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Keith Andrew Noble

Submitted in total fulfilment of the requirements of the degree of Doctor of Philosophy

July 2016

College of Marine and Environmental Sciences
James Cook University
Acknowledgements

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Our Tully neighbour Chris Teitzel has helped keep the bluebird of happiness circling our farm these past three years, even if it does get lost in the clouds for extended periods. I appreciate all your help Chris, and am looking forward to spending more time there soon.

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And my parents, Ralph and Connie, who set me on this path a long time ago, and continue to guide me from afar.
Statement of the Contribution of Others

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Abstract

Contemporary Australia is seeing a renewed national focus on northern development (above the Tropic of Capricorn), with agriculture as an important component. The history of agricultural production in northern Australia is one of constant perturbations. Therefore, it was seen as essential to seek the views of those with lengthy experience in the industry to determine what factors might contribute to their resilience.

A qualitative Grounded Theory approach through two distinct (but non-sequential) processes - the first literature-based, and the second in-depth semi-structured interviews, addressed these objectives: (1) Determine whether a study of the context, personal strategies, perspectives and operating environment of individuals (now and in the past), could identify and understand the factors and strategies that contribute to or enhance an individual’s chance of achieving successful outcomes; (2) Determine whether such factors and strategies might improve planning and policy, particularly in the consideration and reduction of industry risk.

To address these objectives, the context in which Northern Australian agriculture has operated was considered in order to understand the nature of industry perturbations, and to identify and understand the factors and operational environment that both influence and contributes to the ability (or otherwise) of individual industry participants to survive and prosper. Phenomenographic analysis of 66 interviews, conducted across a range of farms and related agencies, identified four themes of (1) Situational Awareness, (2) the Ability to Plan, (3) the Ability to Adapt, and (4) Social Connectedness: which illustrate resilience strategies farmers used. Inter-twined through these was the Perception of Fairness, which relates these attributes to a broader sense of agency, and which acts as an enabler of the resilience individuals derive from the implementation of their strategies. It is proposed that this sense of fairness needs to be fostered through ensuring a deliberate process of engagement, consideration, and inclusion of impacted communities during policy development, particularly for policy that bonds communities and cultures within their environment.

This identification of the Situational Awareness, the Ability to Plan, the Ability to Adapt, Social Connectedness and perception of Fairness through a Grounded Theory Approach contributes a new understanding of resilience. This understanding is from the perspective of those who have lived the experience, rather than predetermined notions of what constitutes resilience. In different ways, these factors may also apply for those who have left the industry, and for people in other contexts.
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<td>AACO</td>
<td>Australian Agricultural Company</td>
</tr>
<tr>
<td>ABARES</td>
<td>Australian Bureau of Agricultural and Resource Economics and Sciences</td>
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<tr>
<td>ABC</td>
<td>Australian Broadcasting Corporation</td>
</tr>
<tr>
<td>ABS</td>
<td>Australian Bureau of Statistics</td>
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<tr>
<td>ANU</td>
<td>Australian National University</td>
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<tr>
<td>BOM</td>
<td>Bureau of Meteorology</td>
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<tr>
<td>CEDA</td>
<td>Committee for Economic Development of Australia</td>
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<tr>
<td>CSIRO</td>
<td>Commonwealth Scientific and Industrial Research Organisation</td>
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<tr>
<td>CSR</td>
<td>Corporate Social Responsibility</td>
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<tr>
<td>DAFF</td>
<td>Department of Agriculture Fisheries and Forestry</td>
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<tr>
<td>EMS</td>
<td>Environmental Management System</td>
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<tr>
<td>ESD</td>
<td>Ecologically Sustainable Development</td>
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<td>GFC</td>
<td>Global Financial Crisis</td>
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<tr>
<td>IAG</td>
<td>Industry Advisory Group (to Terrain NRM Ltd)</td>
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<td>IPCC</td>
<td>Intergovernmental Panel on Climate Change</td>
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<td>JCU</td>
<td>James Cook University</td>
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<td>MBI</td>
<td>Market-based Instruments</td>
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<td>NADC</td>
<td>North Australian Development Committee</td>
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<td>NARU</td>
<td>Northern Australia Research Unit</td>
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<td>NASA</td>
<td>National Aeronautics and Space Administration</td>
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<td>National Broadband network</td>
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<td>NDRRA</td>
<td>Natural Disaster Relief and Recovery Arrangements</td>
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<td>NFF</td>
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<td>Natural Resource Management</td>
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<td>NGO</td>
<td>Non-government organisation</td>
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<tr>
<td>OECD</td>
<td>Organisation for Economic Co-operation and Development</td>
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<td>OTC</td>
<td>Overseas Telecommunications Commission</td>
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<td>PES</td>
<td>Payments for Ecosystem Services</td>
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<td>Planning Institute of Australia</td>
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<td>QFF</td>
<td>Queensland Farmers Federation</td>
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<td>RDA</td>
<td>Regional Development Australia</td>
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<td>WWF</td>
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Preface

A long, long time ago, but I can still remember

‘Fly away little bluebird, I guess you’ll have to find another farm’
Mark Knopfler Privateering (2012)

Here, for two reasons, some personal history relevant to this thesis is provided: first, to help the reader better understand the author’s orientation and motivation; and second, because the present is so heavily influenced by and cannot be separated from the past (Bourdieu, 1984).

Early in my third year of school, circa 1964, we young students had to stand and tell the class about ourselves. I told my classmates I probably wouldn’t be around for long, as my dad was going to buy a farm and we would be moving. Nine years later, I completed high school just up the road from that primary school – still in Brisbane. My father had never actually said we were moving, but he did talk a lot about buying a farm and we did go and look at a few, so my young mind had just joined the dots. The concept obviously had appeal, and stuck.

November 2000: four days drive in a truck containing our worldly possessions from the Gibson Desert, Western Australia to Far North Queensland; with our three red dogs sharing the cab. From one of Australia’s driest regions to Tully, a Pretty Wet Place\(^1\) in the Queensland Wet Tropics, where they measure rainfall in fathoms\(^2\). We were moving to our farm – a 31 hectare established tropical fruit and taro property rising up the slopes of the Walter Hill Range at East Feluga, north east of Tully, and the wet season had arrived early.

Thirty-six years after first talking about it, I moved to a farm – our farm. Though I won’t pretend this had been an unwavering course through my life, when there was a choice to be made, generally the path that headed towards a farming future was the one chosen. I studied agricultural science at university, took my first job at

---

\(^1\) The slogan on the Tully “Gumboot”, a 7.9 metre high rubber boot replica at the entrance to Tully that indicates the height of Tully’s record annual rainfall recorded in 1950.

\(^2\) A unit of length in the old imperial and the U.S. customary systems equal to 6 feet or 1.8288 metres, used for measuring the depth of water. Sometimes used in a humourist sense by residents when describing Tully’s rainfall.
Toowoomba – a large agricultural service town in South-east Queensland, and then steadily worked my way further west. I enjoyed a range of jobs in agriculture and natural resource management for state and federal governments, and discovered the joy of being part of small regional communities: where I discovered the butcher sold raffle tickets at the RSL on Friday nights and ran the pony club on Sunday, where everyone knew everything about everyone and what they didn’t know they made up, but with a care and consideration for other people that once experienced, I valued. From Gatton to Longreach to Broken Hill (where I met my wife), to Charters Towers to Townsville (where I married her), then Alice Springs and on to Warburton Ranges (a Ngaanyatjarra Aboriginal Western Desert community in Western Australia) and all the small places in between, it was the same: people looked out for people, and respected and appreciated the contributions made by others. The pinnacle, in my mind anyway, was always those people who worked directly with the land – they had a pride and confidence that I admired, and aspired to be part of.

So in the early hours of Monday 20th March 2006, when Cyclone Larry blew out the 600 new fruit trees we’d planted, it was only natural that our first thought was to rebuild our farm and the emerging tropical fruit industry we had become part of. After all, we’d had our one-in-a-hundred year storm, so we’d be right now!

Third of February, 2011: Severe Tropical Cyclone Yasi, category five, crossed the far north Queensland coast near Mission Beach, between Cairns and Townsville, bringing peak wind gusts estimated at 285 kilometres per hour. The eye went right over the top of our farm, giving 40 minutes of deceptive calm before the winds snapped back from the opposite direction – demolishing everything that the first onslaught had weakened. Not only were the 800 trees we’d replanted after Larry (and picked our first fruit from the previous year) gone again, along with our new machinery shed and a good part of our roof - that night the tropical fruit industry ceased to exist as an industry, with survivors slipping back 20 years to a state of disconnected individual growers.

Those trees weren’t getting planted a third time, but I didn’t know what to do next. That farming picture had been in my head so long I believed it was a permanent
fixture. Certainly the next slide wasn’t queued and ready to view. This thesis is a direct outcome of that shattered dream. It is in part me making sense of what happened – moving beyond feeling a victim of circumstances, and understanding and accepting that ‘life is what happens to you when you’re busy making plans’ (Lennon, 1980). It is also, in part, an attempt to understand why I wanted to ‘go farming’ in the first place. But more importantly it aspires to contribute to an enhanced understanding of the operational context of Northern Australian agriculturalists, particularly at a time when a substantial industry expansion is being contemplated and, in some sectors, promoted.

But first, a story: When I commenced this PhD, I was introduced to the faculty tea room as a climate change refugee. This took me aback, then led me to reflect on what was the role of climate change in my present circumstances? It is an important consideration, which I will illustrate later through Vignette3 Two The Cutten Brothers and Climate Change.

I have used a series of vignettes in this thesis to illustrate the concepts being discussed, but they also illustrate the humanity of agriculture. All too often when agriculture is being discussed, it is in the context of facts and figures: yields, production schedules, contribution to GDP, seasonal forecasts, return on investment. The vignettes are included to illustrate or reinforce specific points, but they are also included to remind the reader that farming is carried out by farmers – by people, and everyone has a story to tell.
Chapter One

Introduction

The question of questions for mankind - the problem which underlies all others, and is more deeply interesting than any other - is the ascertainment of the place which Man occupies in nature and of his relations to the universe of things.

Huxley (1863, p. 71)

Robert Christison is the subject of the first vignette. He came to Australia with nothing, settled in the north, and left a wealthy man - but not by choice. He was torn between the love of his adopted country, for which he was a great champion; and his family, who suffered the trials of climate and deprivations of isolation, along with limited access to health and education services. And so it continues today: while many women effectively operate in and champion Northern Australia, it remains predominately a culture of masculine challenge necessitating sacrifice by other family members which, until addressed, will continue to limit development of a diverse and stable resident society.

But there is much more in the Christison story: in a time renowned for the exploitation of and cruelty towards Australia’s first people and Traditional Owners, Christison championed their cause; he looked globally for markets and innovation; and he demonstrated an ethos of environmental awareness and sustainable land management. In fact, this one man’s life could be an allegory for a vision that continues to manifest right through to the 2015 Our North, Our Future: White Paper on Developing Northern Australia (Australian Government, 2015b).

Christison’s story demonstrates how from early European settlement there has been a vision for Northern Australia that many have strived to achieve, while the perceived obstacles continue to be relatively the same: distance, disaster, an unsympathetic southern government. Just because Christison did not achieve his vision in its entirety does not mean he was not successful. He was very successful as an individual, and those that came after built on his success. But that is not the story of Northern Australia – it is not the story of Australia – it is the story of people and society. Whether Christison’s vision is ever achieved however is not a question of success or
failure, it is a matter of unresolved collective decision-making.

**Vignette One: Christison of Lammermoor**

Robert Christison (1837-1915) left Scotland aged fifteen on a borrowed fare for Australia’s goldfields. Arriving in Melbourne without friends or money, he found sheep work on the Werribee and discovered a sense of fellowship and pride in *the bush*. From sheep he turned to horse-breaking, survived attack by bushrangers, quickly abjured the lottery of mining and, after taking lessons in navigation, struck out in 1863 for new country which he might farm. Travelling north from Bowen (Queensland) he chanced upon the explorer William Landsborough, whose account of his search for Burke and Wills Christison knew by heart. Following a route described by Landsborough, Christison came to the Great Divide’s western watershed and air that was ‘lighter and drier ... of diamond brightness’; and in his mind, saw the Lammermoor Hills in Scotland. This was to be his home.

He built sheep yards, horse yards, and then a house, whilst determinedly making peace with the resident Dalleburra Aboriginals – ‘*country belonging to you: sheep belonging to me*’. Joined by his two brothers, (William had witnessed ‘*the trouble*’ [sic] at the Eureka Stockade), they weathered the depression of 1866-69 when wool sold for seven pence a pound, the local bank failed, and nearly a thousand runs were abandoned in the unsettled districts4. In 1870 a cyclone destroyed Townsville and flooded the west - landholders who didn’t know they’d built by a watercourse spent weeks on their roof watching trees and hard work flow by. Floods were followed by financial crisis, so Christison set off on a nine-month journey walking 7,000 sheep to Adelaide. Discovery of gold at Charters Towers in 1872 brought hope to the region; Christison bred Hereford cattle and prospered.

But brother Willie drowned crossing the flooded Burdekin River, which turned Robert’s mind to family; so, in 1877 he returned to Edinburgh, gifted a third of his lands to his sister and her husband, and fell in love. Though his wife declared Lammermoor heaven, she succumbed to malaria, leaving Christison bereft and melancholy. Queensland’s trade in tinned meat collapsed when the United States began shipping fresh meat in ice to Britain.

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4 In an effort to stem this abandonment, changes to the *Pastoral Leases Act* in 1869 permitted freehold purchase of 2,500 acres
Challenge drove innovation, and Thomas Mort established the world’s first freezing works in Sydney, declaring ‘the time has arrived ... when the over-abundance of one country will make up for the deficiency of another’. Christison again visited Scotland, remarried, and in his enthusiasm established The Australian Company which built freezing works at Bowen. On the evening of 29th January 1884 beef was being frozen to ship next morning on the Fiado, when an ominous silence proclaimed a change – a cyclone. By noon next day the wreck was complete: the Fiado beached, and Bowen in ruins. Christison refused to deplore the loss ‘for we shall yet see factories studded all over Australia’.

But drought followed, and the death of a son; a change of government raised rents and resumed leaseholds with no entitlement to compensation, resulting in ‘stagnation and widespread misery ... more ruinous than drought’ and the closing of all freezing works. Christison’s brother died suddenly, and his wife declared she would return to London for the sake of the children.

Visiting his family, Christison called at Pasteur’s Paris laboratory and learnt of a stream of artesian water obtained from 1,800 feet, and his active mind turned to the spectacular floods that disappeared into the porous desert sandstone and rarely reached western waterholes. He ordered a boring plant in Sheffield which proved inadequate for Australia’s hard rock, but a Canadian plant struck water.

In 1898, 46 years after arriving in Australia on a borrowed passage, Lammermoor had 500 Arabian horses, 40,000 cattle and a stud herd second to none, with every slab of the house and post in the yards split by himself. The 1899 drought proved the wisdom of Christison’s light stocking and network of sub-artesian wells; but as the drought continued through 1903 the effort of maintaining stock and pumps and an increasing overdraft took their toll on his heath, and he pined for his family. So, when rain came he decided he must sell to provide for them, but would not discuss anything ‘till [the Aboriginal’s] right to remain on the station as their home is settled’. Robert returned to Scotland and is buried at the foot of the Lammermoors.

[Extracted from M. M. Bennet, Christison of Lammermoor (London: Alston Rivers Ltd. 1927)].
1.1 Positioning the Research

Northern Australia is vast, over 40 percent of the mainland continent; geographically diverse; alternatively, and at times simultaneously, very wet and very dry (Lawn, 2011). Precisely what comprises Northern Australia does vary according to the context of the discussion, but for this study the description is aligned with that used by the 2015 Our North, Our Future: White Paper on Developing Northern Australia (Australian Government, p. 132): ‘those parts of Western Australia and Queensland above the tropic of Capricorn (see Plate 1.1 Entering the Torrid Zone\(^5\)) as well as all of the Northern Territory’.

![Plate 1.1 Entering the Torrid Zone - road sign on the Aramac-Ilfracombe road](image)

Source: K. Noble

It is a unique part of the tropics: with an enormous natural resource base yet remarkably small human population\(^6\), operating in a democratically governed first world economy.

\(^5\) Aristotle divided the world into Temperate (habitable), Torrid and Frigid zones. He viewed the ‘Torrid Zone’ as an inhabitable region of oppressive heat and pestilence (JCU, 2014)

\(^6\) Around 1.3 million people – or 5% of Australians – live in the north (ABS, 2015)
This situation is at odds with international trends, where almost half the world’s population live in the tropics and tropical economies are growing 20 percent faster than the rest of the world (JCU, 2014, p. xii). The world’s population is projected to exceed 9 billion people by 2050, and it will be accompanied by an increase in the middle class demographic (DAFF, 2013b) - Kharas (2010) predicts that more than half the world’s middle class will be Asian by 2020. This larger, wealthier population will require more food, and food of higher value. Linehan et al. (2012) speculate that the real value of global food demand in 2050 is expected to be 77 percent higher than 2007 levels, with most demand coming from Asia, particularly for meat and processed foods rather than traditional staple grains. It is unlikely Asia will achieve food self-sufficiency (Andrews & Gunning-Trant, 2013; Cole & Ball, 2010). These projections have been widely interpreted by government and industry to provide opportunities for the growth of Australian agriculture, particularly in the under-developed north.

A viable and diverse agricultural industry already exists in Northern Australia, with beef, sugar, dairy, corn, sorghum, peanuts, avocados, mangoes, nuts, chia, and a myriad of fruits and vegetables, as well as plantation timber including sandalwood. Agriculture is a major contributor to Northern Australia’s economy, with a gross forecast value in 2015-16 of $57.13 billion providing $43.4 billion in export earnings (ABARES, 2015). For Far North Queensland, direct primary industry turnover in 2008-09 was estimated at over $1.7 billion, with direct employment of about 9,000 people (RDA, 2011). Australia is the world’s largest exporter of sheep and cattle, and eighty percent of exported cattle are from the north of the continent, valued at $416 million in 2006-7 (Gray, 2009), and in 2015 AACo opened their new Livingstone Beef facility – an abattoir near Darwin with eventual processing capacity of 1,000 head per day (McGauchie, 2015). Paralleling this diversity of agricultural production is the nature and scale of enterprises involved in production – from traditional family farm operations through to large corporate-owned operations, and from specialist peri-urban niche producers through to extensive leasehold grazing operations over hundreds of thousands of hectares. Further expansion of agriculture in Northern Australia is being actively promoted and arousing national interest, as demonstrated

This thesis relates to the mechanisms and strategies primary producers adopt to manage the set-backs and adversity they face as part of farming in Northern Australia, particularly in the contemporary context enthusiastic for an expansion of Northern Australia’s agricultural capacity. It does not intend to address the textural questions of which crops, what markets, or specific agronomic and animal husbandry practices related to any expansion of agricultural production. Rather, the focus is on the resilience\(^7\) of individual producers involved in primary production in Northern Australia: the manner in which they cope with adversity and disaster\(^8\), and how under such conditions many actually prosper.

It is social research, and as such, stands at the intersection of a number of disciplines in an attempt to ground individuals, and the events that affect them, into the broader social context of humanity. For, as Habermas (1972, pp. 155-156) points out,

‘Life histories constitute themselves not only in the vertical dimension as a temporal connection of the cumulative experiences of an individual. They are also formed at every moment horizontally at the level of the inter-subjectivity of communication common to different subjects’.

This focus is therefore not intended to in any way diminish or devalue the importance to primary producers of access to technical information and advice, or the need for on-going research, development and extension efforts in agriculture. Rather, the intention is to demonstrate that the use of such tools and information is not context-free, and that an improved understanding of the contextual situation and world view of primary producers could have a demonstrable benefit in improving policy development and alignment, as well as the individual primary producer’s ability to

\(^7\) An often used but loosely defined term, increasingly associated with community and individual response to adversity, and which will be considered at length in this thesis.

\(^8\) The United Nations International Strategy for Disaster Reduction defines disaster as a ‘serious disruption of a community or a societies functioning, causing widespread human, material, economic and/or environmental losses which exceed the ability of the affected community or society to cope using its own resources’ (ISDR, 2006, p. 5).
consider and utilise such information.

This enquiry started a long time ago – during my early professional career when I spent considerable periods conducting (initially) solo biological surveys in central and north Australia and (subsequently) pest and weed management research and extension, repeatedly visiting many remote properties over a nine-year period. This interaction provided the opportunity to get to know people, while the distances travelled provided the time to reflect on their particular situation. I wondered what their life would be like to live – what would be the good aspects, and what would be hard; and how might I cope if the roles were reversed. The thinking and perspective that flowed from such contemplations continued to feed my pre-existing desire to go farming (though I realised that I would have to find a start a few points removed from the extensive pastoralist scale in which I worked), but they also continued to occupy my thoughts long after the work was finished. I wondered what made farmers tick?

Then, while working as a pest management Extension Officer in the early 1990s, the disassociation between scientific and farmer’s knowledge confronted me, and particularly the disregard some scientists had for the practical experience and opinion of farmers. While I knew this view was not universal, a specific instance made me consider how better outcomes could be achieved if these knowledge systems could work together. This thinking resulted in my Master’s thesis, which considered community participation in natural resource management (Noble, 1997).

In 1997 I found an opportunity for affordable entry into farming: the tropical fruit industry; which was at that time transitioning from a loose collection of individual growers into a cohesive entity with a promising future. The industry offered good returns from small acreage, it was situated in a beautiful part of the world (Queensland’s Wet Tropics), and while most people in Australia didn’t know what a rambutan⁹ was, everyone who tried one liked them. Industry members had a shared sense of purpose and values which aligned with my prior experience and

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⁹ Rambutan (Nephelium lappaceum) is a medium-sized tropical tree in the family Sapindaceae. The name also refers to the fruit produced by this tree. Rambutan is native to the Malay-Indonesian and other regions of tropical Southeast Asia.
We embraced farming enthusiastically, confident that our professional skills could complement existing industry knowledge, and were instrumental in establishing a central-packing shed to deliver economies of scale for smaller growers. Next came a grower-owned marketing company exporting fruit direct to Japan while providing coordination (and price stability) to the Australian market. Things were going well – the industry was growing, farm prices were rising as new people joined, and I felt our contribution was valued (see Plate 1.2).

This sense of purpose disappeared in the aftermath of Cyclone Yasi, which cut a swathe through Far North Queensland’s natural and production environments, compounding the impact from Cyclone Larry five years previous. Unlike Cyclone Larry, Yasi occurred in the aftermath of the Global Financial Crisis and in the context of a high Australian dollar and a ‘summer of disasters’ throughout eastern Australia. The tropical fruit industry ceased to exist overnight, apart from a few isolated remnants, along with co-ordinated marketing and farm values. Whereas nine months later the banana industry, despite 90 percent of production being wiped out, was
again facing chronic oversupply and below cost-of-production returns to growers. Then the ban on live cattle export to Indonesia, compounded by widespread drought conditions, devastated Northern Australia’s principal agricultural industry – extensive grazing, and I realised that whether an act of God or an act of parliament, a disaster was a disaster.

It was while endeavouring to ‘come to grips’ with my personal post-cyclone situation (see Plate 1.3) that public discussion around developing Northern Australia, and in particular an expansion of Northern Australian agriculture, came to the fore. I wondered how any industry expansion could be contemplated when the incidence of such (climate related) disasters was predicted to increase as a consequence of climate change (King, 2010), with less climatic predictability and more disasters impacting upon an increasing and more vulnerable population (ISDR (2008), Barratt et al. (2009), Handmer et al. (2012), Prabhakar et al. (2009)); and particularly when regional and remote communities in tropical Queensland were thought to be among Australia’s most vulnerable in the face of climate change (Dale et al., 2011).

I wondered what made people stick to such a hard game; and, more importantly, why some people appeared to not only survive, but to prosper through adversity.

Plate 1.3  East Feluga, February 2011 - the author and his son contemplate life post-cyclone Yasi

Source: T. Dennis
1.2 Aims and Scope of the Study

The second decade of the twenty-first century is not the first time grand plans have been espoused for Northern Australia, founded on the premise of underutilised land and bountiful water resources providing the wherewithal to feed the world’s starving millions. Consider though that contemporary farm returns in Australia often fail to meet production costs, the social, environmental and climatic unknowns associated with increased agricultural scale, and the inherent risks in agriculture, and suddenly the future does not seem quite so clear.

Agriculture is an industry connected across scale, commodity, and community, and this innate capacity has delivered many demonstrations of innovation and success. Small growers need larger growers to attract infrastructure and service provision, but often smaller growers are the innovators who precede wider adoption. Collaboration has provided spectacular outcomes: recognition of the value of zebu cattle by Monty Atkinson in 1926 eventuating in the Droughtmaster beef breed; the 2004 industry-driven eradication of Black Sigatoka disease from north Queensland bananas; the whole-of-industry Brucellosis Tuberculosis Eradication Campaign (BTEC); and the Natural Disaster Relief and Recovery Arrangements response to twenty-first century cyclones and floods. With experience and persistence past ‘failures’ are showing signs of success, for example, the recent sale of the Ord Stage II irrigation development to Chinese interests (Barnett & Grylls, 2013), expanding banana production at Lakeland Downs (particularly post-cyclones), and interest in dryland rice production in the Tully district of Queensland.

Now is a strategic time to consider how a growing Northern Australian agricultural sector can better prepare itself for the natural, social, and economic pitfalls it will encounter along the way; while embracing the principles of sustainable agriculture, and recognising and nurturing the existing tropical agriculture expertise. With this in mind, Walker et al. (2010) propose featuring resilience and transformability alongside productivity as major objectives of research, as literature suggests that not only are resilient organisations about surviving, but thriving; and the dynamic relationships between vulnerability, resilience, hazard impact, hazard change,
adaptive capacity and social change in the context of climate change and disasters can inform approaches to planning for and developing community-based approaches to adaptation (Cottrell et al., 2011).

The importance of understanding a participant’s perspective is supported by other researchers; for example, when considering reasons behind sub-optimal adoption of seasonal climate forecasts by graziers for managing climate variability, Marshall et al. (2011, p. 514) found that social factors, not technical factors, were significant, and hypothesise that:

‘Factors that make resource-users dependent on natural resources (such as attachment to occupation and place, education, employability, environmental attitudes, local knowledge, and the quality and extent of formal and informal networks) act to influence resource-users in their decisions to adopt strategies that could enhance their capacity to cope and adapt to climate variability.’

Therefore, insights into and improved understanding of how farmers think about and interact with their situation, along with clearer understanding of the inter-relationships around this thinking, could provide opportunities for planning and improving the resilience of farmers dependent on climate-sensitive resources. Furthermore, it is particularly important that this knowledge is sourced directly, and not filtered through a pre-existing theoretical construct.

There was never an intention within this study to consider the specifics or merit of what, how, or where to farm; and these decisions should be left to the people and enterprises concerned, as the complexity and inter-relationship of factors affecting success vary for every situation. However, there are factors that affect the capacity of individuals to establish and maintain successful agri-business enterprises that are influenced by government policy settings, some of which could be improved at minimal cost to society, yet deliver significant improvements in individual capacity to adapt to their operational and social environment.

The aim of this thesis is, through a study of the context, personal strategies, perspectives and operating environment of individuals within Northern Australian agriculture (now and in the past), to identify and understand the factors and
strategies that contribute to or enhance an individual’s chance of achieving what they perceive as successful outcomes. It was thought that crisis or disaster would provide focal points, but were not the limit for discussion. A further aim was to determine whether these factors and strategies might be used to improve planning and policy outcomes, particularly in the consideration and reduction of industry risk.

Obviously, absolute coverage either geographically or across the existing breadth of industry would be beyond the scope of this study. However, the intention was to consider a sufficient breadth of industries and regions to enable a proper analysis of perspectives from Northern Australian agriculture participants, rather than an industry or regional perspective.

1.3 Research Questions

The broad objective of the research was, through a review of academic and grey literature filtered through personal industry experience and current research, to identify whether today’s aspirations to expand Northern Australian agriculture differ from past attempts, and specifically what role an individual’s approach and attitude might play in their success; or, to put it in the language of the participants, what made them ‘stick at it’? It is from this position that the following research questions were constructed:

- What factors affect a farmer’s decision to stay farming in Northern Australia?
- What are the strategies farmers use to deal with risk, adversity and uncertainty?

The end purpose of this thesis was to identify whether key elements could be identified and contextualised: the consideration of which might assist contemporary planners and policy makers better engage with, and deliver results for, Northern Australian agriculture, as policy that is silo-based and implemented at scales removed from, or without engaging with, the local context can lead to maladaptive responses. A further objective, though, was to contribute to the theory on resilience thinking and adaptation with respect to farmers, and (possibly more importantly)
provide some link or connection between the implications of such thinking and the actual farmers and communities of Northern Australia.

1.4 Thesis Structure

I have attempted to take my personal experience working in agriculture and natural resource management throughout regional Australia, combine this with a broader understanding of regional communities, current industry experience, and a historical analysis, then focus this mix through the lens of contemporary northern development aspirations, with the intention of deriving a better understanding of what characteristics and processes enable individuals to survive and prosper in North Australian agriculture – their resilience (see Figure 1.1).

Chapter Two explores the extent and variation of resilience concepts and theory across many fields of science. This is then related to popular usage of the term to explain why an appreciation and reconciliation of the two ontologies are so important for improved governance and policy development within agriculture in an increasingly globalised world.

Chapter Three provides a history of agricultural development in Northern Australia, before progressing through a consideration of historic and contemporary challenges and drivers (regional, national and global). This information is then considered against existing policy paradigms and the perennial challenges of infrastructure provision, before moving to Chapter Four and a framing of Northern Australia’s agricultural future.

Chapter Five provides the theoretical position and how it relates to the research questions. The emergence and evolution of my methodology within the social sciences is described, and why it is such an important element of both why and how this research has been approached. The methods used for data collection and analysis are described, and the emergent research themes introduced.

Chapters Six to Nine relate to the dominate themes that emerged from the data: the strategies that people use to cope with adversity. Separation of the themes is a
construction of the research process, and they are considered individually simply as a heuristic device. They are brought together through a unifying thread and their inter-relationships and synergies discussed in Chapter Ten, whereupon the findings are related to a policy and planning context along with discussion of opportunities for incorporation and use in future decision-making processes.

