communities, governments and the non-government sector have banded together to support each other.

Recovery from this event is not a sprint—it's a marathon. We know that support will be needed in the months and years ahead because, for many, full recovery will be a long and steady process. It takes time to recover from events of this scale. In addition to the impacts of the flood event, the regions have faced a number of challenges during the COVID-19 pandemic – from restrictions on international and domestic travel, continued economic strain on small businesses and more stress for individuals and communities. But as we did after the flood event, my team and I will continue to stand shoulder to shoulder with the region until we come out the other side.

The Agency's guiding principle is that solutions should be locally led, locally understood and locally implemented. This approach puts the people and communities who were affected at the centre of the recovery process. The Agency has consulted widely and involved many affected parties to ensure they are determining their own future. This strategy emphasises the future sustainability and prosperity of individuals, businesses, primary producers and impacted communities.

The Agency recognises that the regions are bigger than farming—the potential of both farms and surrounding townships must be nurtured and preserved for future generations. We are already seeing examples of towns changing the way they do things and opportunities being developed as they come their way.

This strategy provides a blueprint that North East and North West Queensland communities, government and non-government alike can take ownership of; confident in the knowledge that it has been developed in partnership with the women and men who live, work and raise their families there, who best know the region, and who are of the North.

We will keep working with local communities and businesses to make this strategy come to life and support their vision for a thriving future.

**The Hon. Shane L Stone AC QC**
*Coordinator-General, National Drought and North Queensland Flood Response and Recovery Agency*

# Executive summary

This strategy is a roadmap for long-term recovery that has been developed by communities affected by the 2019 flood event in conjunction with this Agency and its Advisory Board. It is intended to make North East and North West Queensland's future strong and sustainable.

The strategy aims to guide investment in actions that support the long-term recovery and prosperity of the affected communities, strengthen their preparedness for future challenges, and help the regions adapt and transform in an ever-changing environment.

Five strategic priorities have been identified to direct efforts and investment to achieve the economic, environmental and social prosperity that individuals, communities and businesses want for their future. They are the culmination of many hours of community consultation and research:

- broadening the economic base
- building more resilient infrastructure
- building prosperous enterprises
- fostering connected and cohesive communities, and
- supporting information enabled regions.

The Local Government Areas (LGAs) of Burdekin, Burke, Carpentaria, Charters Towers, Cloncurry, Douglas, Etheridge, Flinders, Hinchinbrook, McKinlay, Richmond, Townsville, Winton and Whitsunday are the focus of this work as they were most impacted by the flood event.

Achieving the objectives of the strategy does not rest with the Australian Government alone—there is a role for everyone to play. The Australian Government requires partners, such as the Queensland Government, local governments, non-government organisations, and industry and community leaders, to implement the priorities detailed in this strategy. Using their local knowledge and expertise, implementation working groups will engage with all levels of government to progress concrete actions to bring the strategy into reality.



*North Queensland Livestock Industry Recovery Agency Advisory Board Meeting – May 2019*

| Broadening the economic base | Building more resilient infrastructure | Building prosperous enterprises | Fostering connected and cohesive communities | Supporting information enabled regions |
|---|---|---|---|---|
| **Focus areas:** | **Focus areas:** | **Focus areas:** | **Focus areas:** | **Focus areas:** |
| • *Broadening the base in the agricultural sector*<br>• *Broadening the base outside the agricultural sector*<br>• *Place-based approaches* | • *Water infrastructure*<br>• *Supply chain infrastructure*<br>• *Telecommunications and electricity* | • *Fostering innovation*<br>• *Best practice management for improving business fundamentals*<br>• *Rebuilding the herd and managing the environment* | • *Mental wellbeing*<br>• *Leadership and local capability*<br>• *Community services* | • *Improved collection and availability of information*<br>• *Building skills and using information*<br>• *Disaster planning and management* |
| **Actions:** | **Actions:** | **Actions:** | **Actions:** | **Actions:** |
| • Incentivise and facilitate investment<br>• Improve information collection and sharing<br>• Facilitate opportunities for collaboration | • Identify gaps and opportunities<br>• Ensure collaborative planning<br>• Incentivise and coordinate investment | • Connect business with the best available, regionally relevant information to secure long-term change<br>• Create opportunities to innovate, share ideas and design regionally relevant solutions<br>• Support innovation and technology that improves business natural disaster management<br>• Invest in natural capital and business training to achieve long-term sustainability and profitability | • Ensure health services coordinate and increase cross-sector collaboration<br>• Focus on preventive health measures<br>• Support and fund community infrastructure and events<br>• Support and invest in local leadership capability<br>• Build disaster management capability<br>• Encourage the delivery of innovative educational opportunities for regional areas | • Ensure information is captured and shared<br>• Build skills and digital capability<br>• Improve collection and use of disaster related information |

# Introduction

## What happened?

From 25 January 2019 to 14 February 2019, regions of North Queensland experienced exceptionally heavy rainfalls and major flooding due to an active monsoon trough and a slow-moving low pressure system. The region hit new rainfall records in terms of geographic spread, duration and intensity.[1]  For some areas, the impact was exacerbated by years of drought in the lead-up to the flood event.

The flood event was far reaching. Floodwaters up to 700 km long and up to 70 km wide covered 15,000 km[2] in the Flinders and Norman river basins[2]. Some locations, including Townsville, exceeded their average annual rainfall during the event recording more than 2000 mm.

Communities were cut off, rail lines and roads were severely damaged and many thousands of people reached out for help. Agriculture also took a big hit with substantial losses across livestock production, cropping, horticulture, vegetables, aquaculture, nursery and floriculture.

*Table 1: Estimated cost of 2019 flood event*

| Impacts | $m |
|---|---|
| Residential damage | $1,460 |
| Commercial damage | $402 |
| Public infrastructure damage | $807 |
| Agriculture damage and disruption | $432 |
| Small business disruption | $116 |
| Emergency response and clean-up | $109 |
| Deaths and injury | $56 |
| Health, wellbeing and community impacts | $2,255 |
| Environmental impacts | $44 |
| **Combined social and economic cost** | **$5,681** |

*Figure 1: Area affected by 2019 flood event*



Figure 1: Area affected by 2019 flood event

**Legend:**
- Estimated Flood Extent (AgForce 2019)
- SDARG-activated Local Governments
- DRFA-activated Local Governments

February 2019 relative rainfall percentile (BOM 2019)
- Above average (70-80)
- Well above average (80-90)
- Extremely high (90-100)
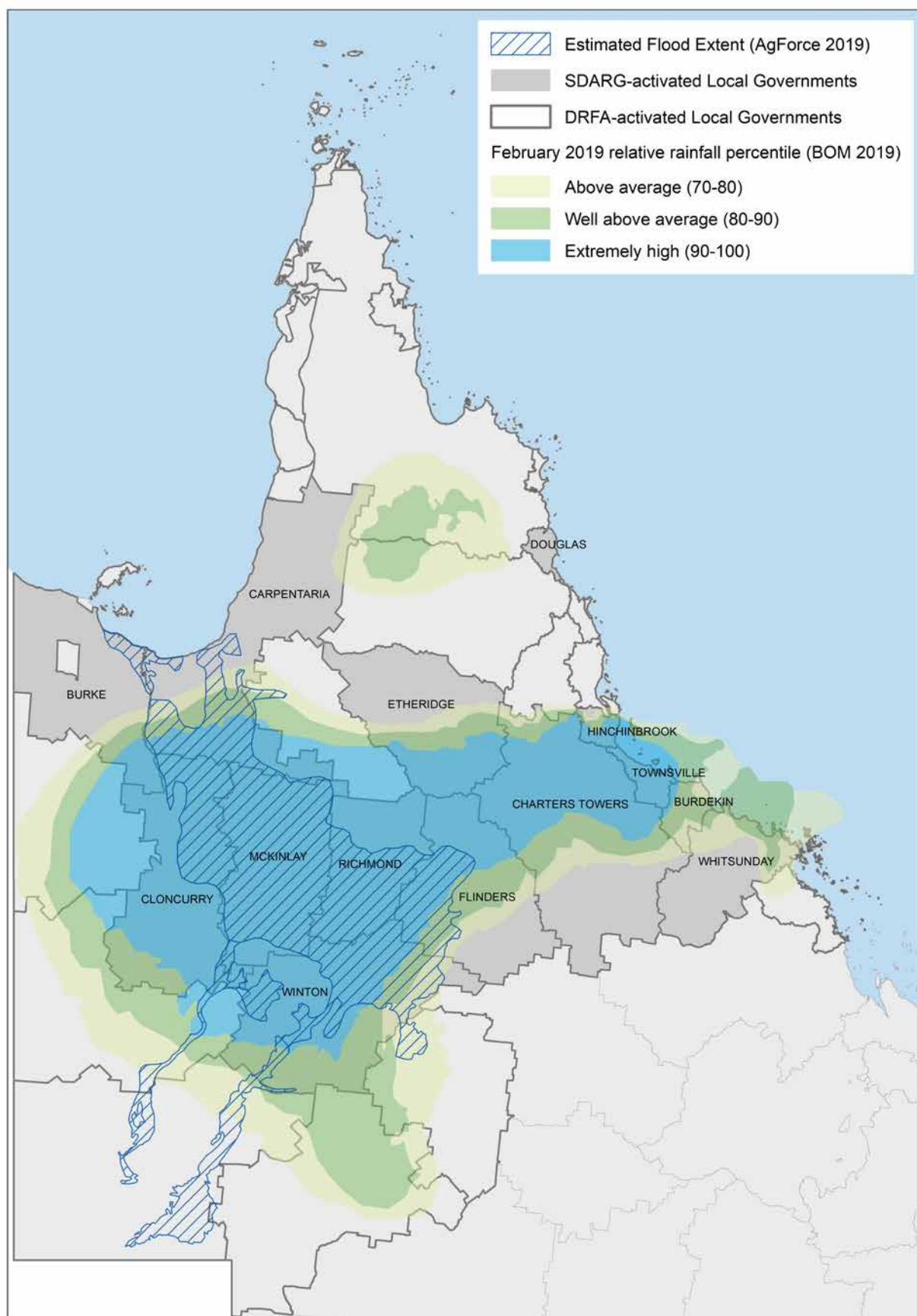
# Setting the scene