The concluding chapter, Eleven, reflects on the project process, conclusions, limitations, theoretical contribution, and future research opportunities.

Figure 1.1 Scoping the study - PhD Flowchart

[Diagram: Scoping the study - PhD Flowchart]
Chapter Two

Resilience Discourse and Adaptation Strategies

‘Humanity looks to the future, and wants some of what it now values to be there.’
Claudia Juech and Bethany Martin-Breen (2011)

The term resilience often appears with terms such as sustainability, vulnerability, and robustness, though the relationships between these terms are often quite loose and used to describe ‘particular ends rather than theoretical constructs’ (Martin-Breen & Anderies, 2011, p. 47). Reghezza-Zitt et al. (2012, p. 1) describe resilience as a ‘fashionable concept’ which is ‘now a must in both academic research and management’, a view which could be supported by Xu and Marinova’s 2013 analysis which identified more than 900 cited papers published on the topic of resilience since 1973 (from the Web of Science database), with a strong upward trend.

However, Martin-Breen and Anderies suggest that there is ‘important information captured by studying resilience, information that is traditionally not studied or left out’ (p. 52), and that in studying individual objects, including persons, ‘using resilience can fill a knowledge gap’ (p. 50). This view is supportive of the premise by Ungar et al. (2007) that tensions are dynamic, converging in different ways across time and throughout a person’s life, and that it is at the intersections of these tensions that what constitutes resilience in any given culture or context is revealed: resilience is about finding a way to live in relative comfort despite contradictions and conflicts; to continue to navigate and negotiate challenges. Unger et al. believe that in this way, resilience is not a permanent state of being, but a condition of becoming better. Whilst conventional adaptation approaches emphasise adjustments to move towards a desired state that reduces risks, resilience puts greater attention on building capacity to cope with future change (Brown, 2016).

These views were fundamental to the undertaking of this study. In many instances, agencies are locked into short-term planning and project cycles and do not have the capacity, resources, or resolve to look at longer-term changes and drivers. One intention was to develop an improved understanding of what constitutes resilience
in Northern Australian farmers, which in turn could assist policy alignment supportive of such individuals and their communities, for the benefit of all Australians.

2.1 Conceptualising Resilience: Origins and Evolution.

Resilience theory in ecological systems is a well-developed and quantifiable field of science describing the capacity of a system to absorb disturbance and reorganise while undergoing change so as to still retain essentially the same function, structure, identity, and feedbacks (Walker et al., 2004). Barrett (2013) is very direct, stating that while ecological resilience theory is well developed and quantifiable, social resilience is presently more ‘an ubiquitous buzzword with a lot of arm-waving’, but that there is a ‘big opportunity for ecologist – economist collaboration’ in this area (see also Brown (2014). However, in an exploration of the existing literature on resilience with respect to disasters, Boon et al. (2012, p. 384) found the earliest studies to use the term resilience appear to be the 1940s work of Garmezy, Werner and Smith which ‘focused on understanding the development of psychopathology in children “at risk”’, and thereby predating the widespread adoption of the term into ecosystem science. The closely related term of robustness (also used in psychology) is more often applied to designed rather than predominately self-organising systems, where resilience is more commonly used (Martin-Breen & Anderies, 2011, p. 47).

Zhou et al. (2010, p. 22) identified twenty-eight definitions of social resilience, with many of the discrepancies in meaning ‘arising from different epistemological orientations and subsequent methodological practices’. Skerratt (2013, p. 36) explains that although international literature does not share a consensus in the definition of resilience or of community resilience, the spectrum of literature on rural community resilience is ‘wider than bounce-back from external shock’, and Kaplan (2009, p. 64) observes that when discussing resilience in this context ‘competence in resolving issues in one developmental period does not predict later competence in a linear, deterministic way’. Masten and Obradovic (2006, p. 22) caution investigators that ‘resilience definitions are embedded in cultural, developmental, and historical contexts, even if these contexts are assumed rather than made explicit’.
There are however terms that have acquired specific meaning within the social resilience literature around the concepts of adaptation and coping. Adaptation is adjustment in the face of change and can be positive, negative or neutral, and is a key concept of evolutionary theory. It is also different from adaptive capacity. Adaptive capacity can be increased through adaptations that accurately and effectively respond to events. This is different from a coping strategy, which can be seen as an iterative process of individual, intentional change in response to a stressor; sometimes viewed as a low level adaptive behavior (Dale et al., 2011).

Martin-Breen and Anderies (2011) undertook a rigorous literature review on resilience (commissioned by the Rockefeller Institute), and concluded that within the scientific domain that focuses on the interactions between people and environment, resilience has evolved into an intellectual framework for understanding how complex systems self-organise and change over time, though the relationships are still quite loose and often used to describe particular ends rather than theoretical constructs. They found that in complex adaptive systems, resilience is best defined as the ability to withstand, recover from, and reorganise in response to crises: ‘Function is maintained, but system structure may not be’ (p. 7).

Resilience can also be generally defined in two broad ways: as a desired outcome(s), or as a process leading to a desired outcome(s) (Kaplan (1999); Winkworth et al. (2009)), and as such can be investigated at any level: individual, community, organisation or eco- system; though ‘no single level is the “correct” one for analysis’ (Zhou et al., 2010, p. 30). In fact, the level one chooses for investigation depends on ‘the issue or question of interest. Conceptually, the simplest level of investigation is individual resilience’ (Boon et al., 2012, p. 385). Zhou et al. (2010, p. 26) ask:

‘Is resilience the opposite of vulnerability? Is resilience a factor of vulnerability?
Or is it the other way around? It is not easy to provide single answers to these questions. Addressing this relationship is important in defining the meaning, implications and applications of resilience’.

Through an article screening process on disaster resilience literature, Boon et al. (2012) found that individual resilience is described differently from community
resilience, and that there is a challenge in relating the two because ‘existing models are from either the psychological or sociological perspective, but without an integration of the two’ (p. 389). With respect to individual resilience, most studies indicate it to be partly a trait and partly dynamic process, and that it can be promoted by two groups of generic factors:

1. Personal attributes such as social competence, problem solving, autonomy, self-efficacy and sense of future and purpose; and
2. Contextual environmental influences such as peers, family, work, school and local community.

Furthermore, while resilience within an individual is believed to be a process rather than a steady state, ‘with a person’s level of resilience potentially varying over their lifetime’, many authors ‘emphasise the importance of recognising the dynamic, interactive nature of resilience and the interplay between an individual and their broader environment’ (p.385-86). However, after their extensive consideration of the literature, Boon et al. concluded that, ‘Research linking individual to community resilience is very scarce worldwide and non-existent in Australia’; which is problematic because ‘developmental science and ecological science perspectives intersect to explain resilience at both individual and community levels’ (p. 402-403).

Martin-Breen and Anderies (2011) state that in terms of research ‘most resilience research outside of the psychological tradition stops at the community level’ (p. 36), which is again problematic because what households (individuals) do will map up to higher levels in unpredictable ways, particularly since local vulnerabilities are nested and tele-connected by globalisation, so ‘resilience thinking is valuable in framing and discussing aspects of sustainability and sustainable development’ (p. 13).

Certainly psychological growth can occur as the result of living through adversity, and this can assist the individual when future stressors are encountered (Polk, 1997), and it is this assumption of post-stress growth that leads Aldwin (2007) to deduce resilience to be more than stoicism or survival. But it is important to remember that ‘resilience is not a steady state in an individual’ (Hegney et al., 2007, p. 11) - it can vary throughout a person’s life, being more of a process than a steady state.
(Winkworth et al., 2009); or even a ‘complex family of concepts’ beyond a single trait or process, and to which there can be ‘multiple pathways’ but no ‘magic bullets’ (Masten & Obradovic, 2006, pp. 22-23). Masten and Obradovic (2008) also state that this complex interaction of personal resilience with the environment and particularly the variation over lifespan is rarely researched.

Folke et al. (2002, p. 437) describe accumulating evidence from diverse regions around the world that both ‘natural and social systems behave in nonlinear ways, exhibit marked thresholds in their dynamics, and that social-ecological systems act as strongly coupled, complex and evolving integrated systems’. They suggest that a multi-level governance system is required that will allow for learning, and increase adaptive capacity without foreclosing future development options. This distinction is well explained by Nelson et al. (2007): while adaptation is a process or activity undertaken in order to alleviate adverse impacts or take advantage of new opportunities, adaptive capacity consists of the pre-conditions necessary to enable adaptation to take place - that is, it is a latent characteristic which must be activated in order to affect adaptation.

Humans can reason and choose (Walker & Salt, 2006). A resilient individual might stop what they are doing and do something completely different to survive. They might transform rather than simply cope: into a new crop, conservation management, tourism, or off-farm work. They might stop farming altogether. This is not the same as crossing an ecological threshold which the system then settles permanently into. This is supported by Masten and Obradovic (2008, p. 13) who recommend that:

‘knowledge from research on human resilience from the developmental and behavioural sciences must be integrated with knowledge about resilience from research on many other components of the complex interacting systems in which human life is embedded’.

So while Cottrell et al. (2011) warn that a shared view of what constitutes resilience in general and community/social resilience in particular is likely to remain elusive, she points out that it is essential approaches taken to planning are context specific
and developed in conjunction with those people who are most affected.

Flint and Luloff (2005) point out that, ‘disaster research tends to focus on the immediate post disaster experience ... and does not routinely study the long-term recovery path’ (p. 402). They conclude that to improve policy and decision making, it will be important to properly uncover the perceptions, capacities, and range of contextual variation within community response to disaster, and that an important component of achieving this will be adaptive qualitative and ethnographic research, as the ‘ways risks are perceived within communities influence the range of actions undertaken to reduce them’ (p. 408). Martin-Breen and Anderies (2011, p. 35) also support the application of resilience to governance and management, and make recommendations which ‘highlight how resilience can stimulate both new ways of understanding “wicked problems” and new ways of developing solutions to them’.

Finally, Reghezza-Zitt et al. (2012) suggest that we must also study resilience as a political line since the term has now entered the political lexicon; for example, showing successful reconstruction as quickly as possible is a strong political move that shines a good light on leaders. In such a situation, ‘Resilience’s key issue is to know who says that there is resilience, when and why’ (para. 61), as in society there are always rewards and punishments, and ‘resilience for some people or places may [necessarily] lead to the loss of resilience for others’ (Davoudi et al., 2012, p. 306). A bonus of this could be that such use of the term in these situations ‘highlights the necessity of getting over “zero risk” logic’ (Reghezza-Zitt et al., 2012, p. 66).

### 2.2 What’s in a Name? Theory versus the Vernacular.

Why look at resilience? Why is the concept important? As described in the previous section, the term resilience has been used by many fields of science over the past seven decades, and it is now also found in political science, business administration, sociology, history, disaster planning, urban planning, and international development.

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11 A wicked problem is a problem that is difficult or impossible to solve because of incomplete, contradictory, and changing requirements that are often difficult to recognise. The use of the term wicked has come to denote resistance to resolution, rather than evil (Wikipedia contributors, 2015 Aug. 26)
The shared use of the term does not, however, imply unified concepts of resilience, nor the theories in which it is embedded. Different uses generate different methods, sometimes different methodologies. Evidential or other empirical support can differ between domains of application, even when the concepts are broadly shared (Martin-Breen & Anderies, 2011). The use of resilience across such varied fields does indicate its appeal – perhaps it is a ‘metaphor’ for something that cannot be directly observed or measured?

However, while this is an interesting and important deliberation academically, from a farmer’s perspective, a disaster is a disaster - whether an act of God or an Act of Parliament; and the eventual impact of any event on an individual and their particular enterprise will be determined by myriad inter-connected factors. Whilst a return to normal or bounce back is probably desirable after a natural hazard like a cyclone, ‘this view focuses on the short-term restoration of functions and essential infrastructure’ (Darnhofer, 2014, p. 466), whereas a more desirable outcome from a medium to long-term view might be for a bounce forward or transformative outcome, which Darnhofer argues is a property which plays a ‘more important role in social systems than in ecological systems, especially when taking a long-term view’ (p. 466). There is also a third, more radical transformative dimension to resilience: where change occurs to take advantage of new possibilities and opportunities – ‘to positively develop and to thrive in the face of change and uncertainty’ (Brown, 2016, p. 11).

So if resilience is the ability of an individual or social system to persist, its study will need to include both adaptive and transformative capacities – to bounce back and bounce forward, and the ‘three heuristics of resilience management ... resilience, adaptability and transformability’ (Dale et al., 2011, p. 34)

Would such resilience be an inherent attribute of a system, or should it be considered a process? Whilst these two positions are not necessarily opposed they have different methodological and theoretical implications when attempting to translate theory into operational terms, particularly when the term is used by non-scientist decision makers (Reghezza-Zitt et al., 2012). Flint and Luloff (2005, p. 408) believe
that ‘when disaster strikes, regardless of origin, local capacities for action and the different ways they manifest need to be incorporated in our studies’. However, Flint and Luloff point out that in the literature there is often a bifurcation between presumed origins of risk, with many researchers distinguishing between technological and natural hazards on the assumption that natural risks are met with ‘therapeutic’ community characteristics that serve to ameliorate disruption, whereas technological risks are assumed or found to be met with ‘corrosive’ community processes that ‘break down the social fabric due to the ambiguity of risk’. However, little empirical evidence exists to support such assumptions and distinguishing between technological and natural risks could promote a false dichotomy (pp. 403-4). In a large geographic region like Northern Australia though, and with the diversity that comprises its agricultural industries, it would be unlikely that a natural disaster would uniformly impact either the entire region or all producers of a specific commodity within the region, whereas an anthropogenic event such as the 2011 ban on live cattle export to Indonesia did impact cattle producers across the entirety of Northern Australia, and the flow-on impacts affected the entire regional economy.

So how do communities and individuals respond to risks and disasters, and how important is the nature of the impact? Obviously, not all groups or individuals within a community will be equally exposed to risks or disasters, and individual response capacity will be affected by the difficulties and conditions of everyday life, along with the legacy of resource inter-dependence in natural resource-based communities. However, it is the study of actors in their associational action at the community level of analysis that can move the study of risk and disaster towards an understanding of the variations in response and recovery (Flint & Luloff, 2005).

We are paying attention to the resilience agenda now because it has become policy, and policy has to be measured. The question that must be addressed even before that of how do we measure it though is, exactly what is it we wish to measure? When the foundation for modern medicine was being constructed as part of the 17th century revolution of natural sciences, a mechanistic worldview was dominant and humans were understood as complex machines, ruled by the natural laws that regulate everything else in nature. As mathematics was considered the cradle of
science, that which could be examined numerically and described by statistics was deemed to have higher scientific value (Dahlberg, 2013). In the same way, application of ecological resilience theory to individuals and communities risks an extension of this view, which is a risk when a highly defined term in one context is applied to another. An associated risk is that by overstating the parallels between ecological and social systems, governance and power issues that affect social change can be overlooked, leading to Cote and Nightingale (2012) arguing that the focus of research should move from the content to the context of knowledge production.

Despite all of the above, and recognising the academic complexity around theoretical underpinnings of the term, neither the media nor the community are likely to stop using the term resilience; particularly in discussions about farmers and adversity. It is a term that is popularly understood even if an exact definition remains elusive. As Lélé (1998, p. 249) observed, ‘Resilience is turning out to be a resilient concept’. Latour (2005) argues that to be objective, social science researchers should not muffle informants’ precise vocabulary into an all-purpose metalanguage but, rather, describe what people say and do. In recognition of this, hence, while an appreciation of the context being discussed is important, it is equally important that we not abandon the term or invent another, and that the science be reconciled as much as possible with community understanding.

2.3 Resilience, Adaptive Capacity, and Transformation in Agriculture.

Humanity and its familial and communal structures have, like ecosystems, been around a long time and have persisted despite diverse changes and a great deal of adversity. They are, in a broad sense, naturally resilient (Martin-Breen & Anderies, 2011). Natural resource-based industries such as agriculture occupy a unique interface between society and the environment. Farmers generally operate as part of extended supply chains within the vagaries of global markets, and as a consequence both these industries and their communities often appear particularly vulnerable to the negative effects of environmental and social change, particularly environmental risks and disasters (see Gaventa 1980 in Flint and Luloff (2005, p. 399);
Humphrey et al. 1993; King (2008); Krannich and Luloff 1991; West 1994).

Vignette Two: The Cutten Brothers and Climate Change

April Fool’s Day, 1882: four brothers row a borrowed boat down the Tully River (Far North Queensland) and north along the coast in search of land. James, Leonard, Sidney and Herbert Cutten had arrived in Sydney a decade previous, and gathered considerable experience in their journey north. Though tired when they beached their ‘flattie’, the long hard shining sands of Mission Beach with their inviting shade of cool, fragrant *calophyllums* carried James’s surveyor eye on to the rich vistas of gently rolling well-watered land; with forests of cedar, nutmeg, quandong and native ginger framed by the majestic peak of Clump Mountain and the sheltered *Shangri-La* of Bingil Bay. It was a strange exotic land to these young Englishmen, but they named it *Bicton* in memory of pleasant times in the English Bicton Hills. Coincidently, it was also the local aboriginal word for ‘good camping ground and plenty of fresh water’.

What followed was hard hot work in the steaming jungle with axe and saw, but the four were a powerful team. Pineapples and bananas were planted with assistance from the incumbent Aboriginal population of circ. 400 people (a homogenous tribe quite separate from the nearby Mission Beach people). Tea, coffee, chicory, coconuts, citrus, mangoes, tobacco, spice and jack-fruit followed; along with a stone breakwater which enabled the now regular coastal shipping to safely load produce for southern markets. By 1891 the coffee harvest justified purchase of a mill and expansion to 100 acres, and assisted by seasonal Aboriginal labour produced a quarter of a million pounds of ground coffee annually for export to London.

They prospered, the house grew: there was a two-storey packing shed, sawmill, case-mill, a wooden railway to the stone wharf, and marriage for James. E. J. (Ted) Banfield, the British journalist turned Dunk Island resident and author of “*Confessions of a Beachcomber*” (London, 1908) was a regular visitor, and his writings evoke the idyll of the tropical life they shared. The brother’s fortunes stood at their zenith when their mother died in 1908, and Banfield read the funeral service.

But trouble started when Chinese banana growers started paying Aboriginal labour with opium, resulting in the government limiting employment to three ‘*boys*’ only when the Cuttens needed 70 for their operation. The Yongala Cyclone of 1911 damaged crops, orchards, breakwater and boats; and without labour the Cutten brothers (now in their 60s) mortgaged the property for repairs. Another cyclone in 1913
wrecked further damage. No sooner were repairs effected than WWI broke out and Bicton’s lifeline was cut as all ships were diverted to war service. It was impossible to get produce away, so the brothers pulled in their belts and tried cutting timber. This proved a failure, but a greater disaster was Sidney being badly injured whilst scrub-felling to satisfy their property terms under the Land Selection Act. Then, in 1918, the great cyclone brought to an end the Cuttens 40-year époque at Bingil Bay.

The Cuttens had survived cyclones in 1890, 1911 and 1913, but the cyclonic surge of 10 March, 1918 carried two miles inland, smashing the stone breakwater and boats in an instant. The thirteen-room house disintegrated in the 200 miles per hour winds; along with sheds, crops, orchards, and 200,000 super feet of sawn timber ready to be shipped. Of the Cutten Empire nothing remained, though miraculously everyone at Bicton survived, unlike the township of Innisfail and surrounding areas where almost 100 died. Banfield recorded it as the cyclone of the century and the greatest natural disaster to hit Australia’s east coast.


The 1918 cyclone destroyed the Cuttens enterprise, but it did so on the back of two earlier cyclones, labour shortages, a world war, no transport, legislative changes, and advancing age. Whether this cyclonic event, or Cyclones Larry and Yasi of the twenty-first century, was a consequence of climate change, was of secondary consequence.

It is not surprising then, that much risk and disaster research considers farmers as victims of destructive environmental and societal processes, ‘limited in their ability to better position themselves to address negative circumstances .... [and] trapped in endless cycles of vulnerability and in constant need of external assistance for development, risk mitigation, and disaster recovery’ (Flint & Luloff, 2005, pp. 399-400). Certainly, the vulnerability exists and is real, alongside resilience. Often it depends on the focus of the writer. But over and above extreme circumstances or disaster events it is evident that individuals living in rural communities face ‘life circumstances and unique ecologies which differ markedly from populations living in urban centres’ (Hegney et al., 2007, p. 3). The work by Flint and Luloff (2005) on improved understanding of natural resource-based communities and their risks and
disaster experiences is driven by a commitment to improving policy and decision making. They point out that:

‘Natural resource-based communities are dynamic places embedded within an environmental and geographic context and the homes where people with collective, intersecting, and competing values interact. Though the legacy of dependency remains an obstacle, viewing natural resource-based communities as only being vulnerable is insufficient and flawed. Community capacity exists despite vulnerabilities. How people work together to make decisions and act on their collective and intersecting values in the face of risks, disasters, and everyday vulnerabilities is central to investigations in these areas’ (p. 400).

As a consequence, Flint and Luloff encourage the study of community, risk, and disaster ‘beyond a simple and exclusive focus on vulnerability’ to assess broader community sentiments and responses (p. 408). This is supported by King (2008) who, when investigating agri-ecological systems, proposed that it is the diversity of function of systems at multiple scales that enhances both ecological and community resilience.

Martin-Breen and Anderies (2011, p. 10) recommend that, when considering the broader implications of risk and the appropriate allocation of limited human resources to address it, one needs to answer not only the questions ‘Resilience of what?’ and ‘Resilience to what?’, but also ‘Resilience for whom?’ They then highlight the importance of adaptive capacity in increasing the resilience of a system, as adaptive capacity requires adaptation processes that are both anticipatory and effective ‘in creating systems that are able to maintain their state in response to unexpected crises’ (p. 48).

Agriculture is a risky business. The endless variables that farmers must evaluate and plan for (often almost subconsciously) include weather, markets, supply chain, finance, labour availability, changing legislation, natural disasters, pests and disease. This limits farmer’s ability to plan, as ‘much is unknown and unable to be known, where great uncertainty prevails, and much is uncontrollable’ (Malcolm, 2004, p. 399). Darnhofer (2014) builds on this reality, and understands resilience as encompassing buffer, adaptive and transformative capability. She argues that
resilience thinking offers alternative insights into farm management and how farmers can achieve balance between short-term efficiency and long-term transformability, while balancing exploitation and exploration. She states that while farm resilience can be strengthened or eroded by policy measures and family dynamics, ‘overall resilience proposes an alternative conceptual lens to one building on equilibrium, thus highlighting complex dynamics and the role of farmer agency in navigating change’ (p. 461), because ‘we are regularly confronted with events even experts and dedicated institutions failed to anticipate, highlighting the difficulties of prediction and the limits of focusing on known risks’ (p. 476) when operating in a Newtonian worldview.12

2.4 Resilience and Policy Paradoxes

Lawrence et al. (2013) point out that over time, the application of neo-liberal policy in Australia has sought to foster self-reliance in the management of environmental risk by Australian agriculture rather than expecting it to be addressed through government funding as a national problem. Gill (2011) however makes the important point that while farmers have accepted their responsibility to manage risk, their capacity to do so is often sorely tested. There is an argument that as a consequence of constantly dealing with risk, farmers are conservative when it comes to issues such as politics and the projected impacts of human-induced climate change, and it is ‘understandable that farmers are cautious and contest the claims of those who would have them reorganise current production systems’ (Lawrence et al., 2004, p. 256).

Parallel to the increasing expectation of self-reliance in the management of environmental risk by Australian agriculture described by Lawrence, Brennan (2008) describes how both America and the European Union have witnessed a consistent devolution of responsibility for social and other services from the government to the local level, with communities being called upon to do more with less. However, Brennan then describes how community agency, or the capacity for local action and resilience, can emerge as a consequence, and that this agency can be seen as the

12 A view which considers the world as an orderly mechanical device whose behaviour can be explained and predicted by mathematical rules and monitored by using a command and control approach (Darnhofer, 2014).
capacity of people to manage, utilise and enhance the resources available to them. This shift in focus occurred through recognition that ‘local residents are better suited to address their immediate and long-term needs, as well as being intimately familiar with mechanisms for achieving these’ (p. 60). As a consequence, Brennan states that both research and applied programs and policies that shape community adaptive capacities can emerge ‘based on the premise that active communities have the capacity to improve local well-being and directly shape their resilient capacity’ (p. 61).

Early settlers lacked the skills and knowledge of their new environment to realise that their introduced European agricultural practices were often unsuited to Australia (Gray & Lawrence, 2001). Governments used pastoral lease conditions to facilitate and encourage land use intensification and closer settlement, an approach often incompatible with the unreliable climate and limited carrying capacity of the rangelands (Productivity Commission, 2002). The resulting negative impact of agriculture on Northern Australia’s natural environment and biodiversity has been extensively documented, and climate change is predicted to bring new pressures to bear on both agriculture and biodiversity (Cocklin & Dibden, 2009).

The International Assessment of Agricultural Knowledge, Science and Technology for Development report (2009a) describes agriculture as a multi-output activity producing not only commodities, but environmental services, landscape amenities and cultural heritage. A major challenge facing humanity is the continued production of food and fibre for a burgeoning population while avoiding long-term negative impacts on ecosystems and the services they provide (Folke et al., 2010; Rist et al., 2014; Walker B., 2014). However, production ecosystems

‘typically have a high dependence on supporting and regulating ecosystem services and while they have thus far managed to sustain production, this has often been at the cost of externalities imposed on other systems and locations’ (Rist et al., 2014, p. 1);

a situation they describe as ‘coerced resilience’. They therefore suggest expanding the resilience framework to accommodate the specific characteristics of production systems. Their focus is however on ecosystem (engineered) resilience (see Martin-Breen and Anderies), not the capacity of the farmer to achieve such transformation.
Whilst McManus et al. (2012, p. 28) warn policy makers that, ‘perceptions of the local economy, environment and community are inter-related and resilience is dependent on all three simultaneously’, there are many examples where societal pressure to integrate social issues into natural resource management (NRM) planning has resulted in a technocratic response (the identification of indicators) rather than a strategic approach to planning for improvements in the state, trend or resilience of the asset; an example being the extended policy conflict and delays experienced in the Murray Darling Basin water management planning, though anecdotal evidence would suggest:

‘the problem is as much due to the lack of exposure and influence of the social science community within the natural resource domain versus the domination of the biophysical sciences in that domain’ (Dale et al., 2011, p. 56).

Cocklin and Dibden (2009) postulate that it is possible to envisage mitigation and adaptation responses that would alleviate pressures on all three systems (climate, agriculture, biodiversity), and there has been a wave of interest in shifting emphasis away from productivity enhancement and towards sustainability and resilience (IAASTD (2008, 2009b); McNeely and Scheer (2003). This movement is being assisted and facilitated in Australia by Regional NRM bodies13, who are improving participation and shared understanding by all regional land managers in natural resource management (personal observation and experience from involvement over the past decade).

Farmers are popularly perceived as resilient (Hodgkinson (2014); Landry (2014); Neales (2015), and often self-identify as being resilient (Cristaudo (2012); McFarland (2013): capable of handling the uncertainty and adversity that life on the land brings. But farmers are also members of regional communities and broader society, from whom they derive and contribute support. Farmers interact with, and transition in and out of all aspects of society, and this can introduce risks that are beyond the control of individual farmers, no matter how prepared they are. Whilst it might not be a policy or societal intention, increasing socio-economic marginalisation could be

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13 There are 56 regional NRM organisations across Australia that act as delivery agents under the regional stream of the National Landcare Programme – see www.nrm.gov.au/regional/regional-nrm-organisations
an inadvertent outcome of inadequately considered policy. An illustration of such a perverse outcome was the 2011 ban on live cattle export from Australia to Indonesia\textsuperscript{14}, with farmers at a loss to understand the thinking and actions of the animal rights lobby and the subsequent government decision, and ill-prepared to address the ramifications.

2.5 Future Trends and Direction

Worldwide, there is an emerging discussion around the need to explore alternate governance systems, from global through to local scales, in order to both address the social, economic and environmental challenges facing today’s world, and to improve multi-sector cooperation; particularly since command-and-control regulation has been found wanting (see Taylor 2010).

Higgins et al. (2010) describe contemporary society’s global shift from public to private forms of governance, and how farmer-initiated Environmental Management Systems (EMS) often take a proactive approach to environmental issues in order to avert more onerous legislative intervention by government. As a corollary of this, Dale et al. (2013) describe how linear governance systems that are poorly integrated with the wider system can constrain thinking, have limited benefit, and even be counter-productive; and describe Governance Systems Analysis as a systemic/adaptive means to optimise collaborative effort.

Sayer (2010, p. 20) extends this argument (in the developing world context) by cautioning environmentalists about resisting agricultural innovations that may have short-term or local negative impacts on nature but which might provide better long-term options by jump starting the economic growth that people of the African continent so desperately need; as he states ‘more efficient agriculture will in general be better for the environment’, and that ‘the ability of civil society to assert itself will be much greater when people are prosperous and well fed’. But are there processes available to these communities to consider and achieve balance in such complex

\textsuperscript{14} In June 2011, the Federal Government suspended live cattle exports from Australia to Indonesia following the ABC’s Four Corners programme of 30 May, 2011 showing brutal slaughtering methods and mistreatment of cattle inside an Indonesian abattoir.
decisions? Possibly not, when we consider the track record of well-resourced first world economies like Australia in dealing with similar instances: the on-going debate over Murray-Darling Basin water allocation and, closer to home, Great Barrier Reef water quality issues?

Much of the developing world’s agricultural research is directed towards improving production, and Pachauri (2011, p. 100) points out that currently ‘few plans for promoting sustainability have specifically built in means of either adapting to climate change or promoting adaptive capacity’. Whilst the production focus of agricultural research for developing countries is appropriate, improvements in governance systems and the adaptive capacity of farmers is also required. Australian agriculture is well placed to develop and extend practices that could be applicable to and of benefit to other tropical regions; if they can get it right themselves. This is a significant opportunity for Australian research, capable of delivering global benefit.