## North East shires
Burdekin, Charters Towers, Douglas, Hinchinbrook, Townsville and Whitsunday

## North West shires
Burke, Carpentaria, Cloncurry, Etheridge, Flinders, McKinlay, Richmond and Winton

The region covers a combined area of

## 459,517 km²

including **14,955 km²** of protected areas such as parks, forests and reserves

**TOTAL POPULATION**

## 292,610 people

**194,072** in Townsville

**352** in Burke

| NORTH WEST SHIRES | NORTH EAST SHIRES |
|---|---|
| **25 year** population prediction | |
| **-0.9%** per year | **+1.3%** per year |
| Regional classification | |
| **78.3%** VERY REMOTE AUSTRALIA | **93.6%** OUTER REGIONAL AUSTRALIA |

**Overall socio-economic classification**

Bottom two quintiles
**over 50%**
(53.5% as compared to 40% for Qld)
**Only 11% are in the top (most advantaged) quintile**

## NORTH EAST ECONOMY
**MINING, AGRICULTURE, PROCESSING** and **TRADE**
Employment driven by services such as **DEFENCE** and **TOURISM**.

## NORTH WEST ECONOMY
Significant **COPPER ORE** and **SILVER-LEAD-ZINC ORE MINING, BEEF CATTLE FARMING** and expanding **SERVICE-BASED SECTORS**.
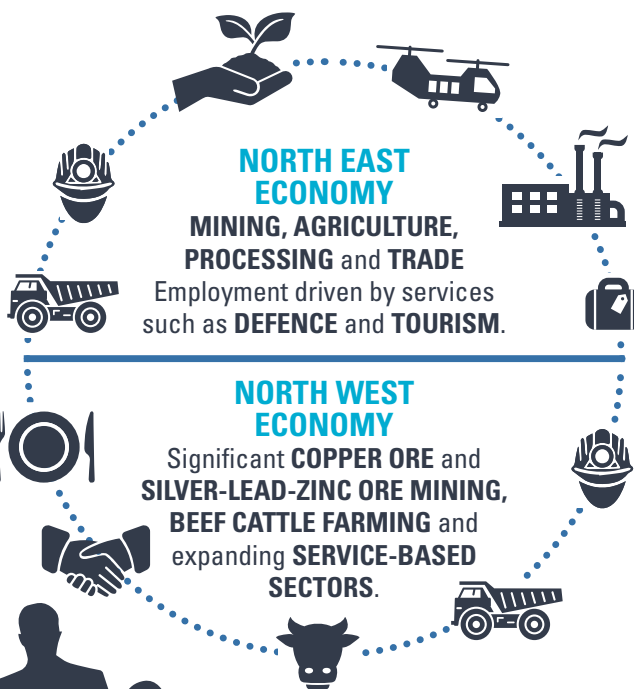
**APPROXIMATELY**

## 97%

**OF ALL BUSINESS IS SMALL BUSINESS**
(LESS THAN 20 EMPLOYEES)

Industries with the most businesses are AGRICULTURE, FORESTRY and FISHERIES

## One of the most variable climates in the country

Climate variation affects Queensland's diverse communities, regions and industries in different ways and presents both opportunities and risks[3]. Globally, climate-related disasters are on the rise. Our changing climate is already causing a shift in the frequency, distribution and intensity of weather events. The 2019 flood event is unlikely to be an anomaly, and communities in North East and North West Queensland need to be able to prepare, respond, recover and adapt to the range of climatic conditions they could potentially face in the future. Predictions include increased average temperatures across all seasons, more hot days and warm spells, possibly greater rainfall variability, increased intensity of extreme rainfall events, rising mean sea levels, and increased height of extreme sea-level events[4].

## A valuable natural environment: from the Great Barrier Reef to the red dirt outback

Many in the impacted regions talk about the importance of the environment—whether it is in the context of ensuring viable and sustainable production practices; protecting native vegetation, watercourses, and natural resources like the Great Barrier Reef and Gulf of Carpentaria for future generations; or recognising the inherent value that Australia's natural beauty has for both the tourism sector and for the people who live there.

The regions' landscapes are essential for maintaining biodiversity, community liveability, and the regional economy. The natural environment provides opportunities for activities related to tourism and primary production that can help drive the economy forward, and for attracting new residents and businesses[5] to North East and North West Queensland.

# What happened next?

### *The North Queensland Livestock Industry Recovery Agency*

The Australian and Queensland Governments have well-established and formalised approaches that allow a coordinated and timely approach to responding to disasters such as the flood event. However, the scale and extent of devastation, as well as the long-term implications of this event for the region led the Prime Minister, the Hon. Scott Morrison MP to establish the North Queensland Livestock Industry Recovery Agency in March 2019. The LGAs of Burdekin, Burke, Carpentaria, Charters Towers, Cloncurry, Douglas, Etheridge, Flinders, Hinchinbrook, McKinlay, Richmond, Townsville, Winton and Whitsunday are the focus of the Agency's work because they were most impacted by the flood event.

After the flood event, the Agency's Coordinator-General and his staff were on the ground immediately, working with affected communities to ensure they received the support they needed. The Agency worked closely with all levels of government to speed up processing times for financial assistance so that people could quickly begin the clean-up without wondering how they were going to pay for it. The Australian Government allocated $3.3 billion—including $232 million from the Disaster Recovery Funding Arrangements (DRFA)—to support the initial response and recovery effort. The Coordinator-General and his staff drove more than 24,000 km throughout the region and had one-on-one discussions on farms, at camp drafts, community halls and local government meetings, learning first-hand what people had been living through and exchanging ideas on how to best support them through their long-term recovery and path to a prosperous future.

The Agency then turned its attention to providing strategic leadership and coordinating the Australian Government's efforts to deliver a longer-term plan for recovery and resilience in the regions. This included ensuring the government's efforts complemented existing recovery arrangements, as well as providing advice on how to tailor policies and programs to support the communities affected by the flood event.

In December 2019, the Prime Minister announced an expansion of the Agency's remit to include drought nationally. As a result, it became the National Drought and North Queensland Flood Response and Recovery Agency. Shane L Stone AC QC was appointed Coordinator-General, and is supported by an Advisory Board comprising members with expertise in agriculture industries, rural and regional Australia and experience in government and non-government organisations.

### *A plan for a secure future*

This strategy is a blueprint that can be used by communities, organisations and governments working together to make the regions' futures strong and sustainable. It draws heavily on the Agency's consultations and the evidence-base it has built. The aim of the strategy is to guide actions that support the affected communities' long-term recovery, improve preparedness and help them adapt and transform in an ever-changing environment.

While the flood event has been the catalyst for developing this strategy, it can be used as a template in recovery and resilience-building following a range of possible future shocks— whether that be from a flood, drought, or other adverse events. And while this strategy is targeting 14 specific LGAs, it is worth noting that they sit within an area—Northern Australia— which is recognised as an important component of Australia's continued economic growth.

It builds on the 2015 Developing Northern Australia White Paper which outlines the importance of the broader region and its potential to be an economic powerhouse[6].

In developing this strategy, the Agency looked closely at the economic impacts of the flood event and analysed various funding and investment scenarios to support the regions. It also looked at what has been done around the world in similar situations to gain insights into international best practice.



*Elderslie Street, Winton.*

*The vision: a strong and prosperous future*

During its consultations, the Agency heard about the regions vision for a future where:

the **economy** is profitable, innovative and diverse

the **community** is vibrant, healthy and empowered, with a sense of belonging

the region is an attractive place for **people** to stay (or relocate), raise families and grow old

the **environment** is valued, proactively managed, and left in better condition for future generations.

These are the drivers for the five strategic priorities outlined in this strategy. Each strategic priority is of equal importance and has equal weighting.



**Building prosperous enterprises**

**Building more resilient infrastructure**

**Fostering connected and cohesive communities**

**Broadening the economic base**

**Supporting information enabled regions**
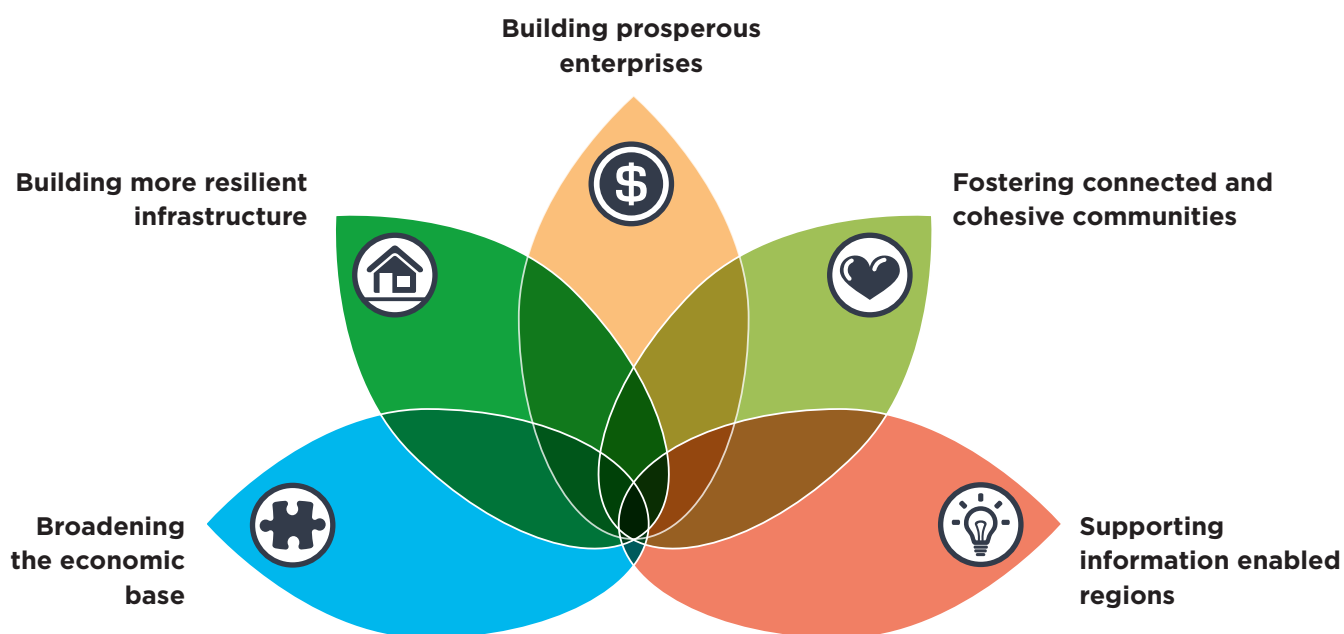
# STRATEGIC PRIORITY 1:
# Broadening the economic base