To achieve this though, the skills loss and declining interest in agriculture as a career will need to be addressed, as many Australian universities have either closed or merged their agricultural faculties to compensate for a shortfall in students, indicative of the broader negative community view towards commercial agriculture in Australia (Keogh, 2009). Along with this demise, there continues to be a lack of clarity and certainty of farmer’s property rights conferred by legislation, particularly for pastoral lease arrangements. Approaches vary across jurisdictions with regard to non-pastoral land uses on leased land, but in general they are treated as special cases within the legislation. Such lack of formal recognition reflects the continued narrow and prescriptive nature of pastoral lease arrangements (Productivity Commission, 2002), and therefore restricts the ability of farmers to pursue innovation. Rather than attempting to fix such issues individually, they would be better addressed through governance systems that better recognise and value farmers’ interdependence with society.

I mention these issues because the 2015 Developing Northern Australia Whitepaper provides a strategic opportunity for a growing Northern Australian agricultural sector to better prepare itself for the natural, social, and economic opportunities and
pitfalls it will encounter, while embracing the principles of sustainable agriculture and recognising and fostering existing tropical expertise. This approach is in alignment with the proposal by Walker et al. (2010) to feature resilience and transformability alongside productivity as major objectives of research because, as previously stated, literature suggests that not only are resilient organisations about surviving, but thriving. The dynamic relationships between vulnerability, resilience, hazard impact, hazard change, adaptive capacity and social change in the context of climate change and disasters can then inform approaches to planning for and developing community-based approaches to adaptation (Cottrell et al., 2011).

In the same way that Cottrell and King (2008) emphasise the need to have an understanding of how people living in communities view risk to more effectively engage them in planning and mitigation for disasters, both agricultural industry individuals and organisations will need to be engaged, understood, and empowered as part of longer term planning processes. This will require adoption of the principles described by King (2010) to achieve climate change adaptation - flexible, local, stakeholder driven, and involving all levels of government and institutions.

Whilst there are multiple views and contestations around resilience in human development, Michael Ungar, co-director of the Resilience Research Centre at Dalhousie University, Canada, challenges what he refers to as the dominant ecological understanding of resilience in human development and proposes that rather than being an objective fact, resilience is ‘the outcome from negotiations between individuals and their environment for the resources that define themselves as healthy amidst conditions collectively viewed as adverse’ (Ungar, 2004). Whilst this work was among youth, Ungar proposes that a more qualitative approach to resilience research will assist in informing international development. I propose this is equally applicable to the Northern Australian agricultural context, and that successful outcomes would have international application.

This is important, because a characteristic of today’s world is increasing urbanisation and social connectedness (Zalasiewicz et al., 2011); and while improved communication technology enables people in remote areas to easily and
immediately connect to the rest of the world, it would seem that the ability of these same regional and remote populations to influence city-orientated political decision-making continues to decline. Deliberate mechanisms to maintain an inclusive society are required.

2.6 Conclusion

Resilience might be a fashionable concept, and a difficult one to describe accurately; but it is also a widely used and generally understood term capable of bringing disciplines together for a better understanding of social-ecological issues. It can become a platform to support the deliberation around strategies to negotiate and shape current and future sustainability, and is a concept that can assist individuals to navigate and negotiate challenges in their effort to find a way to live in relative comfort, both in response to and outside of risk and disaster.

This chapter, through a review of the resilience literature, shows how the concept has been used in a many different disciplines and contexts, and that resilience has many definitions. Resilience can be seen at the level of the individual farmer, of the community, of an industry, or of governance systems; it may focus on ‘bouncing back’ (for example, after a disaster) or include ‘bouncing forward’ (for example, in the context of personal growth, adaptation and transformation); and it may be seen both as an attribute of an entity, and as a process. This thesis contextualises resilience through the perspective and words of individual farmers, which requires consideration of the interplay of resilience at different levels be taken into account.

The following chapter will provide an overview of Northern Australia’s agricultural development, followed by a consideration of contextual factors affecting its agricultural future in Chapter Four, before combining them with this resilience discussion to introduce the research questions and methods.
3.1 The Historic Challenges of Northern Australian Agriculture

This Northern Australian landscape has had tens of thousands of years of human intervention (Gammage, 2011), and the notion that the ‘natural’ landscape can be maintained in its pre-European state simply by excluding or limiting contemporary land uses does not stand up to scrutiny. The number of Indigenous Australians living in the north is much higher (14.3% of the population) than the national average (2.3%) (ABS, 2015), but the lifestyle and land use of Traditional Owners is now typified by relatively stable population centres and cessation of nomadic lifestyles. European settlement in the late nineteenth and early twentieth centuries was instrumental in this change, and it was the search for economic opportunity that drove the invasion of Aboriginal lands (Bottoms, 2013).

Early European settlement agriculture was basically subsistence: the colony was not self-sufficient in bread grains till the 1820s and relied on Tahitian pork till the 1830s (Heathcote, 1994). From the mid-1850s though agriculture underwent significant changes, partly the result of increasing local and export demand (an influx of gold miners, repeal of protectionist British Corn Laws in 1846, higher European living standards, technological innovations), and partly the result of political policies on the process of land settlement itself (Heathcote, 1975). However, a bright future was always forecast for Northern Australia agriculture. John McDouall Stuart, the Scottish-born explorer of inland Australia, remarked in his 1865 exploration:

‘I have no hesitation in saying the country I have discovered on and around the banks of the Adelaide River (near present day Darwin) is more favourable than any other part of the continent .... I feel confident that, in a few years, it will become one of the brightest gems in the British crown’ (Stuart, 1865, p. 6).
Aschmann (1977, p. 39) succinctly described the non-indigenous development of Australia as one of:

‘an initial investment of capital and introduction of people (sometimes involuntary), extensive pastoralism and limited subsistence farming, followed by mineral discoveries (often gold) that attracted enormous immigration. Extensive agriculture developed to feed these immigrants, often subsequently specialising in a commodity for export. Manufacturing and service industries developed to supply the established population, and the whole complex became economically self-sustaining’;

though he thought that in the north, except along the east coast of Queensland, this sequence was interrupted at the agricultural stage not because of climatic or soil limitations but because, while transport was expensive, it was cheaper than local production - a cost-benefit outcome repeated in today’s food-mile debates.

Australia was on the winning end of many late nineteenth / early twentieth century innovations. Mechanisation (the petrol engine, refrigeration) combined with labour shortages (driving the need to innovate) and large areas of land to allow Australia to supply cheap meat and butter to Europe and satisfy the demand for an improved working class diet. Advances in pesticides, herbicides and fertilisers continued to increase productivity. Contemporary European farming systems still based on labour-intensive methods could not compete in open markets against mechanised industrial agriculture (Barr, 2009). Following this period of rapid expansion, Imperial preference deals between Britain and her colonies and dominions after World War I gave a protected market to Australian agriculture. Food scarcities after global disruptions such as the Second World War, the Korean War, the Vietnam Wars and the Chinese Communist Revolution continued to provide export opportunities for undifferentiated commodities, as did extensive drought in the USA in the 1970s and 80s, and middle-east conflict in the 1990s. The exporting of raw, or semi-processed, agricultural commodities such as wool, wheat, meat and sugar was the key to the early success of rural Australia, and continues to be the case to this day.

The first Commonwealth Administrator of the Northern Territory, Dr Gilruth, placed great hope in the pastoral industry to develop the economy, and in 1914 the (British-
owned) Vestey group of companies were allowed to build and operate the Darwin meatworks; which in turn facilitated their control of vast pastoral leases. The meatworks development doubled Darwin’s population but, plagued by industrial action and failure to complete the rail line to the Katherine River, proved a dismal failure. They did not open till 1917, and closed in 1920 (Carment, 1996).

The Second World War catalysed strategic concerns about the North’s “emptiness” and highlighted opportunities for development. This resulted in a government ‘imbued with a newly-forged nationalism and readiness to engineer the future’ establishing the North Australian Development Committee (NADC) in 1946, charged with ‘investigating the region’s pastoral, agricultural, mining, forestry, marine, fuel and power, and processing and manufacturing industries; and to guide systematic development of these industries’ (Garnett et al., 2008, p. vi).

Twenty years later, Dr ‘Nugget’ Coombs, a NADC commissioner and long-time advocate for Northern Australia, said in his opening address to the first annual seminar of the Northern Australia Research Unit (NARU) in Darwin, August 1977, that:

‘the optimism at the time and the prevailing views … that growth was a good thing, that it could be achieved primarily by seeking to impose on the North a pattern of productive activity and a way of life essentially European in its origin and substantially European in its relevance. There was little attempt to envisage the gradual emergence of a more humanized environment capable of self-perpetuation, providing a context for a more rewarding life for those who already lived within it’ (Bauer, 1977, pp. 8-9).

It is significant that this conference was titled “Cropping in Northern Australia: Anatomy of Success and Failure”: a productive landscape was the intent, and this could only be measured as a success, or a failure. The proceedings of this conference contains an analysis by Fisher et al. (1977) of six large-scale agricultural developments (including the original Ord River Irrigation Project, Territory Rice at Humpty Doo, Tipperary Land Corporation, and Lakeland Downs in Queensland), which showed that all failed to achieve their stated objectives.
A particularly pertinent comment was made by Mollah (1980) in his retrospective analysis of the cropping development at Tipperary Station: In 1967, encouraged by a world-wide beef shortage, tax concessions to encourage investment, and the first stages of the Ord River development, the Tipperary Land Corporation (registered in Texas, USA) announced the biggest agricultural project attempted in Australia, with ‘American know-how’ and $20 million to establish a farming community of 15,000 people, producing 300,000 tons of grain sorghum annually and high quality beef cattle. These great expectations were never realised, and farming was all but abandoned after three years and the station sold back to Australian interests. Mollah’s comment (p. 156) was that:

‘Pioneering developments in the North had no room for those who doubted their own ability but, from the outcome at Tipperary, it is equally clear that confidence is no substitute for knowledge and experience.’

Cook (2009) summarised five historic pushes for Northern Territory development in which government led research efforts assumed that once the science was in place, agricultural development would follow, but concluded the aspirational drivers for
these initiatives related as much to addressing the perceived risks of Australia’s “empty North” as a genuine commitment to agricultural growth. Even in the more climatically hospitable and richer soils of Queensland’s Atherton Tablelands, Gilmore (2005) considered government-sponsored agriculture was more a means of closer settlement and strategic defence than a food producing venture; and that the maize, dairy and tobacco industries so established foundered when Australian governments realigned the economy according to neo-liberal principles.

Bauer (1985, p. 12) gave three reasons for this failure of large-scale agriculture in Northern Australia:

(1) Distance;
(2) Ignorance of the physical environment; and
(3) A reprehensible aversion to learning by experience.

Whilst these factors are neither exclusive to agricultural endeavours nor Northern Australia, item three is worthy of particular consideration in the contemporary enthusiasm for expanding Northern Australian agriculture.

3.2 Contemporary Challenges to Northern Australian Agricultural Aspirations

A viable and diverse agricultural industry already exists in Northern Australia, with established production of beef, dairy, corn, sorghum, peanuts, avocados, mangoes, nuts, sugar, and a myriad of fruits and vegetables as well as plantation timber. The successful emergence of new crops and new cropping areas continues; such as chia\textsuperscript{15} and extensive plantations of sandalwood around Kununurra (Western Australia) and the Burdekin (Queensland), the proposed $2 billion Integrated Food and Energy Development (IFED) project on Queensland’s Gilbert River (IFED, 2014), and Stanbroke Pastoral Company’s proposed $200 million irrigated cotton project in Queensland’s Gulf country (Crothers (2015); TRIP (2015) – all evidence of the willingness of entrepreneurial growers (corporate and individual) to try new

\textsuperscript{15} Salvia hispanica, commonly known as chia, is a species of flowering plant in the mint family Lamiaceae, native to central and southern Mexico and Guatemala.
ventures.

Agriculture is a major contributor to Northern Australia’s economy: in 2008/09 direct primary industry turnover for Far Northern Queensland was estimated at over $1.7bn, with direct employment of about 9,000 people (RDA, 2011). Australia is the world’s largest exporter of sheep and cattle, and eighty percent of exported cattle are from the north, valued at $416 million in 2006-7 (Gray, 2009) and a remarkable $22.3 billion projected by 2015-16 (ABARES, 2015). A new Darwin abattoir with eventual processing capacity of 220,000 head per annum (AACo, 2012) commenced operations in 2014.

Australia’s combined farm and livestock production gross value is forecast to reach $86.2 billion in 2015-16 (ABARES, 2015), and is estimated to contribute to the diets of 60 million people annually. Whilst total Australian agricultural output represents only one percent of global production, Australia is the fourth largest net agricultural exporter in the world behind Brazil, Argentina and the Netherlands – well above nations such as China and the USA that have enormous domestic agricultural sectors, but in net terms import just as much as they export (Keogh, 2009). When the outcomes of agricultural research are considered, Australia contributes to the diets of 400 million people worldwide (Prasad & Langridge, 2012).

Most agricultural production is traded through efficient supply chains as bulk commodities, leaving little opportunity for an individual farmer to influence the price. They are price takers, so they must focus on maximising production while reducing operational costs (Hughes, 2014). Keogh (2014) describes three factors that optimise Australian agriculture’s international comparative advantage and provide opportunities for growth:

1. The flexibility of the farm business operating environment (largely as a consequence of deregulation and the lowest level of OECD subsidies);
2. The technical and business management skills of operators; and
3. The open-minded and innovative approach of Australian farmers to new technology, illustrated by the rapid adoption of minimum tillage, digital farming technologies, advanced livestock genetics, precision agriculture and
irrigation, electronic livestock identification, remote sensing, and use of computerised decision-support tools.

The Australian Government’s 2012 White Paper “Australia in the Asian Century” describes opportunities for agriculture to be a major beneficiary of forecast Asian growth, which Keogh (2012a, p. iv) interprets as a signal that policy makers may now ‘see opportunities for agriculture rather than as a sunset industry’, and argues that Australian superannuation funds should join overseas pension funds in investing in agriculture (2012b). Other publications that also set out a strong future for Australian agriculture and its supply chain, include the National Farmer’s Federation (2012) Blueprint for Australian Agriculture 2013-2020; Australia’s 2013 “National Food Plan: Our food future” White Paper; the “Agricultural Competitiveness White Paper” (2015a) and most recently the “Our North, Our Future: White Paper on Developing Northern Australia” (Australian Government, 2015b).

Given that approximately 40 percent of Australia’s land mass is in the north but that less than five percent of the nation’s population live there (ABS, 2015), industry excitement about the potential for growth is understandable, but what are the aspirations of the northern-resident and broader Australian community? Not everyone wants to live in a city, but regional residents also desire a future for their children and access to services for an aging population. Neither should the continuing appeal of the frontier ethos as personified by Mary Durack’s “Kings in Grass Castles” (1968) be dismissed, as not-withstanding the lessons of history, the challenge of future opportunities continues to excite individuals and the nation alike (Bendle, 2013), even though terra nullius never existed.

It is worth noting though, that while absolute numbers have risen, this approximately five percent of the national population residing in the north (with an overwhelming majority living on the Queensland coast between Cairns and Rockhampton) is the same percentage and population distribution as 1975, when ‘Australia’s first

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16 A Latin expression deriving from Roman law meaning “nobody's land”, which is used in international law to describe territory which has never been subject to the sovereignty of any state, or over which any prior sovereign has expressly or implicitly relinquished sovereignty. Sovereignty over territory which is terra nullius may be acquired through occupation, though in some cases doing so would violate an international law or treaty (Wikipedia: The Free Encyclopedia, 2015, July 21).
The tyrannies of distance have been significantly addressed since Bauer’s time; particularly through the mining boom of the past decade, with improvements in road and rail links, port infrastructure, communication systems and employment opportunities; albeit many of these on a fly-in fly-out basis. Both agriculture and export oriented mining have strong projected growth in Northern Australia’s short to medium term future, and the obvious synergies of shared infrastructure are recognised (Owens, 2013). Historically though, the internal distribution of costs and benefits from mining within host regions transitioning from agricultural economies has been limited (Hoath & Pavez, 2013).

Indigenous Australians’ role in the past and present management of Australian landscapes now appears increasingly obvious to contemporary Australians; but has not been an easy transition, riven initially by uncertainty and community division over the implications of the 1992 Mabo High Court decision and the subsequent Commonwealth Government’s Native Title Act 1993 impacts on private and leasehold tenure. Today, Indigenous Australians are majority landholders of Northern Australia (CSIRO, 2013; Moritz et al., 2013), and many are employed in community ranger and other land management programmes. These communities are actively addressing their social issues and considering alternate futures and meaningful employment opportunities for their growing communities (annual population growth is 2.1 percent compared with 1.6 percent for the national average (BITRE, 2009)).

This is not to say that unanimity exists - consider the divided response to Queensland’s Wild Rivers Act 2005 and contested development of the Kimberly (Western Australia) natural gas resource, where conservation agendas resulted in new alliances between Traditional Owners and graziers in the former, and overt

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17 Whilst some land is held as unencumbered freehold, Native Title is not freehold and a restricted form of tenure.
18 Act No. 42 of 2005: An act to provide for the preservation of the natural values of wild rivers, and for related purposes (Queensland Government, 2005); repealed in 2014.
divisions between Traditional Owner communities in the latter; and Aboriginal leaders stating that Green groups' determination to maintain “wilderness” areas distant from the comfortable suburbs in which most of their supporters live deprive Indigenous people of the economic opportunities they need to end poverty and social marginalisation (O'Faircheallaigh, 2011). On the international stage Pieck and Moog (2009) describe similar schisms in the iconic Amazon eco-indigenous alliance due to indigenous people never becoming a central part of the agenda of large conservation organisations, and their subsequent failure to live up to the discursive (and promotional) assurances they made to indigenous people. Cruz (2010, p. 421) warns that ‘*publishing information on a webpage does not make it more accessible to members of a local community, but rather allows that knowledge to escape local control and be used by anyone*’.

The driver for many environmental campaigns has been concerns over resource exploitation. However, mining is increasingly providing opportunities for Aboriginal business and employment in Northern Australia: Fortescue Metals, an iron ore miner in the Pilbara area of Western Australia, have invested $1 billion with Aboriginal businesses since 2010, and employs 1,000 Aboriginal people (Power, 2013). This experience contrasts sharply with historical agricultural industry engagement with Aboriginal people, characterised initially by dispossession and persecution before moving through exploitation to widespread disengagement. Even today, the Far North Queensland banana industry is heavily dependent on international backpacker labour, while aboriginal communities in the same region experience chronic under-employment.

In February 2011, tropical cyclone Yasi cut a swathe through Far Northern Queensland’s natural and production environments, compounding the impacts from cyclone Larry five years before. Unlike cyclone Larry, Yasi occurred in the aftermath of the Global Financial Crisis and in the context of a high Australian dollar and a ‘summer of disasters’ throughout eastern Australia. Agricultural industry impact was widespread, but highly variable. The banana industry received extensive media coverage with 90 percent destruction of the Australian crop (see Plate 3.2), but within 10 months was back in full production and facing chronic market oversupply
and resultant low prices. The tropical fruit industry however was dealt a crippling blow that will take years to recover, if ever. Sugar cane, cattle, dairy, other tree and horticulture crops were also affected to varying degrees relative to their geographical relation to the cyclone’s path, but recovery times from Yasi did not mirror those from Larry five years earlier (personal experience and observation).

How can an agricultural industry expansion be contemplated when the incidence of such disasters is predicted to increase as a consequence of climate change (King, 2010), with less climatic predictability and more disasters impacting upon an increasing and more vulnerable population (Barratt et al., 2009; Cocklin & Dibden, 2009; Handmer et al., 2012; ISDR, 2008; Prabhakar et al., 2009), and with regional and remote communities in tropical Queensland among Australia’s most vulnerable in the face of climate change? (Dale et al., 2011). Indeed Flint and Luloff (2005) point out that natural resource-based communities are generally viewed as being vulnerable to risks and disasters; and climate change will not only affect extreme weather events – higher temperatures and storm surge flooding could affect current

Plate 3.2 A banana crop flattened by Cyclone Yasi. Note the background hills stripped of rainforest “like a fire had been through”
crop and livestock performance, as well as the pest and disease spectrum and pressure (Challinor et al., 2014).

A factor made clear by two high intensity cyclones impacting the same area within five years was the interdependence of industries across scale and commodities: without regular banana transport south, freight costs escalated to the point government subsidy was required to ensure affordable delivery of much-needed building materials, but farmers capable of sending product south also required freight assistance; the disappearance of back-packer employment opportunities impacted on local accommodation and tourism businesses; and dairy cows could not be milked without electricity.

Additionally, while cyclones are stand alone and geographically defined events, their impact manifests in the convoluted environment of world markets. As an example, the greatest concern of the Australian Banana Growers Council post-Yasi was that the lack of supply to supermarkets would result in the importation of bananas from the Philippines (Australian Food News, 2011) - an event that would have more significant and persistent industry impact than one cyclone (Australian Food News, 2011).

Disasters however are not limited to natural events. In June 2011, the Federal Government suspended live cattle exports from Australia to Indonesia following the ABC's Four Corners programme of 30 May, 2011 showing brutal slaughtering methods and mistreatment of cattle inside an Indonesian abattoir. Whilst the ban lasted less than a month, its impacts continue to affect the beef industry today through a combination of narrowed market options compounded by drought conditions across much of Northern Australia. The unexpected market loss and resulting price plummet confused established drought management strategies of producers, and impact of the ban extended to beef producers far beyond those directly dependent on the live export trade.

3.3 National Drivers for Growth

Contemporary drivers for developing Northern Australia appear little changed from
those of earlier times: ‘untapped promise, abundant resources and talented people ... closest connection with our trading partners ... a strong north means a strong nation’ (Australian Government, 2015b, p. 1), though the 2015 Developing Northern Australia White Paper does, for the first time, describe government’s role as a facilitator rather than leader of growth, and commits to trialling and testing new policies ‘rather than just relying on the lessons of the south’ (p. 10).

The twenty-first century has seen a focus on contemporary Indigenous management of the Northern Australian natural landscapes for the provision of environmental services (Cook et al., 2012), but neither the failure of past agricultural endeavours nor the emerging recognition of Indigenous environmental stewardship has stopped the on-going speculation about Northern Australia’s opportunities for further agricultural development. The twenty-first century drought in Southern Australia (compounded by over-allocation of irrigation water) fed this debate to the extent that in 2007 then Prime Minister John Howard established, as part of his plan for water security, a Northern Australian Land and Water (NALW) Taskforce to:

‘examine the potential for further land and water development in Northern Australia, with particular emphasis on the identification of the capacity of the north to play a role in future agricultural development’ (Garnett et al., 2008, p. vii).

Whilst some industry sectors considered the projections and assumptions in the NALW report conservative (Maher, 2011), the report clearly states that the future of the North should not be limited to pastoralism and/or irrigated agriculture, and that decision making should be based on a thorough and balanced assessment of the economic, social and environmental implications. The commitment to such a decision-making context is given in the Developing Northern Australia Whitepaper which, assisted by ongoing technological developments, would address the first two of Bauer’s concerns, but what of ‘the reprehensible aversion to learning by experience’?

McLean and Gray (2012, p. 196) promote the ‘thinking use of history’ as a mechanism for reinterpretation of the premises of major policy decisions. Lessons from the past
highlight the need for precautionary action; to act in the anticipation of change and in the face of uncertainty; to work at multiple scales; to develop institutions which will adapt; and to incorporate learning. Without this, the potential for repeating past failure remains, particularly if the underlying policy paradigms are ill-conceived or flawed.

### 3.4 Global Drivers for Growth

The burgeoning world population of the twentieth century combined with political instability to bring (via improved communications and international media) the reality of famine to the living rooms of the developed world in the 1970s and 80s. For many people, these images, combined with NASA photos of Earth from space, brought the realisation that globalisation meant more than cheap air travel and Americanisation of the Australian language. Globalisation meant awareness of national inequities and a sense of obligation (at least in some people) to address these. The political geographer Kaplan (2006) describes globalisation as a cultural and economic phenomenon - not a system of international security. Kaplan (2009) also postulates that ‘like rifts in the Earth’s crust that produce physical instability, there are areas in the world more prone to conflicts than others’ (p. 102) and that ‘rather than eliminating the relevance of geography, globalisation is reinforcing it’ (p. 98). Kaplan reasons that since the world has realised international relations are ruled by a sadder, more limited reality than the one governing domestic affairs (of his home country, the USA), the central question of foreign affairs is now ‘Who can do what for whom?’ In response, the developed world’s population gave a clear signal that starvation was something it could, and would, do something about.

Global food marketing is a dynamic process open to manipulation by individual countries through measures such as import controls, export subsidies, and price guarantees. The international deregulation of agriculture, including market reform and the abolition of subsidies and protection, has been a major part of globalisation. Restructuring of agriculture is a primary outcome of deregulation and is itself a major cause of impact on rural communities, and while globalisation may bring benefits, it also has adverse impacts which are not seriously considered by many economic
analysts (Vanclay, 2003). Aggregate demand for food in developed countries increases only slowly (McCrone, 1962, p. 121), and the income elasticity of demand for food declines with economic growth such that as *per capita* incomes increase, the proportion of income spent on food declines (Engel’s Law\(^\text{19}\)). In contrast, higher yielding crop varieties, more prolific livestock strains, improved husbandry, and mechanisation all lower unit production costs and increase agricultural productivity; resulting in a *treadmill* where innovative farmers apply revenue-increasing or production cost-decreasing technology which other farmers subsequently adopt, so production increases while prices decrease. Interpreted in this way, technology is no longer a means but a cause of agricultural adjustment, ably demonstrated by a 55 percent increase in USA total farm output between 1940 and 1960 while capital inputs only increased 5 percent (Bowler, 1979). By the 1980s, this treadmill of production combined with increasing awareness of environmental and heritage issues and trans-national adoption of neo-liberal principles to force the developed nation’s farm sectors transition from a *productivism* regime to one of *post-productivism* in the later stages of the twentieth century (Bindraban & Rabbinge, 2012).

The world in 2050 is expected to be not only hungrier\(^\text{20}\) and wealthier\(^\text{21}\), but also fussier, with consumers empowered by information expecting food to be nothing less than healthy, nutritious, clean, green and ethically produced (Hajkowicz & Eady, 2015). International interest in food security was focused by the 2007 – 2008 spike in world food prices (see Figure 3.1) as a consequence of a shift from food to biofuel production (Fraser, 2008). It has been retrospectively argued that the crisis was actually triggered by a combination of short-term factors and longer-term trends, including: a series of extreme weather events; low global stock levels; the use of food crops for biofuels; rising energy prices; export bans; and increased financial speculation; along with structural problems rooted in global resource limits (see Maye and Kirwan (2013)). But politicians and policy-makers were left in no doubt as to the potential threats to food security, the increasing interdependence of agri-food

\(^{19}\) The law was named after the statistician Ernst Engel (1821–1896).

\(^{20}\) 2.4 billion more people on Earth requiring 60 to 70% more food than currently available.

\(^{21}\) Over 1 billion people in Asia alone will move out of poverty as average incomes almost quadruple by 2060.
systems, and the political and social importance of affordable food (Ambler-Edwards et al., 2009; Lagi et al., 2011).

The United Nations Food and Agriculture Organisation World Food Security summit in Rome, June 2008, helped establish a consensus that food security was a key master frame of twenty-first century public policy (Mooney & Hunt, 2009) and that the risks to food security also included slower-onset, more diffuse perturbations such as global climate change (Ericksen et al., 2009).

However, as with most complex problems, the opportunity for a simple solution fades under scrutiny. In 2015 there were approximately 795 million people

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22 Red dashed vertical lines correspond to beginning dates of “food riots” and protests associated with the major recent unrest in North Africa and the Middle East. The overall death toll is reported in parentheses. Blue vertical line indicates the date, December 13, 2010, on which the authors submitted a report to the U.S. government, warning of the link between food prices, social unrest and political instability. Inset shows FAO Food Price Index from 1990 to 2011.
undernourished globally, down 167 million over the previous decade, and 216 million less than in 1990–92 (FAO et al., 2015). Yet almost 30 percent of people globally are estimated to be either obese or overweight - a staggering 2.1 billion in all (Ng et al., 2014), making the Anthropocene the first time in human history that more people have to choose to eat less to improve their health, than those who need to eat more. But starvation is ‘the characteristic of some people not having enough food to eat, not the characteristic of there being not enough food to eat’ (Sen (1981, p. 1) in Mooney and Hunt (2009)). This means that hunger as a component of food security is more a question of access than availability, and research by West et al. (2014) indicates opportunities exist to improve both global food security and environmental sustainability for another 3 billion people through a relatively small set of places and actions: principally yield increase and waste reduction from current production areas, none of which include Australia. This brings into question a fundamental of the approach by global agricultural science and technology for more than a century, that

‘the adoption of new technologies by entrepreneurial producers willing to take enough risk in the global marketplace to increase their productivity in the pursuit of profit, with the alleviation of hunger presumably following as a latent function’

(Mooney & Hunt, 2009, p. 487);

because, managed efficiently, the world has sufficient potential to feed growing populations.

In future, agricultural development ‘will have to serve the multi-targeted demands on agricultural production systems (food and other land-based products, conservation, resource protection, climate mitigation)’ (Müller & Lotze-Campen, 2012, p. 92). Maye and Kirwan’s editorial in the 2013 special issue on Food Security warns of the risks to agriculture’s other outputs such as nature conservation and water management from pressures to produce food and energy. In the same issue Allen (2013, p. 137) warns that, ‘solutions that move control farther from the ability of people in their everyday lives should be subjected to particular scrutiny’, and that

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23 The Anthropocene is a proposed epoch that begins when human activities started to have a significant global impact on Earth’s geology and ecosystems. Neither the International Commission on Stratigraphy nor the International Union of Geological Sciences has yet officially approved the term as a recognised subdivision of geological time.
productivist goals of doubling food output could exacerbate – not solve – problems associated with food insecurity such as energy costs, climate change, and food of low nutritional quality; and suggests that food security is a collective problem requiring a social solution.