A prosperous and secure future requires the regions to have a strong local economy and the ability to grow the economic prosperity of their communities into the future. Broadening the regions' economic base will help support recovery and dampen the impact of future shocks.

The individual competitive advantages of the 14 LGAs have driven their reliance on a small number of markets[7]. In the western shires, there is a strong focus on the cattle industry which reflects the low cost base, access to suitable land and transport links for export opportunities[8]. Tourism also continues to grow, particularly in the dry season. In comparison, in the eastern shires there is a strong reliance on tourism, which reflects their access to unique environmental and natural assets, the availability of labour and the perception of Australia as a safe destination[9] to visit.

In considering how to support the regions, the Agency has outlined three areas of focus: broadening the base within the agricultural sector, broadening the base outside the agricultural sector, and place-based approaches to economic diversification.



*Palm Creek Plantation in the Burdekin Shire is the only commercial achacha plantation in Australia.*

## Why is a broad economic base a good idea?

The Agency commissioned economic modelling to help understand the regions' economies[10]. This included how they would respond in the future if a similar shock occurred and how investment might influence their recovery and resilience[1]. The modelling shows that a broader economic base increases the resilience of the regions to future shocks. If a further event should occur of the same magnitude as the 2019 Queensland Monsoon Trough, and there was investment across a broader range of industries, the estimated impact on the North East region was a Gross Regional Product (GRP) reduction of $32.3 million.

However, if the investment during recovery focused only on agriculture, the estimated impact would be a GRP reduction of $40.9 million. By supporting a diverse economy in the North East region, the potential impact on GRP decreased by almost $8.6 million. The outcomes are similar in the North West region. A second shock could dampen the region's GRP by $11.9 million GRP if a broad economic investment strategy were adopted. If a narrow investment strategy were implemented, the GRP reduction would be $15.3 million, an increased loss of $3.4 million.



*Townsville.*

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1   In undertaking the modelling, the 11 LGAs were split into two groups— the North East and the North West— to account for the current differences in their economic bases and industries. The modelling looked at the impact on their Gross Regional Product (GRP). The modelling only included 11 of the 14 LGAs. Charters Towers, Etheridge and Whitsunday were not included.

North East Impact on GRP ($m) Event Reoccurence



North West Impact on GRP ($m) Event Reoccurence
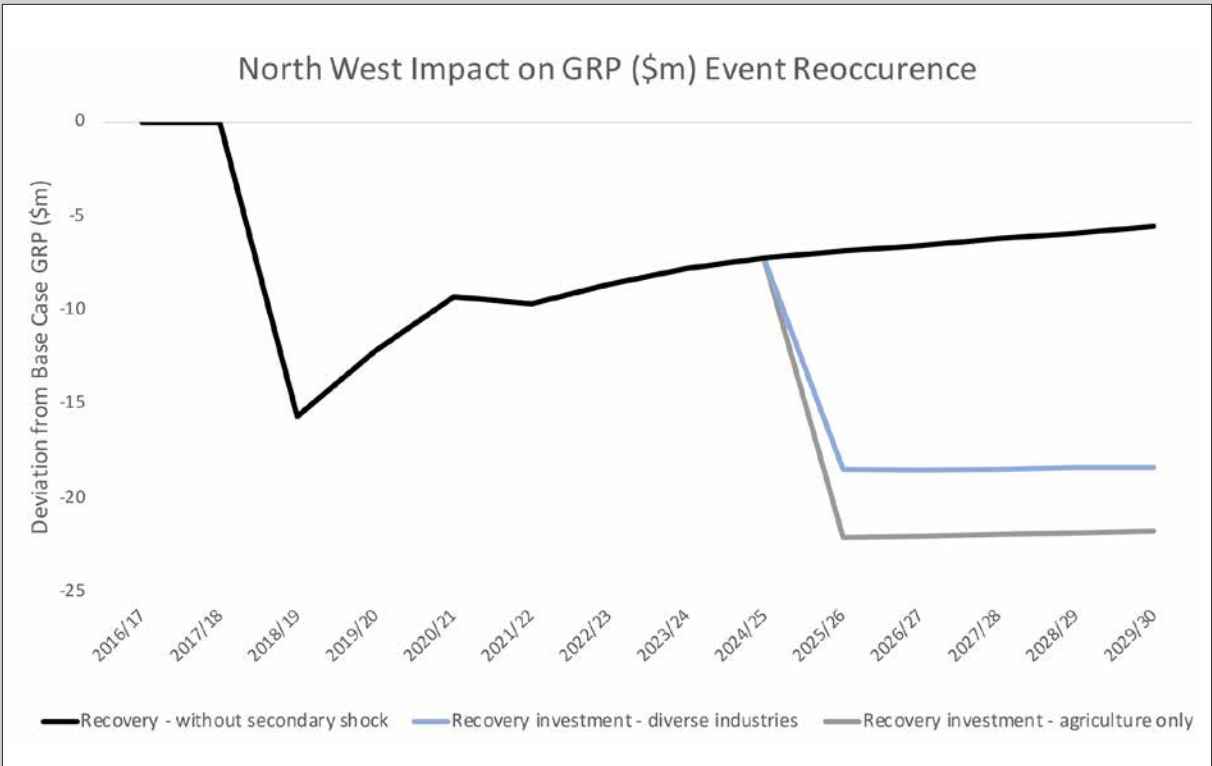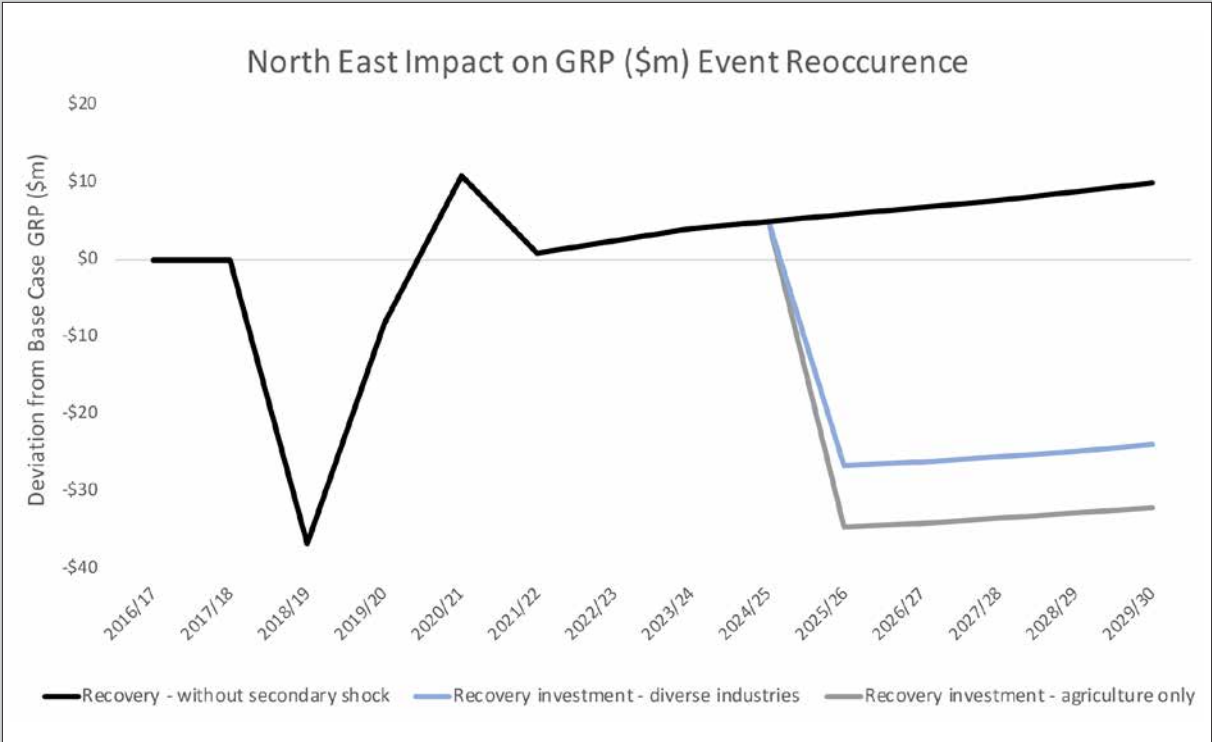
## Focus: Broadening the base in the agricultural sector

Agriculture is a large part of the regions' identity, with traditional livestock and cropping systems such as beef and sugarcane currently representing the majority of agriculture production and employment. Those on the ground in the affected regions want to see increasingly diversified agricultural industries. Many noted that while there is already some diversity within the agricultural sector, there is significant scope to broaden this.

To make the most of the opportunities in the agricultural sector, producers can consider diversifying their current production, or broadening their role within their current supply chains. Strengthening the agricultural economic base will provide a range of benefits for primary producers and a flow-on benefit to communities. In many cases, it will also generate additional employment to further bolster the long-term strength of the economy. Choosing the most suitable form of diversification or intensification is influenced by many factors and is not without risk. It requires thorough planning and a realistic assessment of objectives, skills, resources required, costs, legislative requirements, infrastructure and supply chain requirements, and market prospects.

However, there are also potential barriers to achieving this, including difficulty accessing research, sourcing resources such as specific plant and equipment, high production costs of alternative products, significant upfront capital requirements, long timeframes to reach commercial production and generate returns, as well as skill base and supply chain limitations.

THERE ARE SOME CHANGES ALREADY AFOOT

### Developing irrigated agriculture in Flinders

The Queensland Government has approved a proposal developed by the Flinders Shire Council to create a master-planned irrigated agriculture precinct—known as 15 Mile Irrigated Agricultural Development project—to support growth in the low-volume high-value sector, including table grapes, citrus and avocados. This initiative will generate new jobs and investments in the region and capitalise on its competitive advantage of proximity to export markets, arable lands, existing infrastructure and supply chains, and favourable biosecurity status[11].

## Focus: Broadening the base outside the agricultural sector

To improve the regions' resilience to extreme weather events and increase economic activity in the regions, there are opportunities to increase investment in non-agricultural sectors to build local economies and encourage people to move to or stay in a region. The latter is critical in the aftermath of the COVID-19 pandemic. Those in the regions have suggested that broadening the non-agricultural sector could include capitalising on existing industries such as tourism and mining, as well as developing new industries.

The mining sector has a strong presence and is a major employer in the regions. With increased demand for rare earth minerals and new economy minerals, opportunities are emerging including those associated with existing and former mines. The commercial possibilities to exploit mine tailings and core samples may lead to old sites becoming economical again as well as new sites being discovered. For the regions to benefit from future mining opportunities,

supporting infrastructure (in particular cost-effective electricity supply and transport) will be a key enabler[12]. Equally, there is also a need to have skilled and qualified staff available in the regions to support these new endeavours.

Tourism is also a key industry. The Douglas Shire, with its central town of Port Douglas, has a strong and well-recognised tourism market with many secondary industries. In contrast, smaller shires such as Carpentaria and Burke, while having some tourism activities, operate on a smaller scale. All shires are likely to benefit from targeted offerings and improved marketing to help increase the growth rate of tourism.

A STEP IN THE RIGHT DIRECTION

## Marketing more remote regions to encourage tourism

The shires of Burke and Carpentaria both have the ability to offer unique tourism adventures that take advantage of the remoteness and natural environment. Burketown is one of the best places in Australia to experience the 'Morning Glory' cloud formation[13]. Understanding what makes these shires unique has allowed the region to differentiate itself from other remote Australian destinations. The Gulf of Carpentaria is also a popular recreational fishing destination that brings people into Burke and Carpentaria, with many making it an annual pilgrimage.



*Scott, Gina and Beau Harrington from Brinard cattle station in Julia Creek.*

## Focus: Place-based approaches

Each region has an opportunity to build on unique place-based characteristics. Capitalising on these existing strengths rather than inventing new ones, attracts new investment and strengthens existing businesses. Social and economic outcomes are generally positive when a proactive whole-of-community approach is applied to place-based activities. There is a keen interest in the regions to explore these types of opportunities. Work is already underway using a whole-of-community approach, with some LGAs and adjoining shires seeing the advantages in working together to attract tourists to their towns.

Existing 'hub' based annual events, including the Winton Film Festival, the Julia Creek Dirt 'n' Dust Festival and the Magnetic Island Race week, can be used as springboards to encourage further travel in the region. These activities generate economic benefits and raise awareness of the many other places people can visit in the regions. Such events also deliver broader social benefits to the community such as employment and offer the chance to highlight local Indigenous cultural heritage and regional points of difference. The Australian Dinosaur Trail that covers the Winton, Finders and Richmond Shires is another example of a place-based hub.



*Kronosaurus Korner Visitor Information Centre in Richmond.*

## Cloncurry drone site

In an Australian first, $14.5 million has been committed to a commercial drone flight testing facility at Cloncurry Airport. Being able to access large tracts of open space and support from the Queensland Government was attractive to the drone industry when considering where to establish a test site[14]. This initial funding will be used to construct supporting infrastructure (such as a hangar, operation room, surveillance radar and communications) and there is potential for further investments as the high tech drone industry continues to develop. This will generate jobs and provide ongoing economic benefits to the area[15].



*Aerial view of Winton*

## Outback Hollywood

The Winton Shire continues to explore unique opportunities, including expanding its film industry. With three movies and a number of smaller productions already 'in the can' or in development, Winton is in a solid position to develop its film industry further. The unique backdrop of outback Australia, an historic outdoor movie theatre, the annual Vision Splendid film festival and relationships with key people in the film industry, mean Winton has a strong future as the 'Outback Hollywood'.

# Actions to enable broadening the economic base

Three priority action areas have been identified to help regions to broaden their economic base individually or collectively.

### Action: *Incentivise and facilitate investment*

The Agency has identified the need to pave the way for large-scale and small-scale investment to support flood-affected communities and industries and de-risk future investments. The Agency is aware that there are a number of options already available to source investment, however, concerns were raised during consultations about access to funding for local projects. Support needs to be available from concept development to breaking ground. It is important to build awareness within the regions about existing investment sources (such as the Northern Australia Infrastructure Facility (NAIF), the Queensland Government, and the Regional Investment Corporation) and ensuring individuals, businesses and communities can navigate application processes.

### Action: *Improve information collection and sharing*

Decisions to invest in projects require research and clear evidence of the feasibility, benefits and risks. It is critical that the information be available and accessible to individuals, businesses and communities to support their decision-making.

There needs to be strong collaboration between the affected regions and existing information providers. This will help address locally identified information gaps, improve collection, and ensure there are sufficient skills within communities to analyse the information. Improved access to information will help people evaluate and develop ideas.

### Action: *Facilitate opportunities for collaboration*

It is critical that governments at all levels, industries and communities work together to identify local opportunities so they can share knowledge, plan and implement the actions and investments required to achieve economic goals. This can range from small gatherings of individuals interested in a particular issue through to larger inter-LGA planning work. This would link all levels of government and improve access to expertise and government support, and encourage community engagement.



*G & A Apiaries Australia Pty Ltd, crop pollination specialists and beekeepers, Ayr.*

Infrastructure is a fundamental enabler of how a region is able to function and grow, both economically and socially. While the constant strain on local councils to support small scale infrastructure is acknowledged, this priority considers what may be needed in terms of larger infrastructure.

Infrastructure investment requires long-term, coordinated and integrated planning to ensure the regions' needs are delivered well into the future. As natural disasters are recurrent in Northern Australia, any investment should seek, wherever possible, to improve the ability of the regions' assets to withstand future natural disasters.

One of the main barriers to building infrastructure in these affected regions is the ability to access sufficient funding or attract investment. Reasons for this include low cost-benefit ratios in rural and regional Australia due to the lack of economies of scale, remoteness, increased costs and the small population base. Often projects are only considered economically viable if the benefit-to-cost ratio is above 1:1. However, the social benefits of projects are often not included in these assessments and, while these are difficult to monetise, they need to be a taken into consideration.

In considering how to support the regions to address their infrastructure needs, the Agency has outlined three areas of focus: water infrastructure; supply chain infrastructure (roads, rail and ports as well as processing or packaging facilities); and telecommunications and electricity infrastructure.

## Focus: Water infrastructure

A common theme during consultations was the significant opportunities available by improving water capture and supply. Businesses and industries in regional communities need to have improved access to efficient, affordable, reliable, safe and secure water resources and services to take advantage of economic opportunities. Not every water storage facility is a dam. These days water capture takes a number of forms.

Improved water infrastructure and a reliable water supply are especially critical for the agriculture sector to continue to be prosperous, diversify its production base and take advantage of global market trends. For example, as water prices increase in the Murray-Darling Basin, investors are increasingly looking elsewhere in Australia for irrigation opportunities. There is potential for growth in both existing and new irrigation regions where water and associated infrastructure and supply chains are available, and conditions are conducive for investment[16].

The additional investment that comes with improved water infrastructure (both in its building and its ongoing use) will not only support economic growth but also provide employment opportunities and broader public benefits.

Changes in rainfall patterns (anticipated to be fewer rainfall days but with increased intensity and concentration) and increased temperatures (increasing the rate of evaporation from storage) will influence what type of water infrastructure is most efficient[17].

## Focus: Supply chain infrastructure

North Queensland has the comparative advantage of being a strategic node for freight, commodities and commerce, but this relies heavily on it having appropriate and well-managed supply chain infrastructure in place. During consultations, people emphasised their reliance on transport networks to support the economic viability of their businesses, in particular the agriculture and mining industries, and the need to maintain and enhance existing supply chain infrastructure. Road, rail and port access act as major economic enablers, linking business to both domestic and international markets. This infrastructure must be able to support future development, for example, a change in agricultural production may mean a need for different supply chain infrastructure to support it.

Any investment in the supply chain needs to recognise the relationships and co-dependencies between key parts of the supply chain, such as those that exist between the freight sector and potential bottlenecks.

There is scope to improve supply chains by integrating innovative technology and systems. This can include monitoring freight movements and data driven software that integrates up-and-down stream activity to allow for real-time changes. For example, the Smart Supply Chain project delivered by the Cooperative Research Centre for Northern Australia is looking at how technology, such as sensors, can be used to improve the quality of products during their movement through the supply chain, thus ensuring provenance and creating improved value[18].