Innovative and refreshing outcomes are occurring from this debate though, an example being Project Catalyst - a Coca-Cola / WWF / Australian Government / NRM Regional Bodies / sugar industry partnership aimed at reducing the environmental impacts of sugar production on the Great Barrier Reef through innovative farming practices (WWF, 2013), and along the way substantiating Coca-Cola’s social licence to source sugar from a politically stable but environmentally sensitive area (Cocco, 2013).

The Australian International Food Security Centre was established in 2012 to consider Australia’s role in feeding an extra two or three billion people without irretrievably damaging the planet, and focuses on Australia’s role in research and extension (Blight, 2012). The Department of Foreign Affairs and Trade Secretary Peter Varghese told a panel on Capitalising on the Asian Century that ‘in a globalised world … success lies as much in our degree of internationalisation as in domestic factors’ (CEDA, 2013). But Australia’s agricultural history differs from Europe and the USA, being export-orientated around demands for food and raw materials, more-often driven by foreign investment, resulting in a lack of (or unwillingness to) finance value-adding or processing capacity (Burch et al., 1999). This has locked production into low value, unprocessed, competitive commodities vulnerable to free market price fluctuations and exacerbated by increasing application of neo-liberal policies (Lawrence et al., 2013). Australia’s agricultural sector is the second least protected (i.e. subsidised) in the OECD24 (O’Meagher, 2005). So despite recognition of the need to value-add, most Australian food exports continue to be commodities processed to the minimum necessary for stability and transport, through supply chains fragmented and dominated by overseas interests (Ball, 2012).

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24 The Organisation for Economic Co-operation and Development was established in 1961 and provides a forum in which governments of 34 countries can work together to share experiences and seek solutions to common problems (OECD, 2015).
The Tropics is home to 40 percent of the world’s population and 55 percent of the children under the age of five, and by 2050 these figures are predicted to grow to 50 percent and 60 percent respectively, while the tropical economy is growing 20 percent faster than the rest of the world (JCU, 2014). More than half the world’s middle class is expected to be Asian by 2050, and this wealthier population will require more food, and prefer food of higher value, particularly meat and processed foods (Australian Government, 2012; Hajkowicz & Eady, 2015). However, while Northern Australia is one of the largest land masses in the tropical region, it remains the most sparsely populated, a situation that continues to raise national defence concerns in some sectors.

The interplay of issues related to northern agricultural expansion includes: water resource management, climate change, disaster management, environmental impacts (particularly on, but not limited to, the Great Barrier Reef), native title and other tenure issues, the future of regional communities, foreign ownership of land and production units25, the economics of developing new irrigation areas, and who will pay for the infrastructure. The role Northern Australia will play in future world food security is therefore politically and socially contentious in addition to the structural issues raised by Bauer in 1977.

3.5 Agricultural Policy Paradigms

Whilst many societies, including Australia, have their underlying value system expressed in a constitution, usually values are translated into more tangible beliefs of how the economy or society should be organised and expressed as policy goals or, as Martin et al. (2011, p. 1) prefer, a social contract26 that

‘underpins core elements of the Australian Federation in respect to the national view of assuring a sustainable future for those areas that might not otherwise share in the distributed wealth of the nation’.

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25 While foreign ownership is an emotional issue, the Australian Bureau of Statistics indicate that in 2013 just under 99% of Australian farm businesses and just under 90% of farmland is fully Australian owned (ABS, 2014).
26 A concept outlined by the Swiss-French philosopher Jean-Jacques Rousseau (1762) of systems and processes in western democracies that seek to ensure the equitable allocation of resources for basic infrastructure and services such as roads, health and education.
Australian agricultural policy therefore is a component of a broader attempt to achieve shared aspirations or values in our society, and is not limited to the agricultural sector. Agricultural policy is developed within the broader arenas of regional, national, and global policy, all of which ultimately must deliver outcomes in relation to the economy, the community, and the environment. As a consequence, policy settings can, and do, vary over time. Habermas (2010, p. 191) understands this to be a dynamic process, and that:

‘constitutional democracy [such as Australia’s] depends not only on a routine system of checks and balances or procedural norms governing the making and implementation of law and so on, but on the active intervention of citizens into the political process, whose capability to “restore” the proper normative relationship among citizens, and between citizens and the state, rests on their ability either to foster or at least exploit a “crisis” situation that impairs the political system’s normal operating parameters’.

Such was the case in the early settlement of Australia. Although there were no real physical barriers to pastoral land use expansion once the Blue Mountains had been crossed by European settlers in 1813, there were considerable legal barriers until 1847. Initially, any occupation of the interior had been forbidden (but not necessarily enforced) by the British Government in order to concentrate energies and security of the small population closer to the coast. From the 1830s though, official opinion came to see pastoral land use as an effective form of pioneer settlement, in the tracks of which farmers could follow (Heathcote, 1975). The system of leases adopted in 1847 was based on the premise that

‘In return for occupation without ownership, he (the selector) has been granted use by lease of only a limited range of the land’s resources. If he wishes to change his land use to agriculture, he was and still is usually required to give up his pastoral lease and purchase his land’ (p. 91);

a premise that was to remain the feature of pastoral land use until the 1970s, after which some alternative land uses were considered for inclusion within the lease.

Beginning in the 1850s, agricultural land use was encouraged by colonial and state governments with the intention (firmly stated in all local parliamentary debates) to break the early squatter’s land monopolies and ‘socialise’ this natural resource by
the establishment of a yeoman farming settlement. These ‘Closer Settlement’ policies were intended to lead to intensification of capital investment and consequent production, but the legislation was less effective than hoped through a combination of careless legal drafting, inefficient supervision of enforcement, and blatant frauds (Heathcote, 1975, p. 109). However, in the sparsely settled north of Queensland, the (new) 1884 Land Bill resulted in constantly increasing rents without security of tenure (Bennett, 1927), and ‘returns so small it was possible to carry on only by producing great numbers [of cattle]’ (p. 217) with concomitant over-exploitation of pasture and environmental degradation. Subsequent Governments provided subsidies for fertiliser use, incentives for tree clearing, funding for expansion into the drier areas of the continent, and extension and education services that ensured Australian agriculture would take advantage of the latest technological and managerial innovations.

Governments also fostered the creation of grower boards and statutory marketing authorities, founded research institutes to develop and apply innovations, and employed a cadre of extension officers to communicate the results of science to the farming population (Lawrence et al., 2004). In many instances these assistance measures also distorted resource use across farms and weakened farmer’s incentives to find better ways of managing risk and improve productivity. Moreover, government assistance served to offset normal adjustment pressures, impeding ongoing structural change and preventing more efficient farmers from expanding their operations (Gray et al., 2014).

In part a consequence, but in line with global trends, the 1980s and 1990s saw the adoption of neoliberalism or hard liberalism by Australian governments, described as the most profound transformation of Australian public policy since World War II and one that fundamentally reworked a framework in place since Federation (Western et al., 2007). This transformation was underwritten by two principles: (1) Liberalism – the view that citizens are autonomous individual actors whose interests are best served when they are free from coercive government interventions into individual action (Yeatman, 2000); and (2) Marketisation – the belief that free markets are arenas which best enable individual autonomy and produce efficient economic
outcomes (Marginson, 1997).

In Australia, as elsewhere, the primary arguments for neoliberalism were economic: that free markets are necessary for sustained economic, employment and income growth and were a consequence of an increasingly globalised world. Governments also privatised existing marketing arrangements for many commodities whereby farmers were obliged to sell their produce through a government monopoly (single desk) marketing board. After deregulation, farmers could access a range of marketing options and strategies including future contracts, but these new arrangements also presented difficulties for those with no experience of them. While some prospered, many struggled to understand the changes and some farmers suffered large losses from the increase in risk (Vanclay, 2003).

The application of neo-liberal policies was across all sectors of the Australian economy, but Burch et al. (1999, p. 183) describe how when neo-liberal restructuring occurred in advanced economies such as Australia

‘Globalization uniquely manifests itself in the transfer of control of existing (food) processing facilities and their reconstitution into a broader corporate plan. This has involved agri-food processing companies making decisions to cease production of a particular commodity, or to shift production to new, cheaper, sites within Australasia or further afield’;

a process which Vanclay (2003) refers to as jurisdiction shopping. Australia was particularly vulnerable to this scenario because its long history of export agriculture was organised around the demands for basic foodstuffs and raw materials, with only a small local market for food products and a minimal commitment to value-added manufacturing. This had made Australia peculiarly dependent upon one or two major markets for agricultural exports. Initially Britain was the major outlet for Australian produce, but once Britain joined the European Economic Community, Australia was forced into a radical reorientation to find new markets for wool, beef, wheat, and the wide range of other products that it produced so cheaply (Aschmann (1977); Burch et al. (1999)).

Today, Australian governments have removed almost all statutory marketing
arrangements that characterised the pre-1990s agricultural marketing sector, and Keogh (2014) identifies this as a contributor to the flexibility of today’s farm business operating environment; with farmers free to adjust enterprises and management systems in response to market signals. Keogh describes this as a ‘*major success factor*’, especially for broadacre farmers, and claims that ‘*farmers have no desire to return to a more regulated market environment*’ (p. 4).

Collits (2006) believes that most regional policy objectives in Australia can be reduced to two overarching goals:

1. Decentralisation, with less regional out-migration, retention of young people in regions, greater economic diversity and improved employment opportunities; and
2. Reduced inter-regional disparities.

In 1965, Max Neutze observed that ‘*decentralisation of population has been the policy of most political parties since World War II. It has, so to speak, been everyone’s policy but no one’s programme*’ (p. v). By the late 1970s, Australian governments had moved away from an overt decentralisation objective and pursued the ‘*more familiar overseas policy concern of reducing disparities ... even though the decentralisation urge remains strong in many regions*’ (Collits, 2006, p. 2). The reasons for this change were complex, and described by Collits (2011, p. 44) as a ‘*classic “wicked problem” [where] just about everything that has been thought of has already been tried ... to little real effect*’.

Centralisation was not just about *economic rationalism or metrocentrism*, tempting though these explanations might be. Rather, Collits (2011) suggests, governments abandoned decentralisation for a complex and inter-twined set of reasons which include:

- Serious difficulties with the idea of decentralisation itself;
- The emergence of new regional problems as a result of changing regional conditions that overshadowed the old problem of metropolitan primacy;
- The advent of new thinking about regional development and its drivers, and new regional policy ideas more relevant to the emerging problems;
• The ineffectiveness of interest groups supporting decentralisation;
• Changing ideologies within government and changing policy priorities of governments that were in conflict with balanced development; and
• Institutions and processes within government that were unsympathetic to decentralisation.

Around the world, the greater the importance of agriculture in an economy the stronger has been the belief in the advantages of a rural life; with farm people considered to make a special contribution to political, economic and social stability (Hathaway, 1969). The twentieth century saw increased urbanisation of many of the developed world’s populations and an associated decline in the rural influence, to the extent that Self and Storing (1962, p. 226) observed that, ‘the question is no longer whether the family farm will save democracy, but whether democracy is prepared to save the family farm’. Half a century later, this remains a publicly debated question without an agreed answer, complicated now by foreign farm ownership and the globalisation of agriculture.

Paradoxically, while farmers world-wide are renowned for their beliefs in independence and free enterprise, they have also been active in political processes to deliver a disproportionally large influence on policy making. While Wilson (1977) could find no common reason across different countries for agriculture’s political power, Bowler (1979) generalised three main factors which explained the power of agriculture in the political processes of many developed countries at that time:

1. Individuals in agriculture have formed active and vociferous interest groups27, usually apolitical, and able to form close relationships with government agencies and so circumvent established political channels;

2. Widespread acceptance that the social and economic problems of agriculture are different from other national problems, as agriculture is not the master of the physical environment it operates in; leading to establishment of separate Ministries for Agriculture which provided direct access to government through their own department (and which often

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27 Interest group embraces both groups hoping to obtain a material advantage on the basis of a common objective, and those held together by a common ideals or policies.
became the sector’s spokesperson in government decision making); and

3. Direct political voting power of farmers, farm workers, their families and the broader rural vote.

Increasing urbanisation has diluted this influence, though in the 1980s rural areas in many countries still tended to be proportionally over-represented in legislating bodies as constituency boundaries were not revised with sufficient regularity to counteract changes in population distribution or, in some cases via a direct gerrymander28. These three points, and in particular the first, align with Habermas’s conclusion that only politicians and administrators remain the ultimate arbiters of public good, because

‘only their actions are governed by explicit and binding democratic procedures, which are understood to manifest themselves only in the relationship between the “strong” public sphere of representative legislatures, the political parties that occupy it, the administrative apparatus and the legal judiciary’ Habermas (2010, p. 192).

Times continue to change though, and there has been a continuing reduction in direct political influence by farmers; but the well-being, security and future of Australia’s agricultural sector continues to figure prominently in public discussions. Whilst not limited to questions of production, the broader Australian public is demonstrably interested and engaged at many levels on wide-ranging agricultural issues including: foreign ownership of farm lands, animal welfare, food miles and provenance, agricultural impacts on the natural environment, mining impacts on the agricultural environment, food safety, food security, Australia’s supermarket duopoly and its relationship with farmers, regional food processing capacity, drought and natural disaster impact on mental well-being in rural areas, social equity and service provision, and, of course, our national image.

Australia might be one of the world’s most urbanised nations, but outback sunsets,

28 A gerrymander is where electoral boundaries are redrawn in an unnatural way with the dominant intention of favouring one political party or grouping over its rivals. In Queensland, the Bjelke-Petersen government’s 1972 redistributions occasionally had elements of “gerrymandering” in the strict sense, though their perceived unfairness had more to do with mal-apportionment whereby certain areas (normally rural) were simply granted more representation than their population would dictate if electorates contained equal numbers of voters.
endless plains and new frontiers still feature strongly in the national identity (and tourism promotion), with ‘a wistfulness about, and longing for, the days of decentralisation policy among the people in regional Australia’ (Collits, 2011, p. 42). Notwithstanding this sentiment, Sorensen (1993, p. 238) suggests that

‘In general terms, Australia’s market driven settlement system is well attuned to the nation’s geography ... there is, for good reason, no large city in the interior ... it therefore seems eminently logical to have several large metropolises that are capable both of providing high order services and dealing with the rest of the world as equals, and to surround them with a range of small regional service centres and their tributaries. It is patently absurd to look to settlement systems in the quite different geographical environment of Europe and North America and claim that Australia is in some way deficient.’

Whilst the Our North, Our Future: White Paper on Developing Northern Australia (2015) includes strategies to support both economic and population growth, there is clearly no intent to develop a northern metropolis.

### 3.6 The Importance of Infrastructure

Economic infrastructure - transport, energy, water, and telecommunications - provides services essential for economic activities, including Australia’s domestic and international food supply chains (Nguyen et al., 2013). Distance and isolation however have always been particular challenges for provision of such infrastructure to those who ventured away from south-east Australia, and their resolution has been a major hurdle which (it is popularly believed), if overcome, would facilitate more settlement, increase productivity, and improve quality of life. The scale of the challenge is such that it is popularly seen as the role of government to address; that is, beyond the ability of the affected individuals.

However, it also needs to be remembered that for some individuals the isolation and challenge of Northern Australia has perhaps been part of the regional attraction, along with the sense of opportunity that accompanies new horizons. Notwithstanding this, low population numbers combined with tropical geographic and climatic constraints continue to present challenges for infrastructure provision.
In an analysis of Commonwealth government funding, Hull (2000) found that Northern Australia received considerably more than its pro-rata population share of grants (5.3 percent of the population, but 8.4 percent of grants)\(^29\). This could be attributed in part to higher maintenance and depreciation costs because of the physical environment’s effects, but other identified factors included: socio-demographic composition; administrative scale; differential input costs for labour, accommodation and electricity; reduced urbanisation affecting service scale delivery; dispersion and isolation, and being uneconomic for the private sector to provide services.

The question of infrastructure provision is an important element of the 2015 White Paper on Developing Northern Australia, with specific provision of a $5 billion Northern Australia Infrastructure Facility to provide concessional loans for the construction of major infrastructure such as ports, roads, rail, pipelines, and electricity and water supply. This recognition of the critical role of infrastructure in northern development is illustrative of the importance of understanding the infrastructure provision context, past and present, on agricultural development and farmers, and the rest of this chapter is devoted to further explanation of some of these influencing factors.

Before doing so though, it is important to point out that despite $1.1 trillion likely to be spent on critical infrastructure between now and 2050, and while Australia is likely to become a signatory to The Sendai Framework for Disaster Risk Reduction 2015-2030\(^30\) (UNISDR, 2015) there is currently no formal requirement to consider resilience to disasters when making decisions about building infrastructure (Deloitte Access Economics, 2016).

### 3.6.1 Freight and Transport Infrastructure

As a lightly populated continent, Australia’s economy is both dependent on and sensitive to freight and transport costs. The Australian Government 2011 National Infrastructure

\(^{29}\) This analysis excluded funding to Australia’s northern external territories – the Cocos (Keeling) Islands and Christmas Island.

\(^{30}\) The Sendai Framework includes preparedness to “Build Back Better”.

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Land Freight Strategy describes how many freight systems have their origins in the pre-federation colonies, so any national freight network discussion necessarily has historical overtones. For example, federation-era transport aspirations were for standardised rail gauge, and though there have been incremental changes to improve connectivity, the *regulatory* break of rail gauge still exists. All levels of government are engaged with freight, and transport policies can also reflect principles that governments want pursued across sectors. Various maps and definitions of a national transport network have been produced (*Auslink/Nation Building*, the *National Highways* scheme, the *Designated Interstate Rail Network*, the *Australian Rail Track Corporation* network) but none purports to depict a national land freight network. In most respects, policy initiatives have been directed at providing infrastructure to be used by transport as a whole rather than identifying freight as a separate target, and many transport plans relate primarily to the application of government funding.

**Sea**

From the outset of European settlement, sea freight provided transport, and as a nation dependent on maritime trade, Australia’s ports remain an important gateway for agriculture, with operational ports around Australia providing transport logistics for 42.4 million tonnes of agricultural production in 2012/13 comprised of wool, cotton, sugar, grain, livestock and timber products. Total ports throughput was 1.1 billion tonnes, the balance being predominately mineral exports (Port Master Planning, 2014). The resources boom of Australia’s twenty-first century has resulted in rapid expansion of some port facilities and associated infrastructure, particularly in Northern Australia, and Australia’s bulk commodity exports and metropolitan container imports are both expected to double in size every ten years, resulting in some regional bulk export ports now facing significant infrastructure challenges (COAG, 2011).

**Rail**

As in Europe and North America, rail provided Australia’s first mass transport opportunity, and establishment of a ‘rail head’ was an indication that a settlement
had ‘made it’. Whilst operated initially by private companies, a shortage of speculation capital resulted in continued rail development being undertaken by colonial governments to connect the hinterland with the major export seaports which, in most cases, were the capital cities. Planners gave little thought to connecting their railways with the other rail systems. By Federation in 1901, all states except Western Australia were linked by rail and more than 20,000 km of track had been laid. Sadly, those who envisaged a nation had not contemplated a national rail network, with three different gauges in use (Dept of Infrastructure & Regional Development, 2014).

Construction of a transcontinental rail link from Adelaide to Darwin began in 1878, following the route taken by John McDouall Stuart during his 1862 crossing of Australia. But it was not till 1929 that the extension to Alice Springs replaced the Afghan camel train (leading to the line’s nickname the Ghan), by which time the line was running at a financial loss and plans for connection to Darwin put on indefinite hold (AustralAsia Railway Corporation, 2014). A 1999 economic analysis estimated extension of the rail line to Darwin would add $600 million to Australia’s GDP during construction and $4.5 billion in net present value over 25 years (Bannister, 2000, p. 88). Line construction began in July 2001, with the first passenger train reaching Darwin on 4 February 2004, after 126 years of planning and waiting and at a cost of $1.3 billion. The project was believed to be the second-largest civil engineering project in Australia, and the largest in the 50 years since the creation of the Snowy Mountains Scheme (built 1949–1974). In addition to heralding a new era of tourism in the Northern Territory and providing better access to and for Aboriginal communities in the region, justification for the rail link was that it would enable Darwin to serve as another trade link with Asia.

In 1991 Australia’s Industry Commission (now the Productivity Commission) examined the extent to which Australia’s railways acted as a monopoly, and what affect this had on productivity and efficiency, and whether targeted governance reforms could produce better results. The resulting reform of Australia’s rail monopolies was estimated to unlock $5 billion per annum in productivity dividends to the Australian community. Today there is a clear organisational delineation
between social and economic functions of the railways. Both functions are pursued through commercial principles and contractual arrangements. This enables social train services to be provided on tracks which have an overwhelmingly commercial purpose, and commercial train services to be provided on tracks which the community perceives to be there for social reasons (Fraser, 2012).

However, there is still no interstate connectivity for Queensland rail services, and when coal is excluded, rail provides just 9 percent indicative freight movement in Queensland compared to 88 percent by road (Keyte, 2014). There is provision in the Developing Northern Australia White Paper for investigation of a new Mt Isa to Tennant Creek rail line, which theoretically would enable circular rail connectivity from Sydney, Adelaide, Darwin, and Townsville and back down the east coast. However, there is concurrently a proposal for a dedicated freight rail corridor from Toowoomba (SE Queensland) to the Port of Brisbane that has already achieved support from all three levels of government, and is likely to further entrench rail freight focus away from the north.

**Road**

In the 7 years from 2001 to 2008, Australian agriculture produced $253.5 billion dollars in gross value agricultural commodities, almost all of which began their journeys to domestic and export markets on Australia’s rural local roads (Fraser, 2010). There are far more roads than there ever were railways in Australia: over 800,000 kilometres valued at somewhere over $100 billion dollars, but Australia has never addressed the question of the road system’s natural monopoly in the same manner as the Industry Commission enquiry into rail monopolies (Fraser, 2012). A 2012 investigation into economic reform of Australia’s road sector found that:

‘Road use is not directly charged. This means there is no monetary estimation of loss or gain, and a strong ability to cross-subsidise. It also means that road use, and potentially provision, is excessive at least in some places. Evidence of this includes congestion. The extent to which transport is induced by road provision is unclear. Among the issues this generates is externalities and induced car traffic. In other places it is clear the condition of roads is inadequate and this includes local roads. Recent estimates suggest a life cycle funding gap on local roads alone
In contrast to this predominately state-based system of road development, Commonwealth participation in ‘beef road’ development began in 1949 - a programme of improvements to facilitate cattle transport in Queensland, Western Australian and the Northern Territory – with the objective of increasing beef exports as part of the Fifteen Year Meat Agreement with the United Kingdom (Department of National Development, 1968). The major part of the expenditure was provided by the Commonwealth as grants - $4.332 million between 1949 and 1954. A new programme of development commenced in 1961 following consideration by the Commonwealth Government of major developmental projects which might serve to increase Australia’s export income as well as provide an opportunity for the Commonwealth to be more closely associated with productive developmental projects in the outlying areas of Australia. A grant of $10 million to Queensland in 1961 was augmented by a $6.6 million loan in 1962; Western Australia received $6.9 million over a five-year period commencing 1961; and the Northern Territory $9.14 million for specified roads. Following approaches by state governments for additional funds in 1964, the Commonwealth directed that a comprehensive benefit-cost analysis of beef road development be undertaken. However, there was a specific statement in the 1965-66 Budget Speech to the effect that no cut-off in the beef roads programme was intended, and in November 1967 $50 million over seven-years in the form of non-repayable grants was announced, and that the grants would not be conditional on matching state contributions, although it was expected that States would continue to make additional contribution to the development of beef roads.

In May 2014, the Queensland Government committed to progress alternative inland routes as part of their addressing ‘down times’ on the Bruce Highway as a result of natural disasters. Key roads identified in these initiatives which are earmarked for potential upgrade include the Kennedy and Gregory Development Roads (RDA, 2014), all originally ‘beef roads’.

Air

International food supply chains using airfreight are increasing in importance, and
the value of Australia’s airfreight food exports was $1.6 billion in 2011–12 (Nguyen et al., 2013). Whilst a cost-effective option for high-value, low-volume food where quality (and price) is dependent on timely delivery, access to air freight is limited in northern Australia. Future growth will be influenced by market access and biosecurity policy arrangement in addition to infrastructure investment. However, Northern Australia’s proximity to Asia won’t provide agricultural export benefit without direct connectivity: while 90 percent of air freight is carried in the bellies of passenger jets, presently only 1.5 percent of international passengers arrive/depart directly from Northern Australia (Sprigg, 2015).

3.6.2 Communication Infrastructure

Communication services post-European settlement were seen as the almost exclusive responsibility of government. The first regular postal service began in 1821 within New South Wales. The other colonies followed and soon Australia’s mail network was entirely run and regulated by government. This began a pattern that was to dominate the communication industry for the next 150 years - almost complete government control of Australia’s communications services (Australian Bureau of Statistics Yearbook 2001).

When the telegraph first appeared in Europe in 1844, Australia was quick to adopt the new technology, and by the mid-1860s all regional centres in the south east of the country were part of a virtually instantaneous communications network owned, maintained and managed by government. The final and most significant breakthrough came in 1872, when Stuart’s crossing of the Northern Territory enabled the establishment of Australia’s first international telecommunications system - a telegraph link to Asia. This in turn connected Australia to the European and American lines, ending its isolation from the rest of the world.

Telephones quickly followed the telegraph, and in 1882 the Sydney telephone exchange made personal communication available to the average Australian, just six years after Alexander Graham Bell took out his patent. Ironically, it was often easier for a Sydney caller to reach London than outback New South Wales, so in 1960 the
Post Master General (PMG) made a firm policy commitment: while Australia’s international telecommunications industry would continue to be developed, the main focus would be upon providing modern communication services to all Australians.

Television broadcast from Sydney began in 1956, and six years later television was available in all capital cities except Darwin. The PMG began to experiment with data services, sending computerised stock exchange and business information over the telephone system in 1964. The Overseas Telecommunications Commission (OTC) was established in 1946 to oversee Australia’s international telecommunications services and their development. When the first international communications satellite, INTELSAT I, linked North America and Europe in 1965, it became clear that ground-based technology was not sufficient to connect Australia to the rest of the world. In 1966 INTELSAT II was launched, providing a satellite link between Australia and the international telecommunications network, and by 1968 the entire Australian telecommunications system was ‘plugged’ into this network. By 1987 all areas in Australia had basic telephone services, no matter how remote. Australia had achieved telecommunications maturity, with all Australians linked by a single (government-owned) infrastructure – Telecom (later Telstra).

Worldwide, information and telecommunications industries changed rapidly in the next decade, and the quality of Australia’s domestic telecommunication services was crucial for the nation’s participation in this new Internet economy. However, the required technology developments of the internet age brought concerns that Australia would be unable to compete unless it changed its communications industry structure through competition to achieve market growth. This required sweeping changes to the established industry that carried significant risk - if competition was introduced too quickly and without due care, new entrants would flounder, causing the entire Australian telecommunications industry to become destabilised. In 1997 there was a partial sale of Telstra, and the industry opened to full competition and all limitations on the number of licensed players were removed and anti-competitive conduct was prohibited. In 1999, further sales brought the privately-owned portion of Telstra to 49.9 percent.
In 2010, NBN Co (again a government-owned corporation) was established to design, build and operate a National Broadband Network to deliver high speed internet throughout Australia. As Tickell (2011, p. 931) describes:

‘[Australia is] now living in a more globalized world of rapid communication. There is already a kind of universal language of electronics. Ideas, units of information—or memes—will pass almost instantaneously between countries, communities and individuals. The wiring of the planet with fibre optics, cellular wireless, satellites and digital television is transforming human relationships. For the first time, there will be something like a single human civilization. More than ever humans can be regarded, like certain species of ants, as a super-organism.’

The enhanced communication opportunities, access to information, and social networking that the internet provides has changed many aspects of Australian society, particularly by in ways to circumvent social isolation. This is particularly important in rural and remote areas, where the internet can help ameliorate isolation by providing social connections and also provide knowledge about health and well-being (Scott et al., 2015). This revolution in information technologies is making it possible for people to collaborate on a global basis in real time, and enhancing the capacity to respond to some of the dangers associated with other forms of globalisation (Friedman, 2005).

However, the Regional Telecommunications Review 2015 (RTIRC) found that while regional Australians have a higher dependency on mobiles than their urban counterparts because of the broader geographic range within which many conduct their working and everyday lives, the quality and extent of mobile coverage continues to be a major concern. Even though Australians enjoy one of the highest penetrations of mobile broadband in the world, and 87 percent of farmers will own a smartphone by 2016 (Potter, 2016),

‘the low population density ... means that new approaches are needed to assess the priorities of those in the 70 percent of Australia’s land mass that has no mobile coverage, and to improve poor coverage elsewhere’ (RTIRC, 2015, p. ix).
3.6.3 Water Infrastructure

As residents of the driest continent on Earth, securing a reliable water supply has been at the forefront of planning for Australia’s future prosperity. There are more than 820 dams in Australia, with a total capacity exceeding 91,000 gigalitres\(^{31}\) (ANCOLD, 2012). However, most dams are at southern latitudes, where Mediterranean climates mean water storage is required to last through dry summers. Figure 3.2 shows that currently, less than 10 percent of Australia’s dams are located in northern Australia.

![Figure 3.2](image)

*Figure 3.2 Damming of Australia’s rivers has been largely restricted to the southern states. What will this map look like in 2030? Source: Geoscience Australia*

In the lead up to a national election, Australia’s then Prime Minister Kevin Rudd announced in August 2013 his plan for Northern Australia and called for a ‘national imagination’ to take advantage of the ‘enormous agricultural potential’ of the Top End, including harnessing ‘the bountiful supply of water’; while his political opponent

\(^{31}\) 1,000 megalitres, or 1,000,000,000 litres.
(and subsequent Prime Minister) Tony Abbott had already committed to investigating establishment of a Water Project Development Fund ‘to support the advancement of meritorious proposals for water infrastructure across Northern Australia, including dams and groundwater projects’ (Liberal Party of Australia, 2013).

However Rayner (2013, p. 2) warned that the Prime Minister’s announcements echoed the:

‘European-derived understanding of rivers that was used when settling the Murray-Darling Basin. There, early decisions to allocate water for agricultural progress were made implicitly – water licences were handed out and the system quickly became over-allocated. As consumptive capacity was taken up, ecological decline accelerated and “fitful, reluctant co-operation” in water management began.’

Rayner’s view was in alignment with the 2009 report by the Northern Australia Land and Water Science Review (NALW) (CSIRO, 2009) that, despite Northern Australia’s rainfall, there may be only 600 gigalitres of water available across Northern Australia that could support new consumptive use; a volume adequate to irrigate only 40,000 to 60,000 ha of intensive agriculture.

This finding was very much at odds with both earlier research and contemporary industry expectations: Gifford et al. (1975) had estimated the potential irrigable area in Northern Australia to be twice that of Southern Australia, and that only 5 percent of this area had been developed compared with 89 percent of potential southern areas. While Nothrup (1981) found this to be an overestimation, his revised figure was 13.3 million ha of potential agricultural land. The contemporary Integrated Food and Energy Developments proposal for the Gilbert River alone is for 50,000 ha of irrigated cropping land (IFED, 2014).

The important point is that projections are possibly more influenced by the aspirations of the proponent than the science on which they base their estimates; for in its latest report CSIRO now says there is enough water and suitable soil in the north to support 1.5 million hectares of irrigated agriculture (Stone, 2016) – 25 times
the amount suggested in the NALW report.

As it stands, the only schemes built expressly for irrigation in Northern Australia are:

1. The Mareeba-Dimbulah Irrigation Scheme on Queensland’s Atherton Tablelands – serviced by Tinaroo Dam, completed in 1958;

2. The Ord River Irrigation Scheme in Western Australia – serviced by Lake Argyle, Australia’s largest artificial lake (by volume) - and retained by the Ord River Dam built in 1971 by the American Dravo Corporation; and

3. The Burdekin Irrigation Scheme (103,000 ha of land in 2007, see Plate 3.2) in Queensland – serviced by Lake Dalrymple and retained by the Burdekin Falls Dam, Stage 1 of which was completed by Leighton Holdings in 1987. The design allows for future storage capacity increases, and the dam is also capable of providing water for Townsville city.

However, the way water is used in Australia is changing: along with improved understanding of the value of water has come pressure for better management of this limited resource, and past management strategies may no longer be sufficient. Along with increased mining activity, outback areas are diversifying their traditional economic bases into service industries like tourism or irrigated agriculture, and Traditional owners are asserting use and access rights (Larson, 2006). These changes have implications for sustainable water management, which must cater for the individuals and groups who rely upon water for their life and livelihoods.

Plate 3.3 Flying over the rich mosaic of the Burdekin Irrigation Area
Source: T. Dennis
3.6.4 Infrastructure Summary

So, many of Bauer’s (1977) historic impediments to agricultural success have been addressed to varying degrees, resulting in improved quality of life and service provision for northern residents. However, infrastructure provision continues to be a significant challenge, particularly where a sparse population relies on transport, energy, water and communications to an even greater extent than those in the more populated south. Whilst the Northern Australian economy has grown faster than the rest of Australia in recent years and its demographic profile is both younger and faster growing, the cost of infrastructure provision remains high. Though cost-benefit analysis is an essential consideration of investment prioritisation evaluation, it should never be the sole consideration; as its ‘focus on expected or known infrastructure demand can be inadequate where future opportunities are central to the business case’ (Infrastructure Australia, 2015, p. 27).

Improved infrastructure attracts people, who demand improved infrastructure. This chicken and egg situation is not unique to Northern Australia, but nor is it one that can be rectified in an instant. Federal, State and Territory governments aim to promote economic growth, and in some cases population growth, through policy settings and regional plans. Accordingly, the 2015 Northern Australia Audit (Infrastructure Australia, 2015) assesses critical infrastructure gaps under both policy and plan-driven economic and population growth scenarios. However, the audit focuses primarily on infrastructure relating to larger population centres (more than 3,000 persons), as well as to areas of significant existing or prospective economic activity. In consequence, the essential infrastructure needs of the many smaller communities, and in particular remote Indigenous communities, fall outside the audit’s scope.
3.7 Are We There Yet?

While infrastructure continues to be an essential part of the agriculture debate in Northern Australia, history demonstrates that it is neither an absolute limitation to new agricultural development, nor a panacea for addressing slow rates of development. Thinking about this though raises new questions: What is a slow rate of development? By whose standards should fast and slow be measured? Do fast and slow necessarily equate to good and bad, or even to acceptable and unacceptable?

European settlers arrived in Australia during a period of immense social change coupled with unprecedented industrial innovation in Europe, and around the world this rate of change has not abated. Australia was seen as a land of big horizons, and bigger possibilities; and it was well placed to capitalise on the benefits of mechanised agriculture. The most commonly used international measure of a country’s performance continues to be its Gross Domestic Product\textsuperscript{32}, and since agriculture remains an important contributor to Australia’s GDP; it is understandable that a popular attitude of fast development being desirable continues. The recent Australian government election saw growth continually touted by major political parties as a desirable goal, and it is a sentiment readily supported and promulgated by popular news media.

But the world is changing. As the population grows, humanity is becoming increasingly aware of the limit to the Earth’s resources, and the need for better management rather than exploitation. In terms of human land use, Australia is both a young country, and an old country, and it is just possible that this paradox contributes to the confusion over agricultural expansion in Northern Australia. In the next chapter I will consider some of these influencers.

\textsuperscript{32} The OECD defines GDP as an aggregate measure of production equal to the sum of the gross values added of all resident, institutional units engaged in production (plus any taxes, and minus any subsidies, on products not included in the value of their outputs) (OECD, 2002).
Chapter Four

Framing Northern Australian Agriculture’s Future

‘it may be useful to think of places, not as areas on maps, but as constantly shifting articulations of social relations through time...the identity of places ... is always in that sense, temporary, uncertain and in process’

Land is a fundamental component of Australia’s common wealth. It is a communal resource, essential for production and life. As human populations have grown and civilisations developed, land use planning has emerged as a profession to facilitate a negotiated outcome between conflicting parties (Jones, 2014). Whilst regional land use planning has not developed to the level of complexity of contemporary urban planning, Jones (2014) maintains that the focus of planning in most countries ‘remains on the institutional processes to meet “public” interest and “utopian” ideals, of which sustainable development is the latest manifestation’, and concludes that ‘planning not only regulates/constrains the property market, it also shapes and stimulates it’ (p. 578).

Despite widespread adoption of neo-liberal principles by governments in the later decades of the twentieth century, and the commensurate improvement in living standards attributed to them, the free market has not delivered an optimal simultaneous solution for allocating resources, maximising consumer welfare, stabilising foreign trade, and reducing agricultural price instability. Governments are still called upon to intervene in the market and stimulate, regulate or control economic forces; particularly when policy focus moves from direct production issues into less-agreed arenas such as environmental management.

Some of these policies emphasise the willingness of the middle-class consumer to pay a little extra for quality, a force that encourages product differentiation, and thereby feeds investment in both production and marketing of new goods. This latter role has become more pronounced with the expansion of global trade, and new trade theories have evolved to explain why most trade expansion has been occurring at the extensive margin - that is through the expansion of new goods rather than
greater trade of existing products (Hummels & Klenow, 2002).

This supports the view of Vanclay (2003) that the landscape in which agriculture occurs is a social as well as a physical landscape, and Australia’s agriculture policy has included regulation of commercial services in rural areas to ensure cost parity between rural and urban areas and a range of government services to promote agriculture and rural development; but many rural areas were developed only because of government policies - such as the post-World Wars Soldier Resettlement Scheme, which gave land to returning soldiers; while other policies limited the area of land that could be owned and how it could be utilised. Also, immigrants preferentially settled in particular districts, creating an ethnic patterning. Thus the structure and overall prosperity of agriculture is socially, culturally, politically, economically, and historically shaped (Vanclay, 1997) by both domestic and international factors, which Farmar-Bowers (2011, p. 159) describes as the confluence of ‘planet-matters’ (situations and events in the natural world that lead to good or poor harvests), and ‘people-matters’ (the arrangements and occurrences among people that determine the distribution of costs and benefits that flow from the operation of the food system).

This chapter considers in more depth some of these planet and people matters, particularly their inter-play and specific relevance to individuals involved in Northern Australian agriculture, both historically and looking towards the future.

4.1 Australian Environmentalism and the Emergence of Sustainability

In 1989, two hundred years after the European settlement of Australia and on the doorstep of the Decade of Land Care, the (then) Australian Prime Minister (Bob Hawke) launched a ten-year Commonwealth Government commitment to environmental protection within Australia, titled Our Country, Our Future. This first ever comprehensive statement on the environment by an Australian Prime Minister indicated how important environmental matters had become on the national agenda; but the rise of the environmental movement and ‘green politics’ in Australia
has deep roots (Frawley, 1999).

Heathcote (1975) has fitted the European settlement of Australia to ‘five evolving human visions ... as a result of the super-imposition of European and Anglo-Australian ideas onto those of the indigenous folk’; these visions being ‘scientific, romantic, colonial, national and ecological’ (p. 210). His final ‘ecological vision’ encompassed parallel concerns about long-term productivity and the non-economic ecological impacts of land clearance which in the late twentieth century, through a range of publications and the 1965 establishment of the Australian Conservation Foundation (ACF), sufficiently raised public awareness to the extent that a test case over clearance of the mallee scrubs in the Victorian ‘Little Desert’ in 1972 established that for the first time in Australia, the ecological view had triumphed over the colonial view. The desert was of more value in its natural state than under the plough, and environmentalism now ranked high among the political issues that decide the outcome of elections and the fate of governments (Sarokin & Schulkin, 1993).

Heathcote (1975) describes how this environmental vision grew out of, and contained components of, three out of the four earlier visions: (1) the scientific vision derived from eighteenth century European scientific expeditions and their spirit of enquiry into natural phenomenon for their own sake; (2) the romantic vision – which parallels the scientific vision, but included a sympathetic response to the Aborigines and a delight in the ‘uncivilised’ nature of the landscape, along with a retreat or escape from the civilised environment; (3) the excluded colonial vision – indifferent to the two prior visions and characterised by dissatisfaction with the natural scene and its lack of commercial opportunities from native flora and fauna (a body of opinion developed that saw the landscape as attractive only insofar as it was ‘improved’ by European man and his works – a vision with strong aesthetic and social implications); and (4) the national vision built on the confidence and success achieved in the new landscape during the second half of the nineteenth century, which saw the realisation of the hopes of colonial developers as wealth accumulated from mines, field and paddock.

Heathcote (1975, p.225) also describes how a major national task of the national
vision was settlement of the tropical north, but while development attempts showed virtually unlimited optimism in the land resources, this optimism was not borne out by actual settlement. At a national symposium on the problem (of northern development) in 1954, the chairman of the Australian Institute of Political Science noted the general opinion that

‘Australia could not justify her retention [of northern Australia] unless she exploited to the full its mineral resources and its capacity for food production, and that our failure in this part of the continent seemed a national reproach which we should do our utmost to remove’ (AIPS, 1954, p. xiii).

Clearly, at stake was not only the reputation of science, but of the nation. But this view was in many aspects at odds with the more wide-spread emerging environmental vision for Australia.

In the 1994 revised edition of his book, Heathcote added a sixth vision - the ‘vision of guilt’ - as previously rejected, ignored or unrecognised Aboriginal conceptions of the land began to permeate the European Australian consciousness with the realisation that an ancient culture had modified and sustained the land for tens of thousands of years prior to their settlement (see also Gammage, 2011). This broader acceptance of the relationship between people and their environment was founded on ‘certain beliefs which may not be explicitly argued, but are absorbed through a cultural framework which itself is being constantly remade by the outcomes of the relationship’ (Frawley, 1999, p. 265) – a vision at odds with the historic and persistent western intellectual tradition of humanity standing apart from the rest of the animal world and nature in general. Unfortunately, it is this latter perspective that is popularly (and simplistically) associated with farmers per se – a ‘techno-centric’ or developmentalist viewpoint; whereas environmentalism is popularly identified as the perspective of ‘the well-educated section of the middle class that do not draw their livelihood from the industrial or commercial sectors of the economy’ (Frawley, 1999, p. 289).

In reality, rural communities and agricultural land managers are usually very familiar with their landscapes, including degraded landscapes and their associated costs and
impacts such as feral animals, weed invasion, and declining biodiversity; though they might struggle with how to address the problems. There has been a wave of social and attitudinal change since the 1960s in regional Australia, as demonstrated by emergence of the Landcare movement in the 1990s and the Regional Natural Resource Management Bodies network in the twenty-first century. Today many non-Aboriginal Australians proudly and confidently talk about their ‘sense of place’ in the landscape (see Lankester 2013) and a majority of people interviewed in my research described their affinity with and commitment to specific country. Evolving from Heathcote’s environmental vision, sustainability (despite its difficulties in definition) has become a key concept for both pragmatic environmentalism and productive industry.

4.2 Ecologically Sustainable Development

The concept of ecologically sustainable development (ESD) came to the fore in the 1990s, and enabled specific recognition and consideration of the inter-relationships between social, economic and environmental aspects of development. The concept developed in part as a consequence of the 1970–80s environmental focus on and critique of development ideology being countered by a backlash in the 1990s against environmental campaigns which threatened employment. The concept appealed to governments trying to chart a course through the often-contradictory messages coming from the community. Now, environmental concern and activism has become commonplace in the world - prevalent in poor as well as rich nations, and with foci encompassing the local to global levels (Gallagher & Weinthal, 2012). This development and time-flow of perspectives in Australia is presented in Figure 4.1.

There are however problems with the concept of sustainable development, some of which Brown (2011) highlights:

- The concept can be deliberately vague and slippery, making it difficult to operationalise;
- It can enable green-washing or green camouflaging of strategies and thereby foster hypocrisy;
- It implies the notion and possibility of sustainable growth, which Daly (1991)
refers to as an impossibility theorem, and therefore delusional;

- It can distract attention from meaningful, more profound change and the root causes of global inequities and environmental degradation.

![Diagram of Environmental Ideas in Australia](image)

**Figure 4.1** Structure of environmental ideas and public policy development, Aboriginal Australia to present


Frawley also illustrates the juxta-position between the *protective* and *exploitive* components of environmental law, where the *protective* component aims to protect
the environment from undue degradation by human activity, and the *exploitive* component governs the disposal (sale, lease, granting) of natural resources. This segregation can result in a situation described by Lockie (2014) as ‘*ecological apartheid*’ – where areas are either ‘locked up’ or ‘trashed’, with nothing in-between.

Clearly, such an either/or outcome has never been a deliberate policy intention, as it would more likely inhibit than enhance sustainable prosperity. However, there are many instances where, rightly or wrongly, this juxta-position is *perceived* to occur, particularly at the production/protected area interface; for example:

- a banana grower and pastoralist in earlier research stated ‘*I have no [feral] pigs living on my farm - they live in the national park and trespass on my farm every night*’ (Noble, 1997, p. 83);
- ‘*Australian politicians and conservationists have often commented (off the record) that farmers’ attitudes to the environment are not conducive to effective land management*’ (Vanclay & Lawrence, 1995);
- ‘*[the] implication [being] that the local land occupiers could not be trusted to preserve the environment*’ (Mather, 1993).

Such perceptions can easily translate into polarised stereotypes or attitudes that can actively inhibit collaborative outcomes. Such polarised attitudes have, in part, been attributed to Northern Australia being viewed as an ‘*over-managed and under-led last frontier where progress requires indigieny [sic] to be assimilated and hostile environments conquered, and where wealth comes from beneath ground or off the hoof rather than between the ears*’ (Ellyard, 2004, p. 2).

Ellyard advocates that for Northern Australia to participate effectively in the twenty-first century economy will require much more than provision of improved infrastructure: it will need a ‘*new frontier*’ mentality, where design and innovation result in doing more new things first, rather than better ways to do old things. Many leading industries have discovered and benefited from opportunities for improved processes that increase productivity by embracing inter-relationships between social, economic and environmental elements of ecologically sustainable design (see Sustainable Built Environment National Research Centre 2011), and agriculture
should not fear learning from and aligning with such expertise.

4.3 Ideas about Capital

As the concept of sustainable development developed traction and understanding within the broader community, an oft-repeated observation within the agricultural sector was that “it’s hard to be green when you’re in the red”. This comment referred specifically to the need for farmers to maintain their economic solvency if they were to have any hope of satisfying a broader community expectation for higher standards of environmental stewardship. Financial capital is however only one form of the material and human resource assets that society can capitalise, for as Bourdieu (1986) explained the term capital can refer to any resource or asset that social actors can employ to further their goals – economic, cultural and social. Bourdieu argues that it is the distribution of the different forms of capital that represent the ‘the immanent structure of the social world, i.e., the set of constraints, inscribed in the very reality of that world, which govern its functioning in a durable way, determining the chances of success for practices’ (p.241).

Coleman (1988, p. S100) describes that just as physical capital is created by changes in material to form tools, ‘human capital is created by changes in persons that bring about skills and capabilities that make them able to act in new ways’; but Coleman also draws an important distinction between human and social capital, because ‘social capital comes about through changes in the relations among persons that facilitate action’ (emphasis added).

An overview of these two asset/capital classes is provided by Stokols et al. (2013) (summarised in Table 4.1), who propose that this multifaceted conceptualisation of capitalised assets has direct relevance for resilience theory as it

‘highlights transactions wherein decrements in one form of capital (e.g., hazards from extreme weather events) are addressed through the mobilization of other forms of capital (e.g., social capital in terms of a network of emergency service providers; moral capital in the form of norms about sharing in times of need)’ (p.5).
In Australia, there has been considerable debate since the 1990s over the significance of social capital for community development and policy formulation (Giorgas, 2007) as it ‘encompasses norms and social networks which facilitate social action, thus enabling individuals to act collectively’ (p. 207). This concept has been further refined by Putnam (2000), who ‘has helped place social capital as a central policy concern for local, state and federal governments, as well as international organisations such as the World Bank’ (Giorgas, 2007, p. 209), and for whom networks, norms and trust are central, observing that ‘... trustworthiness lubricates social life’ (Putnam, 2000, p. 21). Stehlik (2010, p. 93) states that ‘the critical factor in social capital building is trust’, and Hanna et al. (2009, p. 31) describe social capital as the ‘features of social organisation, such as trust, cultural norms and networks by which communities facilitate action or simply keep themselves going’. When investigating the reluctance of resource users to adopt seasonal climate forecasts that could enhance their resilience, Marshall et al. (2011) found that social factors were more important than technical ones in explaining their reticence. This should not be surprising, as farmers are human, and humans are social beings.

Table 4.1  
Forms of Capital (summarised from Putnam, 2000)

<table>
<thead>
<tr>
<th>Material Capital</th>
<th>Human Capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic capital, or material goods that facilitate the creation of new products and financial growth</td>
<td>Human capital, created through changes in persons that equip them with new skills and capabilities that enable them to act in new ways.</td>
</tr>
<tr>
<td>Natural capital or those resources produced through nature-based processes</td>
<td>Social capital, or changes in the relationships among persons that facilitate their coordinated action for mutual benefit</td>
</tr>
<tr>
<td>Human-made environmental capital such as buildings, vehicles, tools, and other products created by people</td>
<td>Moral capital, or the investment of personal and collective resources toward the cultivation of virtue and justice</td>
</tr>
<tr>
<td>Technological capital, a sub-category of human-made environmental capital exemplified by telephone systems, computing and mobile communications equipment, etc.</td>
<td></td>
</tr>
</tbody>
</table>
Putnam also described and emphasised two fundamental aspects of social capital: bonding and bridging social capital. Bonding social capital relates to the relations among relatively homogenous groups of people, which can promote exclusiveness, build social walls, and be less tolerant of diversity. Bridging social capital on the other hand involves the building of connections between heterogeneous groups, which can foster links to external assets and generate greater information diffusion. Putnam argued that both forms of social capital are necessary, and in the ‘right mix’ (p. 24) create consensus and mutual obligation which contribute to economic prosperity and effective governance.

A further conceptual refinement has been introduced to the social capital literature, linking social capital. This concept refers to the extent to which individuals build relationships with institutions and individuals who have relative power over them (e.g. to provide access to services, jobs or resources) (Hawkins & Maurer, 2010; Szreter & Woolcock, 2004). Onyx et al. (2007) argue that linking social capital is most clearly connected with structural approaches to power, and is central to an understanding of how bonds and bridges enable collective agency within community.

Social capital has gained intellectual currency as a means to understand the relative strength of families and communities, and Hawkins and Maurer (2010) state that its focus on the actions of the individual in relation to their community is where the concept is of greatest value, concurring with Schuller et al. (2000) that social capital is unique in its

‘ability to bridge the theoretical gap between individual and community that spans from the micro to the macro in an interactive and independent manner more effectively than many previous socio-economic/political theories’ (p.1779).

However, Onyx et al. (2007, p. 289) point out that the devil is always in the detail, so whether social capital is used to empower or disempower will depend on ‘the particular intersection of social capital and power relations within specific rural networks’, so these will always need to be understood.
4.4 Traditional Owners and Agriculture

In his extensively researched 2011 manuscript ‘The Biggest Estate on Earth’, Bill Gammage juxtaposes the diary notes, descriptions, illustrations and paintings of early European explorers of Australia with more recent photographs and descriptions, to substantiate his thesis that pre-European (1788) Australia was an intensively human-managed landscape. Gammage describes how early Europeans repeatedly commented that the land ‘looked like a park’, which

‘hardly reflects people constantly on the edge of want. They cannot have been the scavenging, chance-dominated savages Europeans thought them. A rich and time-eating spiritual life builds on abundance, not poverty. In the driest and most fire-prone continent on Earth, abundance was not natural. It was made by skilled, detailed and provident management of country’ (Gammage, 2011, p. 138).

However, such a system of land management clearly did not look like agriculture to early European settlers. Gammage (p. 281) states that ‘People farmed in 1788, but were not farmers’, at least not in the European sense. This is an important distinction, as Gammage points out that to this day ‘Europeans think farming explains the lifestyle differences between them and Aborigines’, and provides ample evidence that pre-1788 agriculture was ‘spread more widely over Australia than now’ (p. 289).

As previously described, post-1788 agriculture’s engagement with Aboriginal people is characterised initially by dispossession and persecution, before moving through exploitation to today’s widespread disengagement. This is despite the extensive influence of Aboriginal culture, particularly in the cattle industry, which still draws heavily on language, fire management, and understanding of natural signs and processes (personal observation and Gammage (2011, p. 167)).

When considering the internationalisation of the Brazilian Amazon, de Sartre and Taravella (2009) describe how sustainable development is actually changing the governance of modern states - particularly in how they exercise their sovereignty; as it encompasses spatial scales ranging from local to global, stimulates emergence of a hybrid form of governance through public-private partnership, and gives importance to local stakeholders such as Traditional Owners who are not usually the
main policy legislators. It is in this vein that Frawley (1999) records the late twentieth century re-emergence of Australian Aboriginal land management concepts within the Environmentalism paradigm.

However, it is important to recognise that while acknowledging this relationship is important for mainstream recognition of continuing Aboriginal interest and involvement in their land and its management, contemporary Aboriginal land management aspirations are not confined to achieving environmental outcomes. For example, Pascoe (2014) presents historical information indicating that many areas of pre-European Australia could have been an agricultural society, though again not necessarily of a form recognised as such by early explorers. In part, Pascoe hypothesises this myopia could, in part, have been because ‘the belief that Aboriginal people were “mere” hunter-gatherers has been used as a political tool to justify dispossession’ (p. 129).

Indigenous Australians are actively addressing their social issues and considering alternate futures and meaningful employment opportunities for their growing communities, along with the complexity of individual land ownership, entitlement, and responsibilities. Any strategies for northern development must be cognisant of both this complexity, and the opportunities to achieve a better outcome for all.

Of even more importance though, Northern Australia has been home to indigenous Australians for tens of thousands of years (Bottoms, 2013), a period which has seen sea levels fall and rise, extensive volcanism, and many cyclones and other natural events commonly referred to these days as natural disasters. It is probable that within traditional ecological knowledge there is experience that would assist more recent arrivals to the country.

4.5 Climate Change and other Disasters

The planet and people matters described by Farmar-Bowers (2011) can change in regular, predictable patterns in response to seasonal cycles and social rhythms, or suddenly and dramatically as a consequence of unforeseen or cataclysmic events. Such events are commonly referred to as disasters, and Australia has long been seen
as a land regularly challenged by natural disasters, as evidenced by lines from Dorothea Mackellar’s 1908 poem33

‘I love a sunburnt country,
A land of sweeping plains,
Of ragged mountain ranges,
Of droughts and flooding rains’

Disasters are the convergence of hazards with vulnerabilities; and as such, an increase in physical, social, economic or environmental vulnerabilities through such factors as population growth, change in land uses or climate change can contribute to an increase in the occurrence of disasters (Guha-Sapir, D’Aoust, et al., 2013; McDonald, 2013). During the last 50 years, better reporting of disasters, population growth, growing population density in risky areas, and changes in land use have led to an increasing number of natural disasters being reported worldwide, although ‘poverty remains the main risk factor determining the long-term impact of natural hazards’ (Guha-Sapir, Santos, et al., 2013, p. 1). Natural disasters have a tremendous impact on the poorest of the poor, who are often ill-equipped to deal with natural hazards and for whom a hurricane, an earthquake, or a drought can mean a permanent submersion into poverty (Guha-Sapir, Santos, et al., 2013). The increase in occurrence of disasters however is not equally distributed among continents: ‘Asia and Africa show the greatest growth, the Americas and Europe show a similar evolution, whereas disaster occurrence in Oceania remains relatively stable over time’ (Guha-Sapir, D’Aoust, et al., 2013, p. 9).

It is in relation to natural disasters that the word resilience is most often used by Australia’s news media, and many see this on-going struggle with natural disasters as a fundamental shaping force on our national identity and psyche; and especially a ‘part of everyday living in much of northern Australia’ (Pickup, 1978, p. iii). During the early European settlement of Australia ‘most inhabitants regarded the ups and downs of climate as being an unfair imposition from on high, rather than a normal feature of the environment, to be managed and celebrated’ (Stafford-Smith, 2005, p.

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33 Australians would not be considered an overly ‘poetic’ nation, but many ‘of a certain vintage’ can recite these lines from Dorothea Mackellar’s poem My Country, originally published as Core of my Heart.
but this attitude has changed as the highly variable nature of Australia’s climate is better understood, along with the understanding that ‘many Australian species may have evolved to “use” fire’ (p. 7).

Notwithstanding these evolving perspectives, natural disasters are a real phenomenon in Australia’s landscape. A report by the Australian Business Roundtable for Disaster Resilience and Safer Communities included the first analysis of the economic costs of the social impacts of natural disasters, and concluded that they cost the economy more than the tangible impacts such as damage to property. This report found that in 2015, the total economic cost of natural disasters in an average year, including tangible and intangible costs, exceeded $9 billion; equivalent to about 0.6 percent of gross domestic product (GDP) in the same year. This figure is expected to almost double by 2030, and to average $33 billion per year by 2050 in real terms; even without considering the potential impact of climate change (Deloitte Access Economics, 2015). A separate report estimates that $17 billion (in present value terms) will need to be spent on the direct replacement of essential infrastructure between 2015 and 2050 due to natural disaster damage (Deloitte Access Economics, 2016).

Human-induced climate change is increasing the risk of both extreme weather and temperatures in Australia. According to the CSIRO (2014) State of the Climate 2014 report, Australia is now almost a degree warmer, on average, than a century ago, and

- seven of Australia’s 10 warmest years have happened since 1998;
- very warm months have occurred at five times the long-term average over the past 15 years, while very cool months have declined by a third;
- winter rainfall has declined 17 percent since 1970 in Australia’s south-west, and by 15 percent since the 1990s in the south-east;
- extreme fire weather has increased, and the fire season has lengthened across large parts of Australia since the 1970s;
- sea-level rise will increase the frequency of extreme sea-level events;
- tropical cyclones may decrease in frequency but increase in severity; and
• by 2070, depending on how fast greenhouse gas emissions are reduced, temperatures could be between 1 and 5\(^o\)C warmer than 1980-1999 average.

Natural resource-based communities such as agriculture are generally viewed as vulnerable to the risks and disasters which will be affected by climate change (Flint & Luloff, 2005), so environmental hazards will continue to be part of living in Northern Australia. Every year at least some communities are threatened by cyclone, flooding, drought or bushfire; while farmers additionally face pest and disease outbreaks, which are often associated with the climate. While the idea of disaster usually conjures images of the spectacular - ‘the catastrophic failure of technological systems, the devastation of natural disasters, the creeping threat of global warming etc.’ (Lockie & Measham, 2012), farmers are also at risk from legislative changes that can fundamentally change their business overnight, as demonstrated by the 2011 live cattle export ban.

In Australian agriculture, the neoliberal state has sought to foster self-reliance in the management of risks, and a particular focus has been on drought. Drought was once viewed as a national problem to be addressed through state financial support. Now, it has been reconstituted as a problem for individual farmers to deal with as part of rationally-based risk management (Cheshire & Lawrence, 2005); but this has occurred at the same time as other government support, and particularly industry extension services, have been significantly reduced through neo-liberal reforms (Gill, 2011). For example, from 1971 to 1989 farmers were provided with disaster relief at times of severe drought, but after this time the state recognised drought as a normal feature of the Australian landscape and provided struggling farmers with various types of business support assistance, with income support (not drought relief funds) being provided only in exceptional circumstances (Aslin & Russell, 2008).

Under Australia’s federal political system the responsibility for natural resources is vested in the individual states, which consequently replicate bureaucratic structures to implement laws for fundamentally similar purposes in each State (Stafford-Smith, 2005). However, the Australian Government can provide funding through the Natural Disaster Relief and Recovery Arrangements (NDRRA) to help pay for natural disaster
relief and recovery costs, and a State or Territory may claim NDRRA funding if: (1) a natural disaster occurs; and (2) State or Territory relief and recovery expenditure for that event exceeds agreed thresholds; and (3) the State or Territory notifies the Attorney-General’s Department of the event. The NDRRA apply to the following natural disasters: bushfire, earthquake, flood, storm, cyclone, storm surge, landslide, tsunami, meteorite strike, tornado; but does not apply to drought, frost, heatwave, epidemic, or disaster events resulting from: poor environmental planning, commercial development, or personal intervention (other than arson) (Australian Government, 2014a).