SOME CASES IN POINT

### Mango Roads

The benefits of working collaboratively to improve supply chain infrastructure is highlighted in the Mango Roads project. This saw all levels of government working together with industry to identify strategic mango industry roads in the Northern Territory under the Roads of Strategic Importance framework. The $20 million upgrade of these roads will impact the quality of fruit while being transported, cutting export times and putting more profits into the hands of producers. The upgrade is expected to have a 9.3 per cent return on investment.[19]

### Townsville 'Pit to Port'

The Port of Townsville and the Queensland Government are investing in a $48 million rail freight terminal at the port. While freight can be moved to Townsville by rail, the existing railway ends 12 km from the port which means freight is moved onto trucks and driven to port before being unloaded and moved onto ships. The new terminal will allow freight to enter the port directly via rail, moving away from road-based transport, and provide cost and efficiency benefits. The investment also supports growth in upstream industries such as agriculture and mining by increasing capacity and allowing for quicker movements.[20]

*Livestock road-train heading towards Mount Isa.*

## Focus: Telecommunications and electricity

Access to reliable and affordable telecommunications and electricity are key to future prosperity. There are a number of common challenges that affect the effective and efficient delivery of these essential utilities—the widespread geography of the regions, the spread and low density of population, and the cost of installing and maintaining transmission infrastructure. These represent significant barriers for the regions' access to fit-for-purpose and competitively priced telecommunications and electricity services. Additionally, competition in both markets within the affected regions is highly concentrated. The Agency heard on a number of occasions that there is widespread market failure. With the emergence of new technologies there are opportunities to resolve some current telecommunications and electricity issues and reduce reliance on ageing and expensive infrastructure.

### *Telecommunications*

Businesses, individuals and families want secure, reliable, affordable and accessible telecommunications coverage. Telecommunications supports and enables productivity and innovation and is central to maintaining economic growth and social connectivity. Investment in telecommunications infrastructure that supports improvements to both connectivity and affordability are required to support the productivity and social inclusion of the regions.

Difficulties with access to telecommunication services in regional and remote Australia is not unique to the regions affected by the flood event. A study of primary producers in 2017 found that 43 per cent reported poor to no coverage across their farm[21]. The 2018 Regional Telecommunications Review[22] found that there were compelling productivity gains to be

made from improved connectivity. Three enablers were identified during the review—access to infrastructure, consumer protection and digital inclusion.

The regions' main industries would benefit from improved telecommunications infrastructure. For example, the use of digital technology has been identified as a key driver for agricultural operations to support real-time decision-making and improve productivity gains.

## *Electricity*

Access to reliable and cost effective electricity supply is a key demand within the region. The age of the existing energy infrastructure and the high cost of electricity were identified as impediments to economic development and household prosperity on a number of occasions during the Agency's consultations. The cost and reliability of electrical supply are critical for many industries including mining where electricity makes up to 40 per cent of the cost of mining operations[23].

There are a number of reasons for the high cost of electricity prices in Queensland. These include the cost of maintaining and changing the network (the poles and wires) due to the large geographic area of the region, generous solar feed-in tariffs[24], high recurrent labour costs, and dividends that are paid to the owner—the Queensland State Government—with some passed onto consumers [25]. However, the electricity sector is undergoing a period of rapid transformation as new products emerge[26]. In addition, the increasing interest and investment in renewables, improved access to electricity and water simultaneously through pumped hydro initiatives, smart technology and battery solutions are making new electricity supply solutions possible. However, any changes to the manner in which electrical supply is maintained for communities within regional and remote areas is likely to incur a large upfront investment and is unlikely to be affordable by a single business and/or local government in the short to medium term.

A GOOD EXAMPLE OF INNOVATION IN THE POWER SPACE

## Weipa bauxite mine and solar farm

The Weipa bauxite mine in Cape York Peninsula is in a very remote area. The energy supply for the mine is achieved via a hybrid power generation facility. The use of diesel engines has been reduced by installing a large solar farm of 18,000 photovoltaic modules producing 1.7MW. The solar farm feeds into the Weipa grid supporting the local community as well as the mine, and the mine has achieved a reduction of diesel use by 600,000 litres each year.[27]

*Train transporting sugarcane at Stockham property in Giru.*

## Actions for improving infrastructure

To ensure infrastructure in the regions affected by the flood event supports their economic and social needs now and into the future, there needs to be improved identification of current gaps and opportunities; improved access to capital; and cross regional or national collaboration.

### Action: *Identify gaps and opportunities*

It is critical to ensure a clear, evidence-based understanding of where the most essential infrastructure investments are needed and how investment can be best targeted. All levels of government, as well as industry and the private sector, need to work together to ensure there is evidence to support infrastructure investment for the regions. A robust evidence-base has been critical to the success of the Inland Queensland Road Action Plan that has been developed to guide and prioritise investment in essential supply chain infrastructure.

Longer-term modelling needs to be undertaken to support ongoing economic development in the regions. This will help identify where new infrastructure investment is required or where the introduction and uptake of new technologies would improve the profitability of the regions' industries. This analysis could be supported by existing industry bodies, research organisations or regional groups to ensure local issues and knowledge are incorporated. This type of modelling would also support decisions to build better, more resilient infrastructure that considers the specific risks within the regions.

### Action: *Ensure collaborative planning*

It is well recognised that poor planning can lead to investments incurring large losses[28]. The need to ensure sound planning, risk management and efficient governance in order to attract investment forms a key part of addressing the investment barrier and ensuring projects are delivered[29].

It is important to identify opportunities for a broad range of stakeholders to collaborate and put plans in place to support investment in current and future infrastructure needs. This could be done at an industry level or a regional level but needs to include representatives with a broad range of interests, including economic, environmental, community and Indigenous development and protection.

### Action: *Incentivise and coordinate investment*

Both private and public infrastructure investment will be necessary. This needs to be supported by favourable conditions (such as regulatory settings) and changes to the manner and methodology of funding to recognise the challenges these regions face.

The need for public funding for these projects is, in some cases, due to investors perceiving a poor return on their investments. The availability of concessional project financing, such as that provided through the NAIF, can help attract and support private investment. However, the decision to offer concessional financing needs to be considered carefully and monitored to ensure it provides broader public benefits than just the project and its proponents[30]. There may also be opportunities to 'de-risk' investment by increasing government involvement in common user infrastructure projects, funding and regulatory settings. For example, amendments to regulations relating to infrastructure could be explored to support private investment where there is uncertainty about future returns or where taxation arrangements are uncompetitive. De-risking can also create favourable conditions for private investors to invest in regional infrastructure projects.

Agencies responsible for managing infrastructure funding should continue to collaborate with project proponents to ensure investment opportunities remain available to the regions and that the proponents have the capability and capacity to access funding. Opportunities for proponents to pool resources to address common infrastructure needs also need to be encouraged to drive successful regional investment.



*Discussing how to best control weeds and rehabilitate native Mitchell grass pastures following the flood, north of Julia Creek.*

# Building prosperous enterprises

From the shops and services in town, to remote home-businesses and farms, private enterprises are the 'glue' that holds regional communities together and are important drivers of change. Businesses are an essential part of a community's social capital[31]. The effect of a business closing down in regional and remote communities can be far greater than the cost of supporting them to keep their doors open. There is usually no business 'waiting in the wings' to take over.

Recovery looks different for each business. However, business owners and managers repeatedly told the Agency that it was not just about recovery, but about building back better[32]. To do so will require access to the tools, skills and opportunities to innovate, find new ways to generate income, contribute to the community and nurture the natural environment.

This section looks at how enterprises can recover and prosper through innovation, harnessing technology and adopting best management practices and business skills. The livestock industry was one of those hardest hit by the flood event, so this part of the strategy also outlines how to best support pastoral businesses to build back better.

## Focus: Fostering innovation

The regions' enterprises face many challenges that also present valuable opportunities to adopt innovative practices and technologies. Fostering innovation has the potential to provide new ideas to manage challenges, generate new industries, adapt and improve existing services and create a comparative advantage. Businesses that innovate create more efficient work processes and have better productivity and performance[33].

Creating an environment that fosters innovation will need to be driven locally with support from industry, non-government organisations, and governments at all levels. There are existing policies and programs to support business innovation, however, they should be refined to suit the specific dynamics of the regions.

Barriers to the take-up of innovative practices include: a lack of knowledge, expertise and confidence to make sound decisions about change; understanding and awareness of available and appropriate technologies, time and resources; capital for investment in new technology or machinery; perceived benefits and value for business; and fear of failure. Access to reliable and affordable telecommunication connectivity and digital capability are critical issues that limit the ability of businesses, particularly those in the agricultural sector, to innovate through greater use of digital technologies[34].

## Smart ear tags

Ceres Tag is a Queensland-based agtech start-up developing smart ear tags to help livestock producers remotely monitor their animals. The Ceres tag uses GPS technology for geolocation and an accelerometer that can detect abnormal levels of animal activity, movement from paddocks, or animals that have been stolen and will trigger an alert. Tags are able to send alerts for a range of production and regulatory metrics, including when an animal is on heat, has an illness, or is about to calve. The use of such tags has the potential to improve trace-back capabilities, provenance, mustering efficiency, pasture efficiency, health, welfare and biosecurity, prevention of stock theft and tag retention. The hardware for these smart ear tags is solar powered, and data is transmitted to a device (smartphone, tablet or computer) via low-Earth-orbit satellite and the internet. The tags also function as traditional traceability devices to capture cattle movements along the supply chain from birth to slaughter.