Drought was removed from the NDRRA in 1989 after a review by the Drought Policy Review Taskforce specifically stressed that drought was a natural, recurring and endemic feature of the Australian environment, and the prospect of variable seasonal conditions was a normal commercial risk that must be incorporated into the management of Australian rural enterprises. Sustainable farm management was supposed to be able to withstand drought impacts without official relief efforts (Heathcote, 2002). In comparison, since 1988, the USA has spent US$48 billion on drought assistance, rather than on mitigation systems which would have been cheaper (Wilhite & Pulwarty, 2005, p. 396). However, despite its banishment from the ranks of natural disasters, Commonwealth drought support measures were $21 million in 1993, $42 million in 1994, $147 million in 1995, and $211 million in 1996 (O’Meagher et al, 2000).

Also, it would appear that only ‘a minority of managers apply for drought relief and of those, a further minority get most of the relief’ (Heathcote, 2002, p. 22). Perhaps this is because, as described by Oliver (1980, p. 16), ‘a drought hazard is produced as much by a human inclination to bank upon the average or better conditions occurring as it is by deficient rainfall’ or, more probably, that the focus on risk places drought in the economic sphere rather than the social or emotional spheres; and thereby avoids the ‘recognised fact that for many, farming is a way of life, rather than an economic undertaking’ (Stehlik, 2005, p. 68). Such de facto recognition was again supported by the 2014/15 Commonwealth budget continuing the $320 million drought relief package (in the form of Farm Household Allowances) announced in
February 2014 (Australian Government, 2014b), despite delivering significant cuts to most other budget sectors.

This focus on drought has been included for two reasons. First, drought will continue to be a significant influence on Northern Australian agriculture; but second, and of more importance, it indicates that the paradigmatic shift from disaster response to risk management has not been universally accepted even by government, and in reality

‘as Australian agro-ecosystems generally have to cope with high levels of climatic variability at all scales ... policy intervention needs to be aware of the many different local ways in which climatic variability plays out and affects managers across the continent, [and therefore] drought simply brings some underlying critical structural problems to a head’ (Stafford-Smith, 2005, p. 12).

The antithesis of droughts are floods, though often one follows the other in Northern Australia in the same close relationship as the line in Dorothea Mackellar’s poem. Floods are often a consequence of tropical cyclones, (King, 2001; Nott & Price, 1999), and many of these biophysical impacts have direct and indirect effects on the health and well-being of people living in affected regions (Green, 2006).

Fire is an important component of the Northern Australian landscape whose role is increasingly being understood by scientists informed by indigenous Australians, while providing opportunities for carbon storage (Douglass et al., 2011; Fache & Moizo, 2015; Maru et al., 2014; Price, 2015; Price et al., 2014; Richards et al., 2011; Richards et al., 2012; Russell-Smith et al., 2013; Stafford-Smith, 2005; Whitehead et al., 2008; Wilman, 2015). The wet-summer cycle means communities are not as vulnerable to wildfire as those located in Southern Australia’s dry-summer dominated areas, and controlled burning enables ‘efficient mitigation of wildfire [which] contrasts markedly with observations reported from temperate fire-prone forested systems’ (Price et al., 2012, p. 297); though Cottrell (2005, p. 109) reminds us that ‘locality remains important to the understanding of communities, bushfire hazard and delivery of services’.

In recent times the ‘easy availability of large databases and information systems has
played a significant role in prompting analyses of community vulnerability’ to such events (King, 2001, p. 147). However, King warns of a danger in defining and measuring vulnerability in such ways ‘because they are there, rather than because these databases encapsulate vulnerability’; for as he points out, ‘A large population in a hazardous location alone defines maximum vulnerability. All other measures modify that basic classification’. This is an important point to remember when the development of Northern Australia is being actively promoted.

Most industries like certainty of tenure in order to plan for the future, and there are risks to agriculture associated with the rapid expansion in extractive industries throughout Australia. Whilst there is uncertainty around the current and future economic, social and environmental impacts of the mineral and energy industries, these uncertainties are sometimes unnecessarily exacerbated by the existence of separate and often unrelated legislative frameworks governing mining (Mayere & Donehue, 2013). Often, agriculture operates under the assumption that existing land users will be entitled to continue into the foreseeable future, but Mayere and Donehue (2013, p. 221) found that while distrust in plans and policies was strongly related to an imperfect knowledge of land use and tenure, it was the ‘state’s capacity to override supposedly comprehensive local planning instruments (that) lies at the very core of the uncertainty’, and thus present an additional risk element.

4.6 Australian Agricultural Policy in the Anthropocene

The interplay between one of the world’s oldest contiguous human landscapes and aspirations for an intensification of production agriculture in Northern Australia is occurring at a time when the extent of humanity’s true impact on the Earth through population increase and anthropogenic emissions of carbon dioxide is being interpreted as a new geological epoch – the Anthropocene (Crutzen, 2002).

Whilst climate change has provided the focus for contemporary human civilisation’s ability to influence Earth’s environment as a single, evolving planetary system (Steffen, W et al., 2011, p. 842), additional impacts include: changes to the nitrogen,
phosphorus and sulphur cycles fundamental to life; altering water cycles between the land and atmosphere; and likely driving the sixth major extinction event in Earth history (Steffen, W et al., 2011). Given the implications of changes of this magnitude, it is not surprising that global society is taking a rapidly increasing interest in the ramifications of associated policy, particularly in achieving security for future generations. Sustainability has become a key concept, which Taylor (2010) describes as having proven itself a robust tenet around which dialogue and mutually-agreed action can be developed between industries and the conservation sector, though Rowell (1996) argues that this ‘accommodating’ mode is actually the co-opting of the agenda for change by dominant political and economic interests.

Though the political influence of environmentalism in Australia may have waned in the aftermath of the 2007-08 Global Financial Crisis (GFC) and changes of government at both state and federal levels, modern environmentalism as the manifestation of a social and political movement advocating a new (arguably re-discovered) philosophy of human conduct towards nature and the cultural artifacts of human civilisation and other human beings will continue to challenge more exploitive attitudes and industries. For as Lockie (2004, p. 26) points out

‘social theory that cannot find a place for the non-human organisms, substances and patterns of nature is social theory that is inadequate for understanding key dimensions of our contemporary world’.

Increasingly, people and institutions are demanding the right to participate in development decision-making and governance, and as the focus of development shifts from modernisation to sustainability, the respective roles of government and individuals in systems of governance also shifts. Eversole and Martin (2005p. 1) state that ‘Good development policy and practice must do more than ensure economic efficiency – they must promote human well-being and equity, and this is not a task that states or development agencies can carry out on their own’ (see also de Sartre and Taravella (2009).

Such an environmentalism paradigm however embodies a continuum of thought and action concerned with the relationship between people and their environment,
which can manifest in more extreme eco-centric views such as those adopted by some elements of the animal rights movement (Singer, 1990). The ability of such groups to directly affect established industries was demonstrated through the 2011 federal government ban on live cattle export to Indonesia.

This, and similar events, lead me in this rapidly evolving era of instant global communication and social networks to consider again Habermas’s (2010, p. 192) assertion that ‘Debate and dispute in the “weak” publics of the press and the street are better suited for the “struggle over needs” and their interpretation than it is for the resolution of these conflicts’: for while the extensive media coverage and debate did not resolve the conflict, neither did the subsequent political decision to ban exports, though the impact of this decision continues to be felt in Australis’s cattle industry five years after the event. It was however the weak (I borrow Habermas’s term) media debate that generated the policy decision.

RSPCA35 Australia’s Goodfellow et.al. (2014, p. 40) point out in a themed edition of the Australian Farm Institute’s journal (Farmers fare better with animal welfare) that ‘as economic prosperity rises, public concern for the welfare of animals increases throughout the developed world ... a trend likely to continue within the growing middle classes of the BRIC economies [Brazil, Russia, India and China]’. They conclude that while the approach industry takes in responding to public concerns can limit the extent of societal conflict and the level of impact upon business and create new market opportunities, animal welfare is a public good - which means it is the responsibility of everyone to improve it, not only farmers. However, in this same journal edition, Sloyan (2014) describes how massive changes introduced to the British pork industry in 1991, in part related to implementation of new animal welfare standards, contributed to weakened farm productivity and profitability to the extent that twenty years later, while sow stalls had disappeared from British farms, so had United Kingdom pork production; with a majority of product now imported from nations without similar animal welfare standards. The problem has

34 There exists a view within the pastoral industry that the media debate was also weak intellectually, insofar as there was only a limited effort to research ramifications of the decision, or to present an industry perspective.  
just shifted further from the public view.

Animal welfare is but one example of how the views of a minority can impact an industry or region, but the converse can also be problematic – where a majority impinges on the rights of a minority, which Dale (2014, p. 8) describes for Northern Australia as a north-south cultural divide where ‘waves of different social, political and economic agendas have washed over the north’ from the developed south. As an example, he describes ‘resource preservationists who seek a northern wilderness but appear to lack much empathy for those people who actually live in, care for, and derive an income from the northern Australian landscape’.

Herein lies a conundrum: how, in a democracy like Australia, to respect and protect the views of the less than 5 percent of the national population who actually reside in the more than 40 percent of land that is tropical Australia?

But the question is even more complex: the popular Australian view of life in northern (tropical) regions has been strongly influenced by our historic European perspective as a place of isolation, hardship, and extremes; whereas in reality the tropics are ‘just home’ to 40 percent of the world’s population and 55 percent of the world’s children under five years of age. Also, the tropical economy is growing 20 percent faster than the rest of the world and the tropics host 80 percent of terrestrial biodiversity (JCU, 2014). Northern Australia, as a sparsely populated tropical region, is a global aberration. As such, it needs to be conscious of the risk of an overly parochial view, particularly in this globally connected modern era.

Dale et al. (2014) provides his detailed account of modern north Australian history not for the sake of record keeping, but ‘to progress a national dialogue about a cohesive forward agenda’ (p. 9), and builds a strong argument for adopting region-centered governance systems capable of integrating improved natural resource management and economic and social development. In reality, such an approach is needed throughout our globally-connected world and none more-so than in the tropical regions, which until recently were often managed by first world countries.

Improved connectivity and communication is a hallmark of our era, and despite the
risks of submerging policy-makers in too much information, could provide the opportunity and tools for informed cross-community, region, and national collective governance. If Australia can achieve this transition from government to governance for the important and (rightly) contested decisions regarding the agricultural development of Northern Australia, the opportunity is there to extend the process for global benefit.

4.7 Global Decision-making and Evolving Governance

Stone (2012) states that governing through knowledge instead of politics has been a utopian dream for centuries, inspired by a sense that politics is messy, irrational, selfish and short-sighted. However, ‘reasoned analysis is necessarily political’ (Stone, 2012, p. 375). Reason doesn’t start with a clean slate on which our brains record their pure observations. Reason proceeds from choices to notice some things but not others, to include some things and exclude others, and to view the world in a particular way when other visions are possible. Policy analysis is political argument, and vice versa, and probably always will be.

Though not a Northern Australian example, such dichotomy in rural policy making is clearly demonstrated by the responses to the escalating and often disastrous bushfires of southern Australia: Stephens (2010, p. 18) identifies what he believes to be an increasing trend towards ‘megafires’ over recent decades, and advocates ‘political and community commitment to a landscape approach to fire risk management that looks at the risks and options across all land tenures and is supported by scientific evidence’; whereas evidence shows that government focus was actually on high-profile investments in fire suppression rather than in adequate fire prevention measures (Keogh, 2010). This divergence in focus is attributed to an inability (or un-willingness) to resolve pre-existing and conflicting priorities, such as a public discomfort with the smoke and ash associated with prescribed burning near densely settled areas; a lack of resources available to public land management agencies for pro-active activities; and a prevailing view amongst some sectors of the environment movement that fuel reduction (through either burning or grazing) produces undesirable environmental damage.
The customary institutional tool for determining outcomes in such community conflict, particularly over property rights and access and use rights, has been land tenure and its coupled obligations, but the above example demonstrates that this mechanism cannot cope with multiple overlays of community expectation. Without community consensus to an agreed position, it is difficult to envisage resolution of such problems.

Returning to Northern Australia, until recent times pastoralism dominated the rangelands as the *highest and best use*. However, beginning in the 1980s, this has been steadily displaced as other interests including conservation, indigenous ownership, tourism and mining have received recognition. Whilst these are not exclusive activities, Holmes (2000) suggests that an over-extension of private property rights (driven by land speculation) has been, and continues to act as, a barrier to transfer of land to other tenures, with an assumed right of exclusive possession (despite being subsequently disproved in the 1996 Wik High Court decision\(^{36}\)) and an effective right of veto over excision of small parcels for private purposes such as a roadhouse or agricultural venture. Holmes argues that a process of *de-privatisation* is a logical response to changing resource values and expectations, and would be consistent with the original intent of the lease tenure system to facilitate transfer of land to *higher* uses when circumstances were right. This multi-functionality concept, where agriculture is only one component of land use, could have a *‘pivotal role in the reconstitution of rural space’* (Holmes, 2012, p. 252), though it should be remembered that it was misapplication of a very similar principle that resulted in the (previously discussed) difficulties of the 19th century pastoralists described by Bennett (1927).

Globally, Holmes (2000) describes the shift in resource values as a transition from a *productivist* era, in which commodity outputs were universally given priority, to a *post-productivist* era in which emerging amenity values are increasingly important:

\(^{36}\) On 23 December 1996, the High Court handed down its decision in *Wik Peoples v State of Queensland and Others*. The decision confirmed that native title rights and interests may exist over land which is or has been subject to a pastoral lease, and possibly some other forms of leasehold tenure. The Court held that existing pastoral leases issued prior to 1 January 1994 and the rights granted under them are valid. It also held that the rights of the pastoralist prevail over native title rights and interests to the extent of any inconsistency (ATNS database, 2004).
'rural lands are undergoing a major re-evaluation. Productive lands, surplus to requirements for commodity outputs, are increasingly in demand for their amenity values, broadly defined as those values directly satisfying human needs and wants, other than material needs. In the [Australian] rangelands, these new values embrace Aboriginal traditional and contemporary uses, biodiversity conservation, and preservation of cultural and natural heritage, tourism and recreation, among others’ (p. 135).

A powerful example of this post-productivist transition comes from both Europe and North America, where serious (and often controversial) efforts are being made to reintroduce large native grazers and predators to areas where they have been locally extinct for millennia (Heffernan, 2016). Often these areas are still farmland. Such effort would probably have seemed unwise at a time when these animals competed directly with humans for survival, but is now a clear indication not only of humanity’s dominance of the natural environment, but acceptance of the concomitant responsibility that accompanies this, at least by some sectors of the community.

This new, highly variegated geography of rural development, settlement and land use is producing many different rurals; each with varying developmental capacities; and accompanied by shifts in political structures, agency and representation (Argent, 2011). This change of definition carries a particular risk for contemporary Northern Australian agricultural development; where a statement by a producer, politician, or policy-maker is susceptible to very different interpretations by other community sectors, depending on their personal interpretation of the words used.

Whilst care must be taken in extending the experience of the rural elsewhere to Northern Australia - as they are not necessarily directly comparable with the productivist-multifunctional countryside transitions of the majority of advanced industrialised nations – nonetheless, global trends are at work and gathering momentum. In democracies, it is clear that voter numbers carry more weight than ownership.

Argent (2011, p. 184) describes three key processes in this transition process, of which one definitely applies to the Northern Australian context: the ‘increasing
public regulation of farm production techniques in order to prevent and/or control environmental and welfare outcomes’. Of the other two processes, the ‘withdrawal of longstanding support to the sector’ (process 2) is not uniformly consistent with contemporary political and sectoral encouragement for the region’s agricultural expansion; and process (3) ‘in-migration into select rural areas that has produced a new ‘class’ of rural residents who have actively challenged the hegemony of farmers over the directions of local social and economic challenge’ has certainly not occurred to the extent experienced in other advanced industrialised nations, probably a consequence of both distance and Northern Australia’s small endemic population.

This is not to say that Northern Australia is not subject to the influence of supra-national, single-interest groups, such as People for the Ethical Treatment of Animals (PETA). However, their influence is generally seen to emanate from the southern capitals and not from sectors residing in the community, and is therefore an extension of Dale’s North South Cultural Divide. This in turn can result in entrenched philosophical positions rather than any attempt to understand another’s perspective. However, the future of Northern Australia is inexorably bound to the expanding and overlapping mesh of global perspectives, networks and influences; and these include specific-focus activist groups whether or not they care that their actions are fair, equitable, or rational. Whilst care must be taken in applying the experience of elsewhere to Northern Australia, there is probably more to be learnt from exploring similarities than from elaborating differences. The importance of this will be elaborated in Chapter Ten: The Thread of Fairness.

Returning to Argent’s first key process – ‘regulation of farm production ... to ... control environmental and welfare outcomes’: Costanza et al. (2014) estimated the 2011 value of the services provided by ecosystems of fundamental importance to human well-being, health, livelihoods, and survival at $125 trillion per year\(^{37}\). Whilst this rather large figure is actively used to argue against increasing productive development by some sectors, it is also used to argue strongly for improving the

\(^{37}\)A move away from Gross Domestic Product (GDP) as a misleading measure of national success is also advocated, and adoption of a metric more suited to measuring what actually makes life worthwhile (Costanza, Kubiszewski, et al., 2014).
perilous financial position of many rural industries while bolstering a transition to more sustainable production. *Market-based Instruments* (MBIs) or *Payments for Ecosystem Services* (PES) have been promoted as economically efficient targeted solutions to otherwise intractable environmental policy problems; with the added potential to improve the livelihood security of ecosystem service providers (Lockie, 2013). Here, a dollar value is put on the clean air, healthy waterways and intact ecosystems that good farming practices maintain.

However, Lockie points out that PES are not an alternative to good planning and governance; a view supported by Costanza et al. (2014, p. 152), who state ‘*global estimates expressed in monetary accounting units ... are useful to highlight the magnitude of eco-services, but have no specific decision-making context*.’ Lockie therefore argues that the effectiveness of PES through a market mechanism will depend on the policy and governance environment in which they operate, that is:

‘the capacity of ... agencies to define and enforce appropriate property rights, identify and mobilise sellers, solicit trust, act on behalf of absent buyers, monitor PES implementation and outcomes, and reduce information deficits and associated transaction costs ... meeting these conditions is not simply a matter of appropriate incentive design but of political decision-making, moral judgment and social learning. Failure to recognise these conditions potentially undermines the effectiveness not only of MBIs but of alternative policy measures taken contemporaneously with MBIs such as community-based natural resource management’ (Lockie, 2013, pp. 96-97).

On a more optimistic note, there are instances of corporations going beyond *compliance* behaviour and creating social knowledge about the pairing of economic growth and environmental governance. Gallagher and Weinthal (2012, p. 144) describe how in 2006, Sir Richard Branson announced that his company, Virgin Group Limited, would invest all profits from its travel companies over the next 10 years in efforts to stop global warming, stating ‘*we need to make a virtue out of investing in clean technology ... and not be ashamed to want to make profits out of it*.’ This is a very long way from the 1970s, when General Motors were chided in *The New York Times* for pondering the notion of social responsibility (specifically, addressing
pollution and safety concerns) as ‘pure and unadulterated socialism’.

Gallagher and Weinthal conclude that while Corporate Social Responsibility (CSR) might have developed as a defensive approach to the regulatory pressure of the state, many businesses now embrace self-regulation, and in the process have changed the way states approach environmental governance (see also Navarro, 2006). No doubt, the enhanced ability for sharing individual comment and opinion through the explosion of social media will see this grow, as evidenced by the success of such entities as Uber and AirBnB38 – where the ability for both supplier and customer to rate their interaction has enabled robust confidence in the services offered (Yarwood, 2016).

4.8 What is Different Now?

Contemporary Australia is experiencing within both political arenas and mainstream media a renewed national focus on the development of Northern Australia, with agriculture promoted as an overt cornerstone of development. Whilst not the first time in Australia’s European history that grand visions for the north have captured the nation’s imagination39, this time they are being debated in a globally connected era increasingly conscious of humanity’s impacts on, and obligations to, the natural environment – the Anthropocene (Crutzen, 2002; Folke et al., 2011; Steffen, Will et al., 2011; The Stockholm Memorandum, 2011; Westley et al., 2011).

Concurrently, and arguably integral to this era, there is at all scales a transition from ‘government’ to ‘governance’40 as around the world, communities question the ‘national interest paradigm in which the inalienable right of the state ... is universally recognized ... [as having] the capacity to decide actions concerning a national territory’ (de Sartre & Taravella, 2009, p. 406). The diverse and divergent

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38 Respectively, the world’s largest providers of transport and accommodation, though neither owns any physical property. Their business models derive from pairing service providers with customers via the internet. Founded in 2009, by 2014 Uber was ranked 48th most powerful company in America with an estimated worth of US$62.5 billion. Founded in 2007, Airbnb has >1,500,000 listings in 4,000 cities and 190 countries (Wikipedia).

39 An interviewee compared North Australian development with Haley’s Comet: “they both come around regularly, though each time they vary in intensity”.

40 ‘The shift from the formal and centralised administration and regulation of populations and territories better known as “government” to the decentralised mode of political management known as “governance’” (Argent, 2011, p. 184).
motivations, perspectives, and ‘grass roots’ advocacy generating much of the attention on Northern Australia is at odds with Habermas’s (2010, pp. 191-193) account of the normal course of events, wherein:

‘initiative lies not with civil society, nor even with parliaments and legislatures, but with senior members of government and the administrative bureaucracy, such that issues will tend to start in, and be managed from the center [sic], rather than following a spontaneous course originating in the periphery’.

Also, according to Habermas, communicative power only becomes political power when it ‘affects the beliefs and decisions of authorised members of the political system … who remain the ultimate arbiters of the public good, because only their actions are governed by explicit and binding democratic procedures’; and debate and dispute in the ‘weak’ publics of the press are ‘better suited for the struggle over needs and their interpretation than … for the resolution of conflicts’. But does this still hold true in our era of global citizen connectivity, social networks, and 24-hour news cycles?

The June 2015 release of Our North, Our Future: White Paper on Developing Northern Australia demonstrated that, through the combined influence of global trends and the continuing efforts of Northern Australian residents and industry, the issue of Northern development had been accepted by Habermas’s ‘authorised members of the political system’. The subsequent question of how this acceptance will manifest in actual development - only time will tell. Improved regional infrastructure will be an obvious indicator. However, the extent to which the aspirations of contemporary advocates for northern development are realised will rest largely on the ability of the five out of one hundred Australians currently living in the north to convince the ninety-five others who don’t (and who predominately live in southern capital cities) that their experience and perspective is situationally important, and should be an essential contributor to decisions around developing and achieving a shared vision for Northern Australia.

The next chapter addresses the methods used to investigate the experiences of individuals operating in this environment.
Chapter Five

Research Approach

‘That is the beginning of knowledge
- the discovery of something we do not understand’
Frank Herbert, 1981

This chapter outlines the theoretical position taken and how it relates to the research questions. My ontological and epistemological positions within the interpretative paradigm are described, and there is reflection on how these have influenced and underpinned the methodological approach. The emergence and evolution of this approach within the social sciences is also described, as it is an important element of both why and how I approach the study. Next, the methods used to gather data are described: which include the review of academic and grey literature, semi-structured interviews with industry participants, attendance at industry events, a web-based interactive consultative tool, and personal reflection. The chapter concludes with a description of the data analysis process.

5.1 A Problem-focus, as Distinct from a Topic-focus

The research objectives were to identify, investigate and understand the factors and operational environment that both influences and contributes to the ability (or otherwise) of individual participants in Northern Australian agriculture to survive and prosper – their resilience. It was never an intention to establish some external metric of what might constitute success or to rank the relative success of individuals either within or between industries. With this in mind, the adaptive capacity of individuals within their own enterprise was adopted as a principal focus, and a phenomenographic analysis used through a qualitative research methodology; phenomenography being

‘a research method adapted for mapping the qualitatively different ways in which people experience, conceptualise, perceive, and understand various aspects of, and phenomena in, the world around them’ (Marton, 1986, p. 31).

In adopting this approach, I was conscious of the warning by Darnhofer (2014, p. 476)
that while

‘Resilience thinking offers a way to conceptualise uncertainty and dynamics, it raises methodological challenges ... [as such thinking requires development of processes that do not] ... solely focus on analysing what “is” but on understanding processes, especially the conditions that enable such processes’;

and as a consequence, have endeavoured to develop as full an understanding as possible of the operational and social context of Northern Australian agriculture. This understanding has been assisted through prior professional involvement in agriculture and natural resource management, experience as a farmer and as an industry advocate, and ongoing involvement in Regional NRM organisations; and while I do not purport to be either unique or an authority in this area, this experience has helped me approach the study with a broad contextual understanding that represents the research starting point, or as described by Grix (2002), my ontological position.

Also of importance, this pre-existing context definitely assisted researcher credibility with and ability to engage research participants, as did my epistemological position within the interpretative paradigm, that is, one which is predicated upon the view

‘that a strategy is required that respects the differences between people and the objects of the natural sciences and therefore requires the social scientist to grasp the subjective meaning of social action’ (Bryman, 2001, pp. 12-13).

5.2 Methodology

In qualitative research, method is primary, as it assists in protecting findings from a researcher’s personal bias and assures objectivity, but the practice of qualitative study requires more than simply applying techniques (Polkinghorne, 2006). Qualitative researchers study phenomena and processes in their natural settings to make sense of matters in terms of the meanings that people bring to them, which has been expressed as a naturalistic or an interpretative approach to the world (Hallberg, 2006), where researchers ‘strive to come further than just pure description ... they want to gain an in-depth understanding and explore meanings and processes of everyday life’ (Hallberg, 2013, p. 1). Marton (1986) describes phenomenography as a qualitative
research methodology within the interpretivist paradigm that enables the qualitative investigation of the different ways in which people experience or think about something; while Polkinghorne (2006, p. 72) reminds us that a qualitative study is ‘problem centred’, that is:

‘it is about producing solutions to show data can be generated and collected that are rich enough to exhibit the detail and depth of the experience under study, and to show meaning can be drawn from these data through an analysis that intensifies its understanding’.

Unlike quantitative research, in a qualitative study the researcher is often the main instrument for data collection, data analysis, and data interpretation; which means researchers must acknowledge and identify their inherent biases (Onwuegbuzie et al., 2008). Bias can also occur through the interaction between researcher and subject, and can come to the fore at any stage of the qualitative research process. Miles and Huberman (1994) differentiate such bias into Bias A and Bias B:

1. **Bias A** - the effects of the researcher on the study participant(s) - prevails when the qualitative researcher disrupts or poses a threat to the existing social or institutional relationships, and can lead to informants’ implicitly or explicitly boycotting the researcher, who is viewed as a spy, critic, nuisance, voyeur, or antagonist; whereas

2. **Bias B** - the effects of the study participant(s) on the researcher - can lead the researcher to ‘go native’; that is, become a participant, as opposed to a peripheral-member researcher who develops desirable emic perspective without participating in those activities central to person/group/society under study.

Of these two, from the outset Bias B was recognised as a significant risk to the objectivity of my research. Unlike quantitative research, in a qualitative study the researcher is often the main instrument for data collection, data analysis, and data interpretation; which means researchers must acknowledge and identify their inherent biases (Onwuegbuzie et al., 2008). Onwuegbuzie et al. (2008) suggest a debriefing of the researcher based on Guba and Lincoln’s five authenticity criteria:
fairness, ontological authenticity, educative authenticity, catalytic authenticity, and tactical authenticity; by someone external to the study as a mechanism to help interpretative researchers identify and reflect on the potential effect of their biases, though they recognise that this technique is not one currently advocated by qualitative researchers.

Strauss (1987) believed that bias could itself represent a rich source of data, and coined the phrase experimental data to describe it, recommending ‘mine your experience, there is potential gold there’ (p. 11). The important issue is to be aware of the potential for bias, identify when and how it might occur, and develop strategies to balance and address it.

A fundamental reason for the methodology selection was that phenomenography (as distinct from phenomenology\textsuperscript{41}) allows the researcher to use their own experiences as data for analysis, and aims for a collective analysis of individual experiences, which Dahlberg (2013, p. 2) succinctly describes as the ‘approach of in-between’ (insofar as it cannot be reduced to any of the ‘isms’\textsuperscript{42} that stem from the dualism of an outer and an inner world). Phenomenographers adopt an empirical orientation, and then investigate the experience of others in order to extend existing knowledge through a fresh perspective, which presents the researcher with ‘aspects of some particular lived experience, which will startle us into recognizing what should have been obvious’ (Ashworth, 2010, p. 1). Ashworth states that in qualitative research, the research topic is always contextualised, and that ‘the stronger kind of paper within the phenomenological tradition … is one in which … the author, drawing on the evidence of the research participants, personally wrestles with the experience itself’ (p. 2). He concludes that it is the researcher’s responsibility to make sense of the research topic and not to rely on ‘authorities’, and Polkinghorne (2006, p. 1) points out that

\textit{‘since researchers themselves serve as the data gathering and analytical}

\textsuperscript{41} Phenomenography will lead to better understanding of the perceptions and experiences of a phenomenon, while phenomenology will lead to a better understanding of the phenomenon itself - see (Bowden, 2000; Marton, 1981)

\textsuperscript{42} Empirism, psychologism, materialism, idealism, objectivism, subjectivism or constructivism, those that stem from the dualism of an outer and an inner world (Dahlberg, 2013, p. 2)
Guided by the above, this methodology\textsuperscript{43} was further selected as a consequence of my interest in identifying social theory that could assist the identification, understanding, and organisation of mechanisms that improve the ability of those involved in Northern Australian agriculture to manage change (i.e. their adaptive capacity) rather than starting with a hypothesis as to what these may be. I was particularly interested in considering theories that relate to the existing social-political ideology and their subsequent relationship to explicit and implicit policy paradigms, and in particular to avoid the situation described by Rist (1994, p. 546), whereby researchers ‘have so persistently misunderstood decision making, and yet have constantly sought to be of influence, is a situation deserving of considerably more analysis than it receives’. Rist postulates that research would be more useful if reoriented away from ‘event decision making’ and towards ‘process decision making’, which would ‘necessitate looking at research as serving an “enlightenment function” in contrast to an “engineering function”’ (pp. 546 -47).

My approach has been ‘inductive’ (as described by Neuman, 1997, p.46): to build theory from the ground up, whereby detailed observations move towards more abstract generalisations and ideas. This Grounded Theory is a recognised strategy for qualitative research, not just qualitative analysis (Bertero, 2012; Seaman, 2008), and avoids descriptive interpretations in favour of abstract conceptualisations by the method of constant comparison, which facilitates the discovery of stable patterns in the data - that is, the emergence of concepts. The central tenet of Grounded Theory is that it allows theory to emerge from the data, rather than a previously formulated hypothesis being tested against data.

The 1967 publication “The Discovery of Grounded Theory; Strategies for Qualitative Research” by Glaser and Strauss represented a breakthrough in qualitative research, as it offered methodological consensus and systematic strategies for qualitative

\textsuperscript{43} Hallberg (2013) believes that the theoretical/philosophical basis for choosing a method should be declared in a scientific article.
research practice (Bertero, 2012) and countered the prevailing opinion that quantitative research provided the one and only approach to scientific inquiry (Hallberg, 2006). New theory is conceived as the researcher recognises new ideas and themes emerging from what people have said or from events observed. Hypotheses about the relationships can be tested and constructs formed. This approach is flexible and can give voice to the participants, but application of a systematic methodology avoids it being ‘just another story’. Grounded Theory methodology is about research questions, data collection, analysis and generating theory. It is not solely data analysis (Bertero, 2012), and Hallberg (2006) states that it is not the form in which theory is presented that makes it a theory, it is the fact that it explains or predicts something.

Grounded Theory has developed and evolved since Glaser and Strauss’s 1967 ‘discovery’, and continues to be modified by the era within which it exists. Hallberg (2006) summarises this history into three distinct eras of Grounded Theory progression:

1. Glasser’s position in the classic mode, which remains fairly close to traditional positivism with an interactionist perspective – a mode occurring in the 1960s;
2. Strauss and Corbin’s reformulated mode, which moved into post-modernism with an intention to also render the voice of the informants into the results, and driven by a constructivist view of science – occurring in the 1990s;
3. The constructivist mode, represented by Charmaz, and part of the interpretive tradition and an approach between positivism and postmodernism – occurring in the 2000s.

Charmaz (2006, p. 2) herself describes Grounded Theory as a set of methods that ‘consist of systematic, yet flexible guidelines for collecting and analysing qualitative data to construct theories “grounded” in the data themselves’. This is important, as it fully repositions grounded theory as a flexible approach and not a strict methodology (Seaman, 2008). Charmaz describes the process as deceptively simple: (1) read verbatim transcripts, (2) identify possible themes, (3) compare and contrast themes, identifying structure among them, and (4) build theoretical models, constantly checking them against the data.
A further variant of Grounded Theory expounded by Guest et al. (2012) is Applied Thematic Analysis, which can provide researchers a practical framework for carrying out an inductive thematic analysis on common forms of qualitative data (in-depth interviews, focus groups, field observations); which they describe as

‘most useful in capturing the complexities of meaning within a textual data set.

It is also the most commonly used method of analysis in qualitative research (p. 11) ... and similar to phenomenology, which seeks to understand the meanings that people give to their lived experiences and social reality’ (p. 13).

Thematic analysis involves Charmaz’s steps (1) through (3) as well as a portion of Step (4). However, as implied by Step (4), a key attribute of the thematic analysis process is that the resulting theoretical models are grounded in the data. In applied research, output may or may not be a theoretical model (which is their distinction from Grounded Theory), but ‘as with a grounded theory approach, researchers are greatly concerned with ensuring that interpretations are supported by actual data in hand’ (Guest et al., 2012, p. 12).

Seaman (2008) also describes ways in which traditional grounded theory can be stretched in new directions by using it in an existing theoretical framework with its own different methodological guidelines, while also preserving its original intent: to help the researcher develop explanatory theory concerning common social life patterns.

In consideration of the process of Grounded Theory renewal, Hallberg (2006) argues that because researchers are not necessarily conscious of how an era is shaping their research practice, they should always reflect upon their own ontological and epistemological standpoints (their assumptions about what reality is and how it can be known) when undertaking research. A clear and stated ontological and epistemological position is also recommended by Mason (1996, p. 47), even for explanatory and unstructured data collection, to enable the researcher to be clear about ‘what you might be interested in to be able to judge what to pursue in the interviews’. Grix (2002, p. 179) states that ‘it is our ontological and epistemological positions that shape the very questions we ask in the first place, how we pose them and how we set about answering them’.
Hallberg’s conclusion is that this continual renewal of grounded theory makes it ‘even more qualified as a useful research approach with capacity to manage the complex and continuously changing social world’ (p. 148), which reaffirmed for me this choice of methodology. It has allowed me to place myself in dialectical relationship with the data as well as providing a theoretical vantage point offering its own methodological guidelines and assumptions.

5.3 Ontology and Epistemology

This study was approached from an Interpretative Social Science hermeneutics44 philosophical position, which emphasises a detailed reading of ‘text’ (conversation, written words, and pictures) to discover embedded meaning. I acknowledge that while a researcher brings their own subjective experience to the text, my intent was, as described by Neuman (1997), to ‘get inside it’ through detailed study, contemplate its messages, and seek connections among its parts. I furthermore endeavoured to use a ‘Postulate of Adequacy’ as described by Smart (1976, p. 100) to determine if an Interpretative Social Science theory is true; which is ‘whether it makes sense to those being studied, and if it allows others to understand / enter-the-reality of those being studied’.

I was acutely aware of the potential for problems that Layder (2013) warns could arise when a researcher identifies with members of social groups, particularly when they seek to empower them. Layder’s recommendation to ensure personal prejudices and biases don’t intrude in research is by ‘steering clear of topics or approaches to research that, by their very nature, make it very difficult to maintain a neutral attitude’ (p. 3). I have been however, and continue to be, overt in both my personal involvement in the research topic and in my allegiance to the farming communities of Northern Australia. Therefore, to proceed I necessarily have had to be scrupulously objective in my approach in order to follow Layder’s subsequent recommendation in such situations if one does proceed: they must be ‘handled skilfully and carefully’ in order to avoid the criticism of being politically motivated or bipartisan.

44 Hermeneutics was originally the practice of interpreting meaning within biblical text, but has expanded to include interpretation of text in search of underlying socio-political meaning (Guest et al., 2012, p. 14).
I justify continuing despite this potential for conflict through offering to the study the combination of skills and perspectives that my life and work experiences have provided. I am familiar with the contemporary but largely unwritten protocols in which Northern Australian agricultural industries and its participants operate. As a researcher, this has assisted me to gain access to and understand the views and interpretations of individual participants and to see things from their perspective, bearing in mind though that Polkinghorne (2006, p. 76) warns ‘we are only at the beginning stage of the refinement of and sophistication in the subtleties entailed in conducting this kind of inquiry’. My intention was to record and analyse data both within and relevant to the sector, combined with interpreting individual responses to past, present and future scenarios. It was important that this be done within the physical context (environment) in which the sector operates, as ‘the ontological distinction between humans and nature is breaking down’ (Delanty, 2005, p. 5) as a consequence of nature’s re-emergence in recent years as a new theme in natural and social science in response to the ecological crisis, and the growing need to have ‘an ethical engagement with the future’ (p. 172).

The process relationship of the methodological components described is shown in Figure 5.1.
Figure 5.1  This PhD Process and Methodology
5.4 Methods and Strategy of Data Collection

Data collection was through two distinct (but non-sequential) processes - the first literature-based, and the second in-depth semi-structured interviews. Both processes were augmented through attendance, interaction and observance at industry events, relevant conferences, and through the contemplative reflection on my own professional and farming experience.

5.4.1 Literature analysis

The review and document analysis (Chapters One to Four) was conducted of relevant academic and grey literature, including:

I. The history of past attempts at developing Northern Australian agriculture;
II. Industry information, including government reports;
III. Demographic information;
IV. Contemporary drivers and policy influences;
V. Current knowledge of resilience and disaster management planning relevant to Northern Australian agriculture and influencing factors.

When reviewing this literature, I was conscious of Hodder’s (1994, p. 393) concerns with the interpretation of mute evidence: these being

‘Written texts and artifacts which, unlike the spoken word, endures physically and thus can be separated across space and time from its author, producer, or user; and so have to be interpreted without the benefit of indigenous commentary.’

5.4.2 Semi-structured interview: Considerations

‘Listen more, talk less ... ask real questions’
Seidman (2013, p. 86)

A semi-structured interview process was selected as my second data gathering process, for the personal experiences of people living and working in Northern Australian agriculture (Chapters Six to Ten). Guided by my evolving understanding and appreciation of the context and breadth of the literature, the semi-structured
interviews were developed around a series of open-ended questions based on relevant topics: to be used with identified sectors and sampled until redundancy (see Fielding, 1994; Hodder, 1994.) The open-ended nature of questions was intended to define the topic, but also to provide opportunity for both interviewer and interviewee to further discuss topics that might arise. This is important, as both Patton (2002) and Polkinghorne (2006) argue that the quality of the results of a qualitative study depend on the study remaining problem-centred rather than strict adherence to a sequence of steps, as deliberation on what to do next will involve sensitivity in response to a prior action: ‘Simply mechanically following through on a set of previously determined series of actions would not bring about the intended consequence’ (Polkinghorne, 2006, p. 73).

Social research is emergent, and each interview is a unique encounter between distinct social actors. Mitchell and Irvine (2008, p. 34) warn researchers to be aware of this ‘research footprint’, and in particular their need to be reflexive and responsive to its impact on participant’s emotional wellbeing - ‘Considering the unpredictability of social research, researchers should think about and plan for how they might respond if and when uncomfortable situations might arise’. Also, when performing qualitative interviews, Tanggaard (2008) recommends that researchers pay particular attention to situations where interviewees object to what might be thought, said, or written about them, because while objections could be the result of a failure to establish rapport, they could also constitute a valuable aspect of the interview and move closer to a better understanding (though Tanggaard states that the interviewer should not provoke such situations).

Also with regard to the relationship between researcher and interviewee, Latour (2004) thinks neither distance nor empathy define well-articulated science. To be useful, both should be subservient to the touchstone: do they help maximise the occasion for the phenomenon at hand to raise its own questions against the original intentions of the investigator, including, of course, the generous empathic intentions? Tanggaard (2008, p. 17) believes that it is clear, from Latour’s formulation, that 'abstaining from biases and prejudices is a very poor way of handling a protocol', and supports Latour’s belief that the path to science requires a
passionately interested scientist who provides his or her object of study with many occasions to show interest and to counter his or her questioning.

There are other factors to consider when using in-depth interviews, and Garg (2008) describes the need for sensitivity to *borderline illegitimate* data. Garg describes *legitimate data* as data usually collected during an overt study, whereas *illegitimate data* refers to that collected during a covert study. Any data collected during non-consented periods of an overt study could be *borderline illegitimate*, and would need legitimisation before use. Garg suggests legitimisation could be achieved by (1) sharing with participant(s); (2) guaranteeing anonymity; or (3) asking permission. Garg makes the important point that ‘if participants ... refused, despite their being crucial for my study, I would not have used them as it is unethical’ (p. 64).

Seidman (2013) provides practical tips for interviewers, including:

- Avoid interrupting participants when they are talking during interview: ‘*follow up, but don’t interrupt*’ (p. 88);
- Rather than asking participants to rely on their memories, ask them to reconstruct it. Ask them “what happened?” rather than “Do you remember what happened” as a mechanism to draw out what the participant senses to be most important;
- Keep participants focussed and ask for concrete details, as these ‘*constitute the experience ... upon which attitudes and opinions are based*’ (p. 91);
- Don’t take the ebbs and flows of interviewing too personally, as often participants haven’t had the opportunity to talk at length on their experience and may be surprised later by the things they have shared;
- Limit your own interaction; for example, either sharing your own experiences, or reinforcing participants’ responses by continually saying “uh huh”, “ok”, “yes” can distort how the participant responds;
- Explore laughter, particularly when its origin is unclear to the interviewer;
- Tolerate silence;
- Follow your hunches and trust your instincts - risk saying what you think and ask the difficult questions; and, possibly of most importance, to
Use the interview guide cautiously, as ‘in-depth interviews are not designed to test hypothesis [but to] ask participants to reconstruct their experience and to explore their meaning’ (p. 94).

Guided by the recommendations of Onwuegbuzie et al. (2008), I also endeavoured to reflect on and record my perceptions post-interview. This was done through either voice recording my reflections as I drove from the interview, or (less often) during the transcription stage. This reflection included:

1. Perceptions of the participant: comfort, rapport, personal characteristics;
2. Perceptions of nonverbal communication;
3. Unexpected issues or problems that arose.

I was heartened when, about halfway through the interviews, a participant observed that semi-structured interviews were good, and a natural process ‘like getting to know your in-laws over the washing-up rather than sitting round the lounge room – maybe because you don’t have to have eye contact’.

The overwhelming sentiment when selecting semi-structured interviews as the data-gathering method though was in agreement with those of Seidman (2013, p. 5):

‘It is hard and sometimes draining, but I have never lost the feeling that it is a privilege to gather the stories of people through interviewing and to come to understand their experience through their stories. ... Use of in-depth interviews alone, when done with skill, can avoid tensions that sometimes arise when a researcher uses multiple methods’.

5.4.3 Semi-structured interviews: Process

‘Stories are a way of knowing’

Seidman (2013, p. 7)

The sectors of the community selected for interview included:

I. Researchers, past and present (a specific early consideration being how might existing pre-digital knowledge and experience at risk of being lost through the recent and imminent retirement of key industry personnel be captured and accessed in the future);

II. Agricultural Industry participants, including: individuals, enterprises, industry
association, allied industry sectors;

III. Regional community members and their elected representatives;

IV. Government, Regional NRM bodies, and related agencies.

When commencing this study, it was an intention to also include Northern Australian indigenous groups and communities - both those already involved in agriculture and those not, as any agricultural expansion that does not engage with this growing demographic will be limited in both opportunity and social benefit for the reasons discussed in Chapter 4.4: *Traditional Owners and Agriculture*. After much deliberation, however, I decided not to - not because it was unimportant, but because it is so important! I was not confident adequate consideration could be provided within this study. The question of Aboriginal Australian's contemporary and future engagement with agriculture remains one of both personal interest and national importance. That being said, interviews with indigenous farmers were neither actively avoided, nor precluded, should the opportunity arise in the study.

Initial interviewees were selected through a review of my established industry contacts. As a component of these early interviews participants were asked who else they thought I should speak to, particularly when interviewing people employed in an industry association or extension role. If additional subjects were suggested, I asked if the interviewee would contact them to refer them to me. In all cases, though, the interviewee advised me to contact the recommended person direct and cite their permission to do so. This follow-on contact was initially made by telephone, explaining the circumstances by which their contact details had been provided, and asking their permission to send an information package explaining why I would like to talk to them (the information pack is included as Appendixes A, B, and C). This process generated a diverse range of interviewees, while reducing the risk of personal bias affecting interview subject selection.

Interviewees were initially contacted by telephone or email, but all interviews were conducted face-to-face. Interviewees were sent a letter stating my research objective, and advising that the research had been approved by the James Cook University Ethics Committee (Ethics Approval Number H5355), as well as outlining
the conditions of their participation in the research. A request was made to audio-record the interviews, though a negative response did not preclude the interview being conducted, in which case note taking sufficed. There was only one subject who asked not to be recorded.

Ideally the study would have been conducted across the entirety of tropical Australia, (north of latitude 23.5°S, the Tropic of Capricorn), and included a representative spectrum of established and potential agricultural industries. In reality, practical considerations of geography and finance imposed limits, which had to be considered with respect to achieving adequate representation.

In total, 66 interviews were conducted between November 2013 and December 2015, ranging in duration from one to five hours, and providing just over 120 hours of recording. An overview of interview participants is provided in Table 5.1. There was, deliberately, no quantitative aspect to the selection of interviewees. That is, there was no attempt made to obtain statistically representative samples based on geographic location, nature of the farmed commodity, scale of the enterprise, gender, ethnic derivation, or any other demographic consideration. Interview focus was at on individual resilience strategies across a range of farmers and regions, and it was considered that introducing a quantitative component to the methodology could risk or confuse the phenomenographical design and approach.

Interview location was of the subject’s choosing, and included the farm office, shed, and kitchen table, though in some instances interviews were conducted while accompanying the subject on some routine activity (for example, a water run, where I doubled as gate-opener).
Table 5.1   Summary of Interview Participants

<table>
<thead>
<tr>
<th>Stakeholder group</th>
<th>Total</th>
<th>Number interviewed</th>
<th>Where interviewed</th>
<th>Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>66</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>On-farm</td>
<td>Their office</td>
</tr>
<tr>
<td>Farmers</td>
<td>39</td>
<td>22</td>
<td>24</td>
<td>20</td>
</tr>
<tr>
<td>• Graziers</td>
<td>18</td>
<td>14</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>• Sugar Cane</td>
<td>5</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>• Horticulture</td>
<td>10</td>
<td>5</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>• Broadacre</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>• Retired</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Organisations</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Industry Associations</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>• Government</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>• Service Providers</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>• Regional NRM Bodies</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Advisors</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Private Consultants</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>• Government Extension Officers</td>
<td>3</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>• Research</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Elected Representatives</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>

The geographic locations where interviews were conducted are shown in Figure 5.2. Multiple interviews were conducted in some locations, so each interview is not represented by a separate pin. Clearly, no interviews were conducted in Western Australia, and I did not travel there as part of this study. Whilst not ideal, I endeavoured to balance this through including in the study farmers, researchers, and organisations with experience in the north-west of Australia.
5.4.4 Additional processes for data collection

A paper drawing on early literature analysis was published in the Summer 2013 edition of *Queensland Planner* (Noble, 2013) and presented at the Planning Institute of Australia’s (PIA) 2013 Queensland regional conference (themed *Sugar & Spice: diversity in our regions*). This provided a platform for engagement with the planning profession, of which the author is a member. A number of other conferences and events were also attended during the study, which provided exposure to different points of view as well as opportunities to recruit interviewees. A description of these events is provided in Table 5.2.

The 2014 *Territory NRM* conference in Darwin was also attended (item 5 in Table 5.2) as a cost-effective opportunity for interaction (and interviews) with Northern Territory farmers, researchers, and NRM practitioners. The poster\(^\text{46}\) for this conference (see Figure 5.3) was also converted into an interactive web page.

\(^{45}\) The scale of the map precludes representing each separate interview with a pin. The map is only intended to show the distribution of interviews across Northern Australia.

\(^{46}\) The poster was designed for large format printing, which renders the text difficult to read at a reduced scale. It is provided here solely for graphical representation, but can be viewed at [www.agmudmap.org](http://www.agmudmap.org)
(available at www.agmudmap.org), with pop-out questions prompting viewers to email comments via embedded links. The page received over 4,800 views between July 2014 and February 2016 (see Figure 5.4).

Table 5.2  Additional consultation and data-gathering opportunities

<table>
<thead>
<tr>
<th>Event</th>
<th>Location</th>
<th>Theme</th>
<th>Date</th>
<th>Engagement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. PIA QLD Regional Conference</td>
<td>Mackay QLD</td>
<td>Regional planning</td>
<td>Nov 2013</td>
<td>Oral presentation + reviewed paper</td>
</tr>
<tr>
<td>2. Terrain NRM IAG\textsuperscript{47} meeting</td>
<td>Innisfail QLD</td>
<td>Regional NRM &amp; agriculture</td>
<td>Nov 2013</td>
<td>Meeting agenda item</td>
</tr>
<tr>
<td>3. PechaKucha</td>
<td>Townsville QLD</td>
<td>Community interest</td>
<td>June 2014</td>
<td>Oral 20X20 presentation [link]</td>
</tr>
<tr>
<td>5. Territory NRM conference</td>
<td>Darwin NT</td>
<td>Annual conference</td>
<td>Nov 2014</td>
<td>Poster presentation and workshop participant on northern development</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>See Figure 5.3.</td>
</tr>
<tr>
<td>6. Interactive website</td>
<td>Internet</td>
<td>Expanded north Australian agriculture</td>
<td>Operational from Oct 2014</td>
<td>Interactive webpage based on the Territory NRM conference poster, providing opportunity for comment</td>
</tr>
<tr>
<td>7. Terrain NRM AGM</td>
<td>Innisfail</td>
<td>Regional NRM</td>
<td>November 2014</td>
<td>Poster on display and discussion with attendees</td>
</tr>
<tr>
<td>8. Northern Beef Forum</td>
<td>Charters Towers QLD</td>
<td>Beef industry innovation</td>
<td>Mar 2015</td>
<td>Attend &amp; meet delegates</td>
</tr>
<tr>
<td>10. TropAg2015</td>
<td>Brisbane, QLD</td>
<td>International tropical agriculture</td>
<td>Nov 2015</td>
<td>Poster presentation</td>
</tr>
<tr>
<td>11. JCU Ag &amp; Aquaculture Research Capacity Discussion Day</td>
<td>Townsville</td>
<td>JCU research capacity</td>
<td>Feb 2016</td>
<td>Oral presentation</td>
</tr>
</tbody>
</table>

\textsuperscript{47} Terrain NRM’s Industry Advisory Group: membership includes primary industry, tourism, mining and local government.
Figure 5.3 Territory NRM conference poster and interactive web page, available at www.agmudmap.org
Despite the high number of page views, no emails, correspondence or other data were identified as being directly attributable to this webpage visitation. This was not surprising, and the study was never dependant on it as a data collection tool. The suggestion to mount an interactive webpage was made by the graphic designer assisting with the poster design and development, and I was fortunate in being able to access the skills within my faculty to do so. I thought it would be interesting to see

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure5_4}
\caption{Webpage analytics for \url{www.agmudmap.org} October 2014 to January 2016}
\end{figure}
what came out of it. Two deductions are made from this data:

1. The selection of a face-to-face semi-structured interview process was clearly a more reliable method to engage with my target audience than a web-based process; and

2. The spike in visitor numbers around June/July 2015 correlates with my presentation at the Developing Northern Australia conference in Townsville, indicating that there is interest in the community in the idea of an expansion of Northern Australian agriculture.

5.5 Process of Analysis

There are four cognitive and essentially sequential processes of qualitative data analysis through which researchers do not aim to isolate a phenomenon under study, but to simplify it so it can be understood within its context. These processes are: comprehending, synthesising, theorising, and re-contextualising (Walker, 2008).

As soon as practicable, interviews were transcribed into a Microsoft Word® document, usually between two and twelve hours post-interview. The 120+ hours of recorded interviews generated a considerable amount of text, which then needed to be distilled to ‘what is of most significance and interest’ (Seidman, 2013, p. 119) – a process that must (since I was not approaching the material with a set of hypothesis to test or with a theory already developed) be done inductively, not deductively (Glaser & Strauss, 1967). To assist with the analysis, transcripts were imported into Nvivo®, a computer software program that enables the organisation and analysis of various unstructured qualitative information mediums.

Each interview was then systematically analysed and analytically coded in Nvivo®, using Richards’ (2005) concept of progression through the phases of ‘that’s interesting’ to ‘why is it interesting’ to ‘why am I interested in that?’ Re-reading of texts and on-going review of the emerging NVivo® codes, coupled with occasional re-listening to the audio recordings was time-consuming, but Scott (2008, p. 2) stresses that ‘researcher depth of sensitivity toward data analysis cannot be over-
emphasized’.

Fortunately, Miles and Huberman (1984) had pre-warned about the trap of self-delusion when analysing data: where you lose confidence in your ability to sort out what is important and wonder if you are making it all up – ‘the bane of those who analyse qualitative data’ (p.64) - but an anxiety researchers can learn to live with. With time, analysis did result in the emergence of themes and, as Ashworth (2010) predicted, my being ‘startled into recognising what should have been obvious’.

5.6 Use of Orienting Concepts to organise and analyse data.

Darnhofer (2014) points out that any property that conveys resilience to a specific farm at a specific point in time might well be irrelevant at a later point in time when both the farm and the context will have changed. Therefore, resilience in such perspectives should be understood as ‘emergent’ rather than as a fixed asset – not as a ‘being’ but as a ‘becoming’ (Davoudi et al., 2012, p. 304). Through this reasoning, Darnhofer (2010) suggests resilience thinking as a conceptual framework that assists with dynamic and holistic thinking in farm management rather than as a formal theory, and she suggests that although farming has not been the primary focus of resilience thinking, there is no reason why it should not be applicable to it

‘through framing a farm as co-evolving with its context, resilience thinking sheds new light on socio-ecological dynamics and may allow the identification of factors enhancing farm resilience so as to achieve sustainable development’

(Darnhofer et al., 2010, p. 195).

This view of resilience helps focus on the persistence of an individual farm and the aspirations of many family farms; that is, as a process to ensure farm continuity and inter-generational succession. This approach can also contribute to an explanation of why farmers do what they do, particularly since ‘farmers are less interested in avoiding risk, than in information on how to benefit from variations’ (Darnhofer, 2014, p. 473). This concept of resilience thinking aligns with that described in Holling’s (1973) seminal paper: being ‘less about reducing risk from known (or assumed) developments than about accommodating future events in whatever
unexpected form they may take’ (p. 21); again, a process for survival and advancement.

Darnhofer et al. (2010, p. 195) warn that farming systems are ‘probably too complex and variable in time and space for resilience models to provide specific, or even closely predictive, guidance to farmers’, whereas ‘resilience thinking promotes qualitative approaches that strive to understand the dynamics of farms and enable self-organisation, adaptability and transformability’. In this way resources can be allocated to strategies that reduce the impact of a wide variety of events and that identify emergent opportunities. Darnhofer (2014) suggests that research to operationalise resilience thinking is necessary, especially those concerning the farmer as a decision maker, and that farm management would also benefit from including insights from sociologists and historians who have studied how farmers have persisted through turbulent and uncertain times.

Guided by Darnhofer’s thinking, and because disaster research tends to ‘focus on the immediate post-disaster experience rather than the long-term recovery path’ (Flint & Luloff, 2005, p. 402), I did not ask people what made them “resilient to disaster” as part of my interview process. The semi-structured interviews explored a range of topics around the individual’s situation and life journey, and how they coped with adversity. This deliberate approach was to avoid either of the dominant perspectives on the relationship between environment and society: that of disaster as agent or disaster as social vulnerability, as both can exclude local agency48 (the capacity to act in the face of a crisis) from analysis due to the emphasis on external environmental forces or social vulnerability (Flint & Luloff, 2005). For, as Lowenthal (2000, p. 256) writes

‘Nature and society have been disaggregated in Western converse for the sake of a spurious simplicity and in the interest of a supposed morality. But they are segregated only in our minds, never on the ground. Only by recognizing their

48 In the social sciences, agency is the capacity of individuals to act independently and to make their own free choices. This ability is affected by the cognitive belief structure which one has formed through one’s experiences, and the perceptions held by the society and the individual of the structures and circumstances of the environment one is in, and the position they are born into. Disagreement on the extent of one’s agency often causes conflict between parties; for example, between parents and children (Elder, 1994; Taylor, 1985).
essential unity can we come to terms with environmental risk’.

Whilst the research focus was on the individual participant in Northern Australian agriculture, it was specifically on these individuals in the context of their self-identity as farmer, grazier, or other manner they self-identified as being involved in Northern Australian agriculture. In a review of research paradigms from the discipline of community sociology, Veinot and Williams (2012, p. 860) suggest that ‘community-level information production, circulation, and technology projects should be understood in an institutional, as well as interpersonal, context’, and I have therefore treated this self-identification as their institutional context. I consider this appropriate, as Veinot & Williams go on to point out that

‘Human communities are territorial; they have a biotic substructure in which individual human beings compete for resources, [and that this] directs the energies of competitive individuals. …. By restricting the competition of individuals, society achieves equilibrium in a process of collective adaptation’ (p. 850);

which is most apt when the institution referred to is dependent on direct utilisation of natural resources within a regulated environment.

5.7 Approaching the Data

The next four chapters explore a component of this experience: the strategies used by a cross-section of northern agriculturalists to survive and, in some cases, prosper in their various farming endeavours. The identification of these strategies was from the principal themes that emerged through Nvivo® coding of participant interviews. The themes all relate to and are illustrated by individual actions as described by the interview participants. The four themes have been named:

1. The individual’s Situational Awareness and consequent Opportunity Seeking Ability, or in the somewhat humorous but definitely insightful phrase used by an interview participant - the Black Art of Experience: understanding the operating context and implicitly and explicitly factoring the variables into both day-to-day and long-term decision making;

2. The individual’s Capacity to Plan, and to then stick to the plan;
3. The individual’s *Capacity to Adapt*, which is closely entwined with the previous theme, because the nature of disasters is that they happen suddenly and without warning, so knowing when to change the plan is important; and finally,

4. Each individual’s *Social Connectedness* as a mechanism to realise change – undoubtedly the most complex and interwoven theme, and includes people’s connection to country, to family, to communities, to their livestock and their industry, as well as their relation to the world.

These four principal themes emerged from the interviews. Comments made or ideas generated through the additional processes for data collection described in Chapter 5.4.4 *Additional processes for data collection* were not used in the theme development, though they were influential on my thinking.

Briefly, the disparity between the number of web site visits to the [www.agmudmap.org](http://www.agmudmap.org) webpage recorded (4,806 between July 2014 and Feb 2016) and the lack of comments received is interpreted as both an indication of the broad interest in the development of Northern Australia concept⁴⁹; and validation of semi-structured interviews as the appropriate research method to engage farmers for this study.

⁴⁹ Only 4.48% of sessions definitely originated from Australia, the USA ranked first at 32.8%.
Figure 5.5 provides a visual representation of this coding and the emergent themes. The order presented should not be taken as any indication of relative importance. As a heuristic device to assist my research process, I have further separated the individual themes into sub-headings, drawn from the data. These four data chapters are composed of extensive quotations from the interviews, as often the actual words are as significant as the point being conveyed. Participant quotes are attributed through an alphabetical system, randomly assigned, and bracketed (commencing with (A), finishing with (XX)); except where more than one family member was interviewed at
the same time, in which case numbers were attached to the letters to indicate number of participants in that particular interview. In some cases, the source is suppressed, wherein it is labelled as (Suppr).