*Brahman cross cattle. With over 450,000 head of cattle lost, 6,000km of formed and 29,000km of unformed farm roads affected and major rail corridors cut off, the impact of the monsoon event had a massive impact on the entire regions' beef supply chain.*

## New business from ancient minerals

The Dugalunji Aboriginal Corporation is based at Camooweal, a small town in North West Queensland on the Northern Territory border with a population of 187 people. The community has discovered and patented a unique high-quality cellulose nanofibre from Australian native Spinifex grass that has the potential to revolutionise the plastic and rubber industries. Researchers at the University of Queensland are working with the Dugalunji Aboriginal Corporation to combine Indigenous Traditional Knowledge and science to commercialise the product. Using simple, cost-effective and environmentally friendly methods, this small town has the potential to create a new industry and employment opportunities for the region.[35]

## Focus: Best practice management for improving business fundamentals

Ensuring business operators, including primary producers, have the capabilities and tools to maximise their business profitability will be crucial for the regions' longer-term recovery and ability to adapt and transform.

When businesses have strong management practices in place, they are able to take advantage of profit-making opportunities during good times and are also better positioned to prepare for and reduce the impact of shocks when they occur. For example, to unlock opportunities and manage risks it is critical that pastoral enterprises have a thorough understanding of their business activities, including knowing their cost of production.

Governments, research and development institutions, universities, not-for-profits and the private sector have developed a range of resources to improve business fundamentals and reduce business risks. These materials draw on world-leading research and experience, however, getting people to use them remains a significant challenge in the region. Many businesses are not aware these services exist, they find the amount of information available overwhelming or they aren't able to access the information in a way that works for them.

### INNOVATION IN FARMING

### E-Beef Smart Farming partnership program

Combining innovative technology and tried and tested business and environmental management practices, the E-Beef Smart Farming project is being driven by the Natural Resource Management (NRM) groups in the gulf region and funded through the National Landcare Program Smart Farming Partnerships Grant. It provides funding for farmers and organisations to help them implement new and innovative tools and sustainable agriculture practices. The E-Beef Smart Farming project is supported by a comprehensive extension approach and institutional partnerships to accelerate the uptake of whole-of-business grazing best management practices. It aims to improve profitability and the natural resource base across an area more than twice the size of Victoria.

*Aerial spraying of sugar cane near Home Hill on the Burdekin River.*

## Focus: Rebuilding the herd and managing the environment

Livestock production is one of the main business activities in the North West region and was severely impacted by the flood event. As production is predominately underpinned by healthy native pastures, graziers are also integral to the region's environmental management. Producers need to have the right tools (including research, extension and market intelligence) to support rebuilding their herds and protecting their natural asset to ensure long-term profitability.

Producers have said overwhelmingly that information on pasture management and erosion control will be most useful for their immediate recovery[36]. This is consistent with the consensus view among extension officers, research institutions and NRM groups that managing the native Mitchell grass pastures is the key to sustainable productivity and profitability in the region's beef industry.

However, low uptake of proven research and development is a perennial issue for the northern beef cattle industry. While investment in innovative solutions to address new and emerging challenges in the sector must continue, significant productivity and profitability gains can be achieved at a property level by applying existing knowledge and research[37]. The rebuilding and recovery phase following the flood event presents a valuable opportunity to think about new ways to encourage greater uptake of reliable research.

UNDERSTANDING THE FACTS OF THE FLOOD EVENT

### The impact on the North West Queensland livestock industries

Approximately 11.4 million hectares—more than 40 per cent of North West Queensland's grazing lands—were subject to the extreme weather conditions including flooding and the sudden drop in temperature associated with the 2019 flood event. The event killed an estimated 457,000 head of cattle, 43,000 sheep and a smaller number of goats, wiped out about 22,000 km of fencing, and damaged or destroyed 29,000 km of farm roads and tracks, 2,320 km of water pipes and 1350 tanks and troughs. In a survey conducted by the Queensland Department of Agriculture and Fisheries, producers noted that the lack of pasture growth following the event, a poor start to the 2019–20 wet season and the return to drought for a number of shires were responsible for slow restocking efforts. Respondents also noted that severe erosion and the spread of weeds was a key concern following the flood event. Producers indicated that they were interested in receiving more information on pasture recovery, general business, technology, and erosion control.

## Actions for prosperous enterprises

While there are different types of businesses operating across the regions, they can all be supported in similar ways—through locally relevant information and delivery that is tailored to local needs.

**Action:** *Connect business with the best available, regionally relevant information to secure long-term change*

Governments and service providers need to continue working together to ensure businesses have the best available information from sources they trust. This includes maximising available resources, increasing businesses' awareness of available service providers, reducing duplicated efforts and establishing direct communication between centralised policy makers at all levels of government and those on the ground.

Both longstanding and newly created networks of trusted advisors—including Industry Recovery Officers, Rural Financial Counsellors, Regional Recovery Officers, Community Development Officers, NRM groups, and Department of Agriculture and Fisheries Extension Officers—are effective in getting information to people in the regions. These service providers are embedded in the local communities and often have the ability to change programs based on user feedback. New policies and programs need to recognise the value of this grass roots approach and where appropriate work with these trusted advisors to develop and deliver tailored products to support businesses in the regions.



*Michael Bulley's Donut King outlet in Townsville's Fairfield Central Shopping Centre was completely destroyed during the 2019 monsoon flood event.*

**Action:** *Create opportunities to innovate, share ideas and design regionally relevant solutions*

Vast geographic distances in the regions have impacted collaboration-based innovation in many shires affected by the flood event. Creating opportunities that bring businesses together can help start-ups and existing business take advantage of professional networking opportunities, connect with resources, improve understanding of the steps and pathways to business success, and share innovative practices. It would also provide opportunities to share ideas and strategies from outside the regions as well as sharing learnings and opportunities at a local level.

**Action:** *Support innovation and technology that improves business natural disaster management*

Rural enterprises looking to improve day-to-day business as well as plan for and respond to future events will benefit from practical innovation and technology. However, sourcing relevant information is sometimes challenging: it can be stored in unfamiliar and difficult to find locations or not in a format that is easy to translate into practical business operations.

To support increased uptake in technology to improve natural disaster information, research organisations, industry groups and service providers need to work with businesses to help them identify relevant technologies, connect technology providers with end users, demonstrate the value of technologies and provide adoption pathways.

**Action:** *Invest in natural capital and business training to achieve long-term sustainability and profitability*

Having the business skills to make decisions that work with the land's natural long-term capacity has always been central to profitable grazing. When surveyed, producers in the North West listed pasture management and business skills as the two main areas for further information and support.

While this strategy recognises the need for producers to restock and return to pre-flood event business activities, principles for long-term pasture management should not be compromised[38]. Considerable effort and coordination will be needed to ensure producers have the skills, knowledge, resources and tools to allow native pastures to recover while still being able to manage a profitable business. There are many non-government and government service providers operating in this space and it is crucial that they work together to transition producers from the immediate response to longer-term business profitability and sustainability.
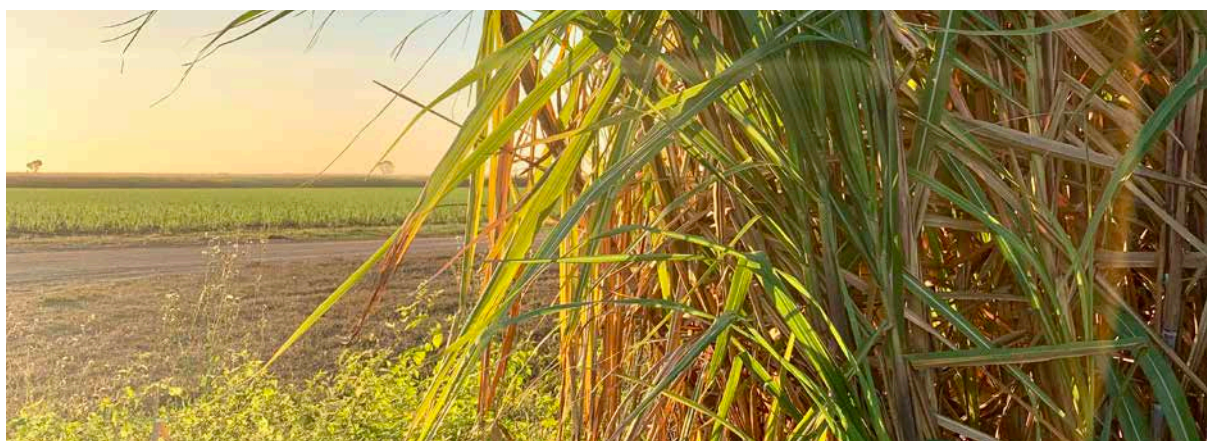


*Sugarcane farm in Burdekin Shire.*

# STRATEGIC PRIORITY 4:
# Fostering connected and cohesive communities

The regions that were impacted by the 2019 flood event have shown the benefits that strong communities can deliver in times of need. These towns, though often small, have demonstrated their ability to manage and cope with substantial challenges. There is a strong sense of local pride, but there is also a realisation that the magnitude of events such as the flood event, and the return to drought have placed a strain on them.

Being part of a connected community with a sense of belonging and emotional wellbeing can overcome the tyranny of distance. Building greater connection and cohesion not only results in improved physical and mental health outcomes, but can also improve social and economic recovery and help halt population decline.

This priority has a focus on mental wellbeing, local leadership and capability, and essential community services.

## Focus: Mental wellbeing

During consultations the Agency heard how important it was for locals to be in the right headspace to make sound business decisions and engage effectively in their return to business and everyday life following a major disaster. Feedback about the mental health support available on the ground following the flood event was positive. It was built on an outreach strategy where personal contact was a priority and driven by local organisations such as the Primary Health Networks (PHNs). However, many people expressed concerns that the expected mental health impacts of the flood event have yet to be fully realised and cautioned against any perception that these services were no longer needed.

There are many opportunities to strengthen the long-term mental wellbeing of the regions' residents by building on the great work undertaken in the aftermath of the event. This includes longer-term investment in commissioned services, supporting multidisciplinary approaches that take a locally driven, place-based approach to mental health support and mental wellness, and better service coordination to reduce confusion on the ground. Of paramount importance is the recognition that support services do not operate in the same way in remote and regional Australia as they do in metropolitan environments.

The method and timing of delivery are also important to the success of mental health and wellbeing activities and services. For example, in addition to formal services, small communities usually have a network of trusted individuals who are relied upon for support on a daily basis. These people are not always formally trained in mental health care, but have a good understanding of how their community is coping. These trusted locals often act as gateways to mental health care.

A focus on tackling stigma and building mental wellness will have positive impacts for economic and social outcomes. Multidisciplinary approaches, such as those adopted by Outback Futures,

can reduce some people's reluctance to use mental health services and open the door to early intervention approaches. This support needs to include both adults and children. As has been recognised already in the region, children exposed to natural disasters can carry anxiety associated with witnessing the aftermath of the trauma and associated stress on their families.

## Focus: Leadership and local capability

Building and supporting the leadership capabilities of the affected regions will support vibrant, sustainable and adaptive communities. Building broader local leadership and capability is also important to promote innovation and economic prosperity.

A key difference between successful rural communities and those perceived as failing is often not due to any inherent natural resources or strategic position, but to an individual or group taking on leadership roles[39]. Investing in community members with strong social connections and the ability to influence others will bolster the leadership of the regions through formal roles (such as local councils) as well as non-formal roles. Recognising and building the leadership capability of the affected regions is important—including the next generation of leaders.

Strong local institutions are also critical: they can ensure tailored approaches to address local issues rather than solutions always being developed and led from centralised decision makers. For example, with Queensland being the most natural disaster-prone state in Australia, stakeholders aspired to be global leaders in the area of disaster management. This would provide an opportunity to build the capacity and capability of a broad range of community members, tap into an accumulated knowledge base, and attract further expertise to the area.

LOCAL LEADERSHIP IS CENTRAL TO ADVANCEMENT AND SUCCESS

### Creating Inspiring Rural Community Leadership and Engagement (CIRCLE)

The CIRCLE program, developed by the Foundation for Rural and Regional Renewal, seeks to create capacity and enhance community leadership in rural and remote communities, tapping into local ingenuity and resources to test ideas and put them into practice. This is a learning process and a way for local leaders to celebrate success stories. The focus is on building stronger leadership skills and enhanced local capacity in communities to be able to consider, plan, prepare and respond to change through innovative solutions.

# Focus: Community services

The ability to attract people to a region not only relies on opportunities for employment but also the availability of services to support the family and community as a whole such as health care, educational opportunities, childcare and appropriate housing. Those living in regional and rural Australia have a reasonable expectation that their access to these services should be the same as in metropolitan areas. Sustainable, flexible and innovative approaches to delivering essential community services are needed to ensure the liveability of the region. Education and health were the top two issues identified as needing the most improvements to attracting and retaining individuals and families to the regions.

The education system provides limited connections to local job opportunities. This is further compounded by many regional and rural areas not having easy access to schools through to Year 12 or the full range of subjects to support entry to university and/or vocational studies. There are also limited local tertiary education opportunities. Improved educational services would help retain a greater proportion of locals who currently leave to undertake study, and also support population growth.

Similar to limited educational opportunities, the range and delivery of health services in rural and regional Australia varies and there are poorer health outcomes compared with cities, particularly for Indigenous Australians. For those living in the regions, not having facilities nearby is often a barrier to accessing specialist services, and in some cases even simple services such as medical tests. Not having facilities and services nearby and a lack of information-sharing between providers can be barriers to accessing the appropriate health care services.



*2019 Winton Outback Festival.*

## Actions for connected and cohesive communities

Fostering connected and cohesive communities is a multi-faceted issue and improvements can be made by a number of interconnected actions.

### Action: *Ensure health services coordinate and increase cross-sector collaboration*

A multidisciplinary approach across all levels of government is needed to manage the overall wellbeing, particularly the mental wellbeing, of people in the regions. Better coordinated, place-based planning and delivery of health services will create more flexible service models. These in turn will improve collaboration and connection across service providers, avoid duplication of service provision and facilitate regionally appropriate delivery methods.

Investment in health services needs to move away from short-term funding cycles to ensure stability for those responsible for delivering and commissioning services. While this may enable communities to build trust and consistency in services and providers, it is ultimately a decision for governments.

### Action: *Focus on preventive health measures*

Stigma and discrimination around mental health remains a considerable barrier to seeking help early. This is compounded in smaller communities where it is difficult to receive care without others being aware of it[40]. Many interventions are only available and/or sought once the impact has reached a severe level, and so increasing the focus on accessing preventative health is important.

Focusing on the mental health and wellbeing of children also needs to be progressed as it can be more problematic for children to access preventative health measures. This could include equipping children (and parents and teachers) with the skills to identify the early signs of mental health stress and knowing where to turn for help to provide important coping mechanisms. It would also be helpful to build coping mechanisms through targeted, repeated mental health programs targeting children and young adults, rather than just one-off activities.

THE FOLLOWING IS A STAND OUT EXAMPLE OF BUILDING RESILIENCE FOR THE FUTURE

### Preventive mental health

The North Queensland Cowboys have partnered with The Resilience Project to build resilient, positive and mentally healthy primary and secondary school communities in North Queensland. The curriculum delivers emotionally engaging programs to schools, with evidence-based practical strategies to help teachers, students and parents understand the importance of practicing gratitude, empathy and mindfulness. As many mental health issues begin before the age of 15, The Resilience Project focuses on reducing this burden through preventative strategies, as well as providing intervention for those struggling with mental health issues.

*Shane Stone and Advisory Board members Don Heatley and David Galvin, with Gerald Aplin, Lleyton Toby, Tristan Toby and Javan Ah-wing at Lawn Hill Station.*

## Action: *Support and fund community infrastructure and events*

Community events foster mental wellness, build cohesion and add to a sense of belonging, as well as facilitating soft entry points to mental wellbeing services. Ongoing support for local activities and events that bring individuals, families and communities together in a relaxed setting and actively encourage the social, emotional and mental benefits is essential. This could include continued support for communities to develop public assets and amenities through existing funding sources.

Where possible, community events should avoid focusing on negative experiences and look instead at positive occasions and building community knowledge and skills more broadly.

## Action: *Support and invest in local leadership capability*

A structured leadership program tailored to the individual needs of communities would help identify local leaders and support people interested in taking a more active role (formal and informal) in the future of their region. It would also bring aspiring leaders together to develop networks to share knowledge, ideas and lessons for developing their regions, and could include a mentor component to provide added support.

Mechanisms to 'support the supporters' are also important. Current leaders and trusted community members need to be well-equipped to cope with supporting others while also managing their own personal stressors. Support people need mechanisms to access training to provide health support to others such as mental health and first aid training.

**Action:** *Build disaster management capability*

Opportunities to develop a disaster management centre of excellence for North and North West Queensland should be explored. In addition to providing a one-stop-shop for expanding local capability in preparing for, managing and recovering from an event, a disaster management hub would provide an opportunity to provide advice and conduct further research into best practice disaster risk management in the tropics and dry tropics.

Investment in a centre of excellence would also help communities develop plans for future natural disasters and better equip them to respond. The National Critical Care and Trauma Response Centre is a model that could be adopted for North Queensland, possibly based out of Townsville.

LEADERSHIP IN CRITICAL CARE AND TRAUMA RESPONSE

## The National Critical Care and Trauma Response Centre (NCCTRC)

Based in Darwin and funded by the Australian Government, the NCCTRC provides clinical and academic leadership in disaster and trauma care, including a local response, education and training, and research capabilities. The NCCTRC has become a local, national and international 'North Australia' success story, and is a key component of the Australian Government's disaster and emergency medical response capabilities. The location of the NCCTRC in Northern Australia ensures that nationally the Centre is prepared to respond to major onshore and offshore incidents in Australia and South East Asia. The NCCTRC played a key role in the 2005 Bali Bombings, 2016 Aceh earthquake and 2018 Tham Luang (Thailand) cave rescue.

**Action:** *Encourage the delivery of innovative educational opportunities for regional areas*

Education providers should explore and implement innovative approaches to support the ongoing needs and aspirations of the flood-affected regions. This would help develop tailored approaches to delivering the curriculum and supporting educational outcomes that recognise the unique characteristics of the regions, including the challenges and opportunities of living in these areas. For example, there are opportunities for schools in the regions to work together to strengthen their delivery of the education curriculum in a way that meets their collective needs, including options for vocational and educational pathways to support key industries in their region.

Investment in innovative approaches that allow students in rural, regional and remote Australia to access higher education without having to leave their community are particularly important. This would help retain and attract young people looking for professional and lifestyle opportunities in the flood-affected region. It could also provide an avenue for vocational education and training and local research opportunities.

# Supporting information enabled regions

Informed communities are not only more able to respond and adapt to sudden changes but also better equipped to make decisions that will directly benefit their day-to-day activities as well as their future prosperity.

This strategy notes the importance of information to strengthening local economies, improving infrastructure and supporting prosperous enterprises. A coordinated approach to collecting data from authoritative sources and translating it into on-the-ground knowledge and actions would help people navigate and use information confidently.

Disasters accelerate the demand for services and information. Sharing of relevant, accurate and timely information that is easily understood and able to be used during a natural disaster is critical[41] so that people can better prepare for and respond to an event.

## Focus: Improved collection and availability of information

Regional communities recognise the importance of reliable access to timely, relevant and credible information. However, while there is significant data being generated throughout the region, access is hindered by inconsistent methods of collection, collaboration and sharing.

Information supports decisions: it is a fundamental part of the way businesses operate and can have significant implications for profitability. From agriculture to tourism to mining, all businesses can benefit from access to better information to provide market intelligence, improve productivity, support planning for emergency responses, and guide long-term investment to ensure ongoing sustainability[42]. Information is also critical for developing government policy.

During consultations, the Agency heard that a key gap was the lack of governance and formal arrangements for facilitating data-sharing. Collaboration and sharing of resources across all levels of government, private entities and the community is particularly important before and during a disaster to ensure everyone has access to the best available information to manage the situation. During the flood event, this was highlighted by the difficulty in collecting and accessing information from river gauges across multiple locations and collected by a range of parties.

The timing of access to information is critical. Some information will quickly lose its relevance and opportunities may be missed. This is extremely important during periods of disaster. Communities are more resilient when they have access to real-time information about disaster impacts[43].

## The Northern Australia Strategic Partnership

In 2015, the Northern Australia Advisory Group, chaired by Shane L Stone AC QC, submitted their final advice to the Northern Australia Strategic Partnership on the development of Northern Australia. One of the recommendations was to establish a spatial data facility in Northern Australia to improve the availability of information and data across jurisdictions (including geology, topography, land use, biodiversity, land tenure, demography, economies and climate) and provide better certainty to potential investors. As flagged earlier, data collected in the north tends to be ad hoc and difficult to access which makes it hard to assess the future economic potential of natural assets and obtain development approvals. It was recommended the facility should engage relevant government agencies, including Geoscience Australia and the Commonwealth's National Environmental Research Program's (NERP) Northern Australia Hub, to help address information and data gaps for environmental approvals under the Environment Protection and Biodiversity Conservation Act. As part of this, the facility should draw upon local landholder knowledge such as the location and quality of productive soils, environmentally and culturally sensitive sites and flood risk areas. This is relatively inexpensive and can provide a rapid information baseline for future detailed surveys. To start filling the gaps, it is recommended Governments look at ways to incentivise the gathering of pre-commercial feasibility data.



*Producers erected this sign to mark the high-water mark of the infamous 1974 flood. No flood waters had come close until it was exceeded during the 2019 monsoon event.*

*Windmill in McKinlay Shire.*

## Focus: Building skills and using information

The Australian Digital Inclusion Index reports North West Queensland (which includes the entire North West affected local government areas) as the second least digitally inclusive region in Australia[44]. It scores well below the national, state and Brisbane urban average in the digital ability indicator for attitudes, basic skills and activities. The problem is compounded by the difficulties in accessing reliable telecommunications. For those people in the North East, particularly the residents of Townsville, the results are far better and on par with the rest of Australia.

People's access to and use of information is contingent on them having the necessary knowledge and skills to use it. This can range from simple skills such as using email to stay connected and receive weather alerts, to complex techniques such as marketing their business or improving farm productivity through mapping and analysing crops with specialised systems and software. The recent #buyfromthebush campaign has shown the power digital outreach can have to support small business, especially during times of adversity[45].

KNOWLEDGE OF THE LOCAL CLIMATE IS JUST A CLICK AWAY

### Climate Mates—making things easier

The Climate Mates initiative is part of the $8 million Northern Australia Climate program, a partnership between the Queensland Government, MLA Donor Company and the University of Southern Queensland. The initiative is helping the grazing industry better manage drought and climate risks through a range of research, development and extension activities. Climate Mates supports local graziers and beef industry leaders to better understand seasonal forecasts and share critical knowledge in their communities. It has project officers in local communities in Queensland, the Northern Territory, and Western Australia where they share critical knowledge, engage directly with producers and offer climate information and forecasts specifically tailored to their region. This service helps producers improve their climate variability knowledge and build skills to help them manage in both the good and poor years.

## Focus: Disaster planning and management

Queensland is the most natural disaster affected state in Australia[46]. To build community disaster management capabilities to respond, prepare and recover from disasters, the risks and impacts must be better understood. Capturing this information in specific disaster management plans is critical. It will help hasten the beginning of recovery, provide guidance in a stressful situation and ensure stakeholders are aware of their responsibilities in recovery efforts.

The Agency heard that information given during and after a disaster must be able to be easily understood by local communities and businesses. This was fundamental to good decision making. Disaster Dashboards managed by LGA's in the North East were promoted as a single source of truth for community messaging during the flood event with the Inspector-General Emergency Management report citing this approach as good practice to maximise existing sources of data, data providers and platforms[47]. Significant disruptions to information sources during the 2019 flood event included rainfall and riverine gauges failing, and emergency notifications not transmitting[48].

## Actions to support information enabled communities

### Action: Ensure information is captured and shared

Innate competition is a barrier to competitors sharing information with each other, as well as with third parties. However, sharing data and knowledge can help introduce new ideas, solidify best practice and improve regional productivity.

It is important to educate people about both existing and newly developed information portals to help the regions become more digitally enabled. Collaboration between landholders, local governments, NRM groups, peak bodies, research institutions and all levels of government will help foster and encourage a data and information-sharing culture. It will also help identify where there might be gaps in existing data and information. Good protocols, transparency and easy-to-use systems are fundamental to successful information sharing.

This could be achieved by establishing a data facility for Northern Australia to improve the availability of information and data across all sources (including geology, topography, land use, biodiversity, land tenure, demography, economies and climate).

Consistent with the Inspector-General Emergency Management Report[49], there would be significant benefits to greater interoperability between the state, district and local disaster management information systems. This would improve access to information and ensure centralised retention of data sources. It would also reduce costs and improve the effectiveness of information management and reporting.

### Action: Build skills and digital capability

Individuals, communities, businesses and industries need to be able to collect, disseminate and analyse information and this requires upskilling.

Affected regions can access a range of programs to help build digital capability. To reflect people's preferences for learning, programs need to target local requirements and skills gaps. This requires a balance of face-to-face training as well as the more standard online courses. There is an opportunity to coordinate current efforts and foster partnerships between local communities and private industries to provide specific programs, relevant mentorship and guidance. Similarly, harnessing those with relevant skills and experience to support peer-based learning would be valuable.

**Action:** *Improve collection and use of disaster relevant information*

Regions must ensure they understand their vulnerabilities and identify possible impediments to implementing mitigation activities at community and enterprise levels. For example, 'Rule of Thumb' guides have been created for the Flinders, Cooper, Diamantina and Georgina River catchments and combine best-available catchment information and local knowledge into a guide for communities to understand how floods might behave.

Understanding these vulnerabilities and what is required to address them will help communities and enterprises secure investment in risk mitigation activities. Increasing opportunities for diverse, interdisciplinary, and collaborative research will help ensure the best possible information is available to assess vulnerabilities and support local disaster preparedness and recovery actions. This includes opportunities for citizen science to support information and data needs.

ACCURATE WEATHER FORECASTING IS ESSENTIAL

## Improvements to weather monitoring

The Bureau of Meteorology (BOM) has recognised that the current forecasting and notification systems are not reaching the community and are looking into a customised region-based outlook to better target weather-related messages. In the 2019–20 federal budget $77.2 million was allocated to enhanced weather monitoring in Queensland including four new weather radars. This includes funding for two new weather radars including 20 new rain gauges to be installed in the Maxwelton and Charters Towers–Hughenden regions to fill the radar coverage gap between Mount Isa and Townsville. It is critically important that the BOM continues to work with the affected communities and other relevant stakeholders to ensure the appropriate data is reliably collected before and during disasters and that data is able to be shared in an easily understood and timely way.



*Old Cloncurry River causeway, Cloncurry.*

*Nuffield Scholar, Colin Burnett at his property Lara Downs, north of Julia Creek.*

# Implementing the strategy

## How will we get stuff done?

Responsibility for achieving the objectives of this strategy does not rest with the Australian Government alone. The Agency will bring relevant stakeholders together and establish arrangements to help communities and governments work together to implement the priorities detailed in this strategy. While new work is needed, it is important to acknowledge that a broad range of local, state and Australian Government policies and programs align with the priorities and are already available.

## Implementation plans

To coordinate efforts, the Agency will establish two groups—one for the North East and one for the North West—to develop implementation plans that build on the substantial work that has already occurred. It is critical that local voices remain central to these plans and that communities take ownership. These will be action-oriented committees.

The implementation working groups will bring together representatives from the Australian Government, the Queensland Government, the LGAs, industry and community leaders and other non-government organisations (such as PHNs and NRM groups). With the Agency's support, the implementation working groups will develop detailed plans, outlining priority activities, timeframes and funding sources to achieve the strategy's objectives. The two groups will collaborate where efforts need to be coordinated.

The implementation working groups will also consider how their work interacts with existing programs and initiatives[2].

## Role of the Australian Government

The Agency has played a critical role providing leadership and coordination in response to the 2019 monsoon trough and the associated flood event. It will continue this role to ensure the strategy and implementation plans benefit from the leadership and coordination the Agency can provide.

The Agency will continue to facilitate Australian Government involvement where implementing the strategy falls within its policy remit, monitor existing Australian Government support, advocate for greater investment in the affected regions, and/or mediate changes to Australian Government policies, programs and/or legislation where required. To encourage the implementation of the strategy, the Australian Government has developed an Action Statement to demonstrate its commitment to the long-term recovery of those affected by the 2019 Queensland Monsoon Trough. It will also continue to work collaboratively with the Queensland Government in areas of shared responsibility.

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2   These include but are not limited to the North and Far North Queensland Monsoon Trough – State Recovery Plan 2019-2021, the Resilient Queensland 2018-21 - Delivering the Queensland Strategy for Disaster Resilience, the Queensland Disaster Resilience and Mitigation Investment Framework 2019, the National Strategy for Disaster Resilience 2011, and the National Disaster Risk Reduction Framework.

*Chinaman Creek Lookout overlooking the Cloncurry River, Cloncurry.*

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