Threading through these four themes was a unifying weft thread: the thread of Fairness; which I will discuss in Chapter Ten, as I propose it strongly relates to the level of agency these farmers have in our broader system of society.

Obviously, the perspective I have worked with is, in the main, of individuals who have both survived adversity and stayed farming, and then agreed to talk with me about their experience: some farmers interviewed had exited agriculture, and some farmers contacted did not want to be interviewed. It is quite possible that the same identified themes apply to people who have left agriculture. Perhaps they might manifest differently, depending on the circumstances of the individual. For example, a situational audit might reveal an exciting opportunity that results in leaving agriculture; careful planning might transition someone into a more secure business environment; an alternate skill set could allow a career change; and a family connection that keeps one person in an area might draw another there from elsewhere. None could be considered to indicate that an individual is less resilient.

I have undertaken this work with great respect for the individuals involved and for what they have achieved, but I hasten to point out that I am neither in awe of them, nor suggesting that they are somehow different from other sectors of society. I am not advocating the need for the special consideration of farmers over other sectors of the Northern Australian community, or even for special consideration of northern residents per se; and remember the statement by Latour (2004) that neither distance nor empathy define well-articulated science. Obviously, the perspective worked with is, in the main, of individuals who have both chosen to continue farming, and then agreed to talk about their experience: some interviewees had exited agriculture, and some farmers contacted did not want to be interviewed. Neither should be interpreted as being somehow less resilient—people make their decisions for myriad reasons. It is important to point out though that the past 30 years of neo-liberal policy application and market globalisation has been challenging, making it more
likely that today’s farmers are there because they want to be there.

What I do hope to demonstrate is that, through appropriate consideration of their circumstances - farmers generally being small enterprises operating across large, sparsely-populated areas - the value that can be obtained through ensuring specific on-ground experience is genuinely included in policy development; and that effective engagement is required to achieve this.

It is possible that the principles discussed apply beyond agriculture, but this is the industry I understand, and agriculture remains the principle industry of Northern Australia outside of the regional cities.

The next chapter discusses the first of the themes to be addressed. Before doing so, Figure 5.6 provides an alternate representation of the research process flowchart, which was used when talking to non-academic audiences. This was labelled “Getting my Head Around North Australian Agriculture”, whereby “I got a headful of ideas, sniffed the breeze to figure out the best way to approach the thing, chewed on some dry theoretical concepts that stuck in my throat until finally, the lightbulb came on and I coughed up some pearls of wisdom leaving me warm and fuzzy and with a lump in my throat. At least that’s what I hope it is, and not pie, peas and sauce down the front of my shirt”.
Figure 5.6  Getting my head around North Australian agriculture
In any field of human endeavour there are individuals who stand out. Whether through financial success, personality, remarkable actions, or even notoriety, these are names which come up regularly in conversation. Agriculture is no exception, and considering the relatively small number of people in the game in Northern Australia, it is not surprising that the same names were provided by many interviewees as examples of successful or stand-out farmers. Often this success was related to the person’s demonstrated ability to understand their operating context and implicitly and explicitly factor the variables into successful day-to-day decision making and take advantage of a situation.

Such an ability was described by one interviewee as ‘the Black Art of Experience’ (OO). By this, they were humorously illustrating that sometimes, from an outside perspective, such people might appear to be either inordinately blessed with luck, or possess arcane abilities bordering on the magical, for example, ‘it started raining the day they signed the cheque [for the property] and didn’t stop until they sold it’ (WW). Perhaps this is not so different from the ordinary magic described by Masten (2001) as contributing so much to resilience.

However, not much intuition was required to appreciate that the common skill seen to be possessed by such individuals was an innate understanding of the industry’s operating context, and a virtually implicit ability to manipulate all the variables in favour of an advantageous outcome. I describe these attributes as Situational Awareness and consequent Opportunity Seeking Ability, some of which are exhibited in Vignette Three.
Vignette Three: Situational Awareness

As a banana farmer, I thought the disease Tropical Race 4 Fusarium was the single greatest threat to my livelihood. I was wrong. Turns out it was the biosecurity response that I really had to worry about. But we got through it, though it took a lot of grunt to establish the first test was a false positive. But I realised there was another advantage to my business model of leasing rather than owning farms: I could have just walked away. I couldn’t do that if I owned it, and sure as hell no one would want to buy it, so I would have been stuck. Not that I was ever going to – I care too much about my staff and my community to abandon them – I’m just saying I could have.

I decided to farm without owning the farm when my Dad retired. Neither my brother nor I could buy him out, so he sold up, gave us an early inheritance, and went off to enjoy life. I’d seen the anguish for Dad to arrive at that decision, and figured I didn’t need it. I might miss out on the capital appreciation, but that’s in never-never land while cash flow is today, and it’s worked out alright. Think about it: Woolworths don’t even own the shelves in their supermarkets! But I’ve bought a couple of farms now, because the bank won’t lend without security. But they’re in another farm sector, one where you wind the handle and the money comes out. One is 1,700 km away, but I can run that farm over the internet, with technical support from Denmark.

I know what I do isn’t for everyone, and I understand emotional attachment to the land. But I’ve proven I can do it in a number of industries now, and I reckon there’s opportunity for me to do it bigger; particularly with the foreign investment interest in Northern Australia. It seems there are more people with money in the world than there are people who can run a farm profitably. Which is what really worried me with the biosecurity scare – that’s not an association I want to pop up when someone in Hong Kong googles® me. I’ll never know who decided not to contact me as a result of that publicity.

A cyclone is devastating, but there’s a timeline. The issue is in your control and you can make decisions – you know when you’re going to get fruit back on the market and you can arrange your finances to aim for that – an end point. Having the farm quarantined though … we wrote the phytosanitary protocol in two days to get our fruit back on the market, but it took the department two and a half weeks to approve it! You just don’t have control. But you do have the $1.1 million fine if you stuff it up.
So it was a great relief when the detection was declared a false positive. I support biosecurity, but my experience wouldn’t exactly encourage other growers to put their hand up. It wasn’t just the financial impact, it put huge stress on our family – I’ve never been through a time like it. Officials have to consider individuals as well as the entire industry, because the industry is made of individuals and they have to be supported.

I can stand in front of a board and I can talk in a paddock, and my new bank manager recognises not everyone can do that. If I lived in Brisbane I’d struggle to get noticed, but up here there’s lots of opportunities. I did a few other things – Dad wouldn’t let me come back till I got a qualification – but I wanted to be a farmer. But not a broke farmer. Farming is a way of life, but it’s also a business and we have to move with the times. We install cameras in our sheds as management tools - for workplace health and safety and Quality Assurance. They’re better value than the biosecurity inspector we paid to sit in our shed all day: he arrived after everyone else and was always the first to leave.

The future? Well it’s not big corporate development. I’ve worked there too, and they suck up money and pay no dividends. You need skin in the game and an understanding of how things fit, including the environment. And there’s a role for government, particularly in infrastructure, and keeping all players honest; but they can do it better than my biosecurity experience. You know the Ord’s chia industry is the result of one man’s inspiration, but that man couldn’t have built the infrastructure that enabled it. There’s plenty of demand from Asia, but will their price-point meet ours? Business costs are high here, and you can’t turn primary production on and off.

The biggest risk? It’s the growing disconnect between cities and farms: people take food for granted and don’t stop to think about how it happens. They pay a dollar a litre for milk, but take for granted it’s safe to drink; pay $12 for a hot Woolies chook, not realising the farmer only gets 70 cents of that to hatch, house, feed, and process it. But farming’s exciting, and I love it!

Mark is a relatively young farmer who definitely thinks outside the box. He grew up on a farm, went away, and chose to come back on his own terms. He knew how to grow bananas, but chose his location away from the worst of cyclones yet close to a stable agricultural workforce. He values his workers, and

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50 Mark gave permission to be identified - ‘that’s part of why I’m talking to you’. This was part of his deliberate strategy to address negative publicity arising from his association with the Tropical Race 4 disease outbreak.
they stick by him; but he uses technology to improve systems. He has farmed bananas, cashews, biofuels, macadamias, and chickens in both family and corporate entities; and has successfully partnered with others to deliver mutually beneficial outcomes.

But possibly his greatest accomplishment to date was keeping his cool during the Tropical Race 4 Fusarium biosecurity scare. He didn’t go public or rant in the press – his response was always measured, considered, and courteous - but firm. He explored options behind the scenes and negotiated in-confidence with government, his eye always on the bigger picture. He looks for and finds opportunity, but never at the expense of his family or community.

Mark values his ethical position above all else.

These were not regarded as rare or unique abilities by interviewees - it was simply that some people are better than others at turning opportunity into commercial success. A successfully retired grazier explained it thus:

‘Agriculture’s not rocket science, but you do need to combine knowledge with what you do. And you have to stick to something, whether it’s a bank, sheep or cattle - chopping and changing and chasing things never works. You need morals, but you also need to be a business man and look for the opportunity: when someone is doing it tough is the time to buy, and vice versa when selling. And don’t tell your bank manager everything, but never give them a surprise’ (D1).

So, was a well-developed business mind the key to agricultural success? Early in the Nvivo® analysis a word cloud of the 100 most commonly occurring words (of four or more letters) was generated from the interview transcripts (Figure 6.1) and I was struck by the dominant words: “good”, “work”, “farm” and “people”, embraced by “live” and “need”. Whilst not wanting to read too much into this, I was intrigued that these words were centre stage, whereas business terms such as “investment”, “money”, and “production” were less frequent, and around the periphery.
As Darnhofer et al. (2010) point out, decision-making on farms is shaped by biotic and abiotic influences including economic frameworks, prevailing agri-ecosystems, social norms, and weather. Actual decisions however are decisively influenced by the individual’s perceptions, preferences and risk aversion; in other words, ‘how a farmer perceives and conceptualizes the potentials and limits of his or her farm, the risks emanating from economic, social or ecological changes, and the options that he or she can employ to face them’ (p. 192). This is in alignment with the importance of Situational Awareness and consequent Opportunity Seeking Ability within the emergent themes: to be a successful farmer requires more than keeping your eye on the money, it requires a clear understanding of what’s being done, and why. This should not be interpreted as diminishing the importance of financial awareness and robust business practices for good farm management, for as one participant stated, ‘knowledge makes management easier’ (U1).

Figure 6.1 NVivo Word Cloud Illustrating the 100 most often recurring words in the interview transcripts; wherein the more often the word occurs, the larger the font.
6.1 A Good Way of Life

The majority of people interviewed were born into farming families (this was not established pre-interview). Of those not born to a farm, all except one had either a family or historic connection to agriculture, either directly, or through marriage. All interviewees spoke of the lifestyle attractions of farming, but no one said “I went farming to get rich”. This family association also applied to those working in agriculture-related fields but not directly farming, such as research, extension, and industry associations.

When asked why they were farming, all participants indicated it was something they had thought about at some stage. No one indicated farming was some default career that they were doing without thinking about. A majority of those born on farms had left at some point to pursue education, secure a trade, or try an alternate career; although for many this had been at their parent’s insistence: ‘Dad wouldn’t let me come back till I’d done a trade’ (JJ1). The decision to return to the farm was voluntary in all but one instance, in which it was a timing issue ‘I sometimes wonder what would have happened if I’d spent another year …’ (VV). This person was part of a large and successful family operation, but is not keen to see his children continue farming.

For another participant, the decision to return required an extended period away: ‘I thought I needed a bloke to come home and farm, but it wasn’t so. Not many people get the opportunity to make important life decisions a second time’ (TT). After a successful investment banking career followed by a few years on the international horse training circuit she realised that ‘I could have anything I wanted in life, but I couldn’t have everything’, and she chose to return to the farm at a time when her parents were looking for some assistance so they could pursue another business:

‘Mum and dad “sort of” asked me to return … I do all the cattle buying now. Initially it was confronting when agents wanted to talk to Dad, but we’ve worked through that. People respect me for what I do. The lifestyle is liberating and there’s a great sense of achievement. Farming is a lifestyle, but so is any job: investment banker, Bunnings, sitting at home with your feet on the couch. It’s a

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51 A few participants did tell me the secret to making a small fortune in farming: ‘you start with a large fortune’.
choice we make’.

Entry to agriculture by non-farm family individuals was most often through an alternate career that enabled transition, particularly for emergent industries like tropical fruit, where the resources necessary to “get a start” were considerably less than for buy-in to established industries like cattle or sugar cane: ‘Tropical fruit wasn’t even an industry .... I saw potential as lots of people knew the fruit but couldn’t get it’ (LL); ‘I wanted to be a farmer, but not a broke farmer’ (MM).

Not everyone was doing well, particularly in the pastoral industries where many were entering their third year of drought and still feeling the effects of the 2011 live cattle export ban. Some were making plans to exit the industry. In other areas and industry sectors, some people who were interviewed had stopped farming, and not all because they’d retired. No one said “I regret farming”. There was a strong indication of desire to maintain industry connection, and pride in their association with agriculture.

Whilst there was clear recognition of both the opportunities and constraints of farming, there was unanimous recognition of the attraction:

- ‘Quality of life is very important, particularly with children until they have to go to boarding school. Was wonderful to have them around’ (AA)
- ‘the kids get to see dad all of the time’ (HH)
- ‘Farming is a way of life but it’s also a business. In Brisbane, I’d struggle to be noticed, but up here there’s lots of opportunities’ (JJ1)
- ‘Not good return on capital but ... it offers a good way of life, with occasional capital increase’ (AA)
- ‘There’s a lot of empathy in the industry for people doing it tough. It’s not a callous industry’ (NN)
- ‘Most people in cities are taking in each other’s laundry, not creating wealth’ (X2)
- ‘What would make me leave? If my pulse gave out! Really there’s nothing I’d rather do. It’s more than money, it can’t be bought. I want to lead an honest life and leave the place in better condition’ (LL).

Even in situations where farms were not doing well and industry exit was being
contemplated, the loss of lifestyle was seen as a major consideration:

‘We came back [to the farm inherited from a grandfather] because I didn’t want to go through life wondering ... It hasn’t turned out well, but if we leave there is no way our kids will ever get a start, so we’re trying to hang on’ (SS1, SS2).

Stories of hardship and compromise were frequent in my interviews, though usually not told with regret - they were a part of life that had to be accommodated. For one interview, prearranged, I arrived to find the participant had been delayed. He arrived five hours later with 12 decks of weaners which had to be unloaded in the dark, followed by dinner for the road train drivers; but there were no complaints and everyone enjoyed the evening. It was a part of life. Another said

‘I work 6 to 5 summer & 7 to 5 winter with ½ hr smoko ½ hr lunch, 3hrs Saturday, 3 hrs Sunday. A weekend off every 6 weeks & Townsville for the V8 supercars. But at 5 pm I sit down & enjoy the view & the birds & don’t ponder “what if?”’ (T).

There were plenty of grumbles about the lack of basic services:

‘Internet is hopeless. Providers are only interested in signing you up, and that’s where the subsidy stops along with the service. That’s why so many properties have 4 satellite dishes on the roof. You come in to send an email, then spend 3 days sorting it instead of sorting cattle’ (X1);

and real concerns about the continuing population decline in more remote areas; along with the limited or non-existent services that many now feel threatens the ability to maintain functional social systems:

- ‘The vastness of this country is not going away. Some like the isolation, some the animals, some ... but when you lose too much population the social basis is severely diminished’ (Y);
- ‘There used to be a cook and governess to talk to, now there’s no one’ (R);
- ‘It’s not the industry that stops bank managers wanting to live here – it’s the lack of social environment for wives & families. Twenty years ago there were tennis parties every weekend ... we’ve got the only functioning tennis court in the district’ (X2);
- ‘There was no phone reception and no one on the 2-way [radio] so ... had to drive to the house, then another 2 hrs till the ambulance arrived’ (U1).

Overall though, the attitude towards such constraints was well summarised by HH
'We allow ourselves one day to have a really good bitch, and then we get on with life. That sort of stuff can really consume you if you let it.'

So, lifestyle attraction is important to farmers despite the constraints, but does it contribute to their ability to succeed, particularly when ‘the emotional attachment to land makes people stick, but also makes them closed-minded to other possibilities and fearful of leaving’ (TT)?

Perhaps the answer is in the experience of a successful entrant to farming:

‘My wife was from a farm and we thought it’d be a good place to bring up our kids. I saw that it was banana farmers buying all the new fishing boats, so we bought a banana farm’ (P).

This person had been successful in his pre-farm business (providing the ability to buy a farm), thought about what type of farming to enter, and then was a successful farmer. His business acumen worked to whatever industry he applied himself, but his decision to farm in preference to other career options was a lifestyle choice.

Some participants had done well financially in the past, some were doing well in the present. Some were about to commit to a major acquisition to provide inter-generational opportunity for their children, while others were the last witness to once vast family empires. Everyone was trying to stay ahead of the bank, but for everyone, the farm meant more than a way to pay the bills - it was part of who they were, and they were proud of it. They farmed because they wanted to farm.

### 6.2 Travel Broadens the Mind

Whether an apprenticeship, a degree, a year driving tourist safaris, or time as a jackeroo on other properties, most interview participants had at some stage left the farm and experienced another life. All felt they benefited from the experience. For some, it was the strong desire to return - knowing that they had a passion for it, rather than not knowing any different; for others, it provided a fall-back income stream for hard times; and for most, it provided skills, experience and knowledge about the bigger world that they brought home and used. Most had been encouraged by their parents to go, rather than return: ‘my boys are interested’ [in the
but I won’t push them ... they’re all getting trades – it’s up to them’ (CC).

Many participants continue to travel, though not in an organised package holiday manner: time away from the farm was often related to farm business, training, an industry association or regional NRM body; or social events related to their industry or district. Invariably the feeling was what they brought back to the farm was more important than any relief from being away:

- ‘After travelling round Australia I realised what an amazing place home was ... my overseas trips teach me more than all the DPI research’ (LL);
- ‘I had four career changes before settling on what I wanted to do. I was 5th of 6 kids so didn’t think there was a future for me on the land, but the passion was there’ (X1);
- ‘I coped flak from [my wife] for being away so much when the kids were little, but it’s a sacrifice all fathers have to make. I got more out of it than I put in, it’s been a major part of my life, and it’s made me money’ (U1);
- ‘Joining the board opened my eyes ... I didn’t know what I didn’t know, especially people management skills’ (BB1).

This extent of off-farm experience surprised me: 30 years ago, while working across rural Australia, I met many who had rarely left either the farm or their district, whereas none of my participants were in this category. But the intervening period has seen wide-spread adoption of neo-liberal policies by state and federal governments and commensurate service reduction by banks and other agencies. Population shakeout has occurred as a consequence, leaving those who want to stay and are capable of doing so, while many others have moved through choice or necessity.

An unfortunate consequence of these policies, combined with hard economics, seasonal conditions, and changed industry practices (sheep to cattle, helicopter mustering, etc.) has been a significant reduction in regional populations, with the subsequent impact on social opportunity and liveability referred to earlier. This has been particularly so in the extensive grazing industries and more remote regions,

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52 There are 56 regional NRM organisations across Australia that act as delivery agents under the regional stream of the National Landcare Programme.
where lifestyle amenity agriculture opportunities are less obvious. Farms have survived and production maintained, but rural communities have suffered. At what point does the system collapse? ‘Do we really want FIFO farms for Northern Australia?’ (X1).

6.3 Off-farm Influences

Situational awareness is more than understanding the workings of one’s own farm. Interview participants demonstrated awareness of a range of external influences and drivers, including international markets, global warming, and political trends. No one interviewed saw the world stopping at the farm gate. The perceived ability to respond to such issues varied though, from ‘we can’t control what happens on the other side of the barbed wire so we don’t worry about it’ (HH), through to ‘I give back wherever I can … [I am supporting] establishment of a Nuffield scholarship in India’ (P).

Being aware of a situation and using this awareness to advantage are not the same thing. Reflecting on the interviews, participants who demonstrated the latter had more obvious business success. This did not always require or align with active involvement in off-farm activities (though many were), rather it was that these participants clearly thought about and researched historical trends and external influences, and incorporated this information into their decisions – they pondered “what would I do if ... happened”.

Such farmers had well-developed scenarios flowing from their “what if ...” questions, and some of these will be briefly discussed now; and then further in Chapters Nine and Ten. The important point is that successful individuals tended to be more situationally aware and actively sought opportunities than other farmers.

Finance

Whilst the importance of lifestyle has been recognised, this did not detract from participants’ acute awareness of their financial position. A number of graziers talked about how their farm was actually two businesses: an investment in real estate
capable of delivering long term capital return, supported by a cash flow business such as cattle, hay, or even off-farm work. These same producers also described how, in the lead up to the GFC, a rapid escalation of property prices had unsettled the status quo, which, combined with a decrease pre-GFC in bank due diligence resulted in some producers being “caught out” in the post-GFC crash.

Whilst this has translated into public media concern over bank lending practices, and one participant had lost their property as a consequence, overall, the mood was one of caveat emptor: ‘it’s your responsibility to keep an eye on it [the property market] ... people are affected by greed or the worry they’ll miss out, but that cycle seems to happen every 40-50 years’ (X1).

Acknowledgement of the importance of knowing your business was widespread:

- ‘it’s too easy for a man in the bush to turn 50 and never have done the books, then mum or dad leaves …’ (X2);
- ‘if a farmer lacks business knowledge it limits their ability to understand and grow their business e.g. they don’t pay themselves a proper wage, so don’t understand the true costs of production’ (T);
- ‘our kids are volatile, so we need a financial vehicle that works 30 years into the future if we’re to buy more property [for the kids] without jeopardising our retirement’ (U1, U2);
- ‘people get interest-only loans and forget that the principle isn’t theirs’ (TT);
- ‘if you’ve got 4 you can comfortably borrow 1. If you’ve got 3, you can carefully borrow 1. But many had 1 and borrowed 1’ (AA);
- ‘we’re price takers on the world market, so we have to understand it (AA);
- ‘not a fish & chip shop ... can’t just consider the balance sheet’ (QQ2);
- ‘you don’t have to own the farm to farm - Woolies don’t own their shelves - but at some point you need land to borrow, because banks won’t lend on cash flow’ (JJ1);
- ‘Agriculture still operates in the old paradigm where people with the capital aren’t using it, and those with the ideas can’t get capital’ (X1).

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53 The financial crisis of 2007–08, also known as the Global Financial Crisis and the 2008 financial crisis, is considered by many economists to have been the worst financial crisis since the Great Depression of the 1930s.
Infrastructure

Throughout my interviews there was a clear belief that better infrastructure makes a place more attractive to new residents, and new residents strengthen the case for better infrastructure, but no one wanted ‘temples, and infrastructure shouldn’t be ego-driven ... facilities have to be carefully considered, and designed for the region’ (G), and ‘not get lost in ambition’ (J). Improving communications and connectivity was rated as important, though a majority believed that better roads and transport infrastructure would deliver them the greater individual benefit, although ‘a new irrigation system would benefit all society’ (J).

No one thought though, that massive infrastructure investment was about to happen as a consequence of the contemporary focus on Northern Australia: ‘infrastructure creates jobs & opportunity but it’s treated like a welfare program rather than strategic ROI ... taken control away from local people & decisions made by bean counters in Brisbane’ (X2) was an oft-repeated sentiment, as were examples of poor strategic decisions:

- ‘Birdsville is going to get cable internet because of the pulling power of the races – it’s not a social justice issue’ (Y);
- ‘the mining boom started 2003 and was pretty well over by 2013. Pity more wealth or infrastructure wasn’t captured [by regional communities] along the way’ (X1);
- ‘Burdekin stage II was supposed to be built straight away, but now all those skills and experience is gone’ (BB2).

Perhaps therefore, infrastructure provision was not seen as the sole responsibility of state and federal governments, and was being addressed by various mechanisms at both property and community levels. Examples at property level include: ‘internet is hopeless so we put up a 60 ft. tower and use our mobiles’ (X1); ‘I know we’re over-capitalised but it’s to minimise labour, maintenance and risk’ (U1). It was pointed out though that as a consequence of drought and the live cattle export ban, ‘many places don’t have the resources to do even basic maintenance’ (M).

A pastoralist and mayor, who described his philosophy as ‘you need a relationship
with the people you deal with’, described how across regional Australia ‘our infrastructure is getting worse as a consequence of local government not having the experience to gauge a reasonable estimate, instead leaving it to big city engineers who get paid a commission, so the bigger the better ... the job goes to a big contractor who can come into a broke community with 30 men and their own gear, then leave with nothing to show for it from the community’ (UU).

His shire has addressed this situation by establishing a pre-qualification umbrella under which local contractors tender for large jobs:

‘Roads are big business for our shire. Local members should follow funding through & ensure it is delivered by local contractors, so long as they have the skills. Give 10% premium to locals. Many councils don’t do this as they’re worried about risk, but they don’t get value for money or improve their local community’.

This community has built a lake at the town’s entrance for 1/25th the cost quoted a nearby community for a similar facility. The lake provides visual amenity and recreation opportunities for the community, but the main reason it was built so when she arrives in the town, ‘the new doctor’s wife thinks “I can live here”’.

This importance of local government in regional infrastructure provision was supported by two other (current and former) mayors interviewed (who were also farmers): ‘local government can keep infrastructure working well ... we’re probably in a better position to borrow than the federal government ... but it’s not our role to fund regional expansion’ (MM); ‘the people to do the work are on the ground, but getting government agreement ... [can be difficult]’ (AA). It was acknowledged though that smaller shires often favoured a “hands on” approach and had more flexibility than larger regional councils.

There were also examples given of the capacity of groups to effect change ‘Community can do these things, don’t always have to go to local Government’ - (CC) describing how some small town infrastructure had been built by the Rotary Club.

Whilst not advocating a welfare mentality, most thought ‘government could make it more attractive for people to live here through help with boarding schools etc.’ (HH), and that the ‘infrastructure investment allocation needs to be changed to better reflect deferred benefit’ (Z), along with improving the recognition (and rewarding) of
the economic contribution made by regional Australians: ‘people who create wealth for the nation need to be looked after ... encouraged to live there’ (UU).

Everyone thought that in order to attract more people to regional areas, better infrastructure will be required, especially schools and hospitals; ‘though there are still some “pioneers” who want to do it’ (S), and ‘maybe we should be encouraging immigrants from rural areas rather than wealthy people from cities’ (UU).

**Global drivers**

No one believed that Northern Australia was about to become Asia’s food bowl, though many thought there was opportunity in Asia’s growing middle class, particularly for beef. Bulk commodities such as rice, cotton cereals and pulses were considered options in some areas, but would require collaborative improvement of transport infrastructure to proceed: ‘a new port at Karumba will require a lot of other services like cool chain, handling and AQIS’ (W). High value and niche products had opportunity for growth and export, but entailed risk, and were currently limited to regions with good infrastructure – ‘in horticulture you need water today, not tomorrow) (W), and is better suited to smaller growers with more flexibility. Distance to southern Australian markets might be further than some Asian markets, but didn’t involve AQIS, international transactions or the risk of political vetos, so entailed lower risk.

The recent political commitment to northern development was welcomed, but none saw it as guaranteeing on-ground activity. Roads have been steadily improving, though there’s always more that can be done, with ‘large areas still cut off in the wet’ (Z). Road transport is the only real option – ‘we used to be all rail but now it’s only interested in mines. Freight trains don’t even stop in Ayr now’ (BB1), and sea freight is ‘impossible! Another language’ (WW). Internet communication was a wonderful business and social tool, though the infrastructure approach remains piece-meal.

Changes to back-packer visas (whereby visa extension is available to those who work in regional areas) have made it easier to source labour: ‘backpackers are fantastic’ (UU) ‘you can usually rely on a back-packer working’ (WW); but does little to improve
regional population skills - ‘everyone has to inducted, and then they leave’ (AA).

**Natural Resource Management and public perceptions of agriculture**

Awareness of stewardship obligations towards the land and the need for sustainable natural resource management were widespread (though not often expressed in such terms). Often this recognition stemmed from past mistakes, or those of earlier generations, although many also spoke of the good management ethos they had learnt from their forebears:

- ‘Landcare in this region really took off when people were stunned by how the country didn’t respond after the 80’s drought’ (OO);
- ‘If my grandfather could see what we’ve done out here, he just wouldn’t be able to believe it’ (RR);
- ‘Probably can’t take too much more red tape out of industry. Changes under LNP [government] were good, but were learning to grow with regulation and if take too much out, the pendulum can swing back. Have to have enough there to protect all sectors – individuals, LG, environment, etc.’ (UU);
- ‘Farmers don’t feel compelled to headline their sustainability; they just sort of get on with it. It’s a buzz word in corporate and commercial spheres at the moment, but sustainability is normal for us’ (RR).

It was not unusual though for tension to become apparent when participants discussed environmental aspects of their farming operations. This tension centred on two factors, the first being the need to make a living while not over-exploiting or degrading their natural resource base. The second, and more concerning, was the increasing level of enquiry and concern from the broader community into farming practices, particularly when this enquiry emanated from specific issue sectors such as some conservation and animal welfare organisations.

It was not that participants thought the public had no right to know about their stewardship practices, rather their concern was about misconceptions and subsequent policy decisions; as graphically demonstrated when the *4 Corners* 54 2011

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54 A weekly investigative journalism television programme hosted by the Australian Broadcasting Corporation.
story on Indonesian abattoir mistreatment of cattle imported from Australia resulted in immediate cessation of all live cattle export, creating chaos throughout Australia’s beef industry, particularly Northern Australia. ‘The live trade has always fluctuated, but the export ban fiasco put a huge lump in the snake that has taken some time to work its way through the system’ (OO); ‘it put 300,000 stock into the domestic system that took a long time to clear. Stock in poor condition just got hammered’ (Y).

Apart from the financial impact of this action (compounded by the ensuing drought conditions across much of Northern Australia), graziers and farmers alike were concerned that they were being ‘tarred with a broad brush’ (I) with respect to their environmental management practices. Many farmers spoke proudly of their demonstrated commitment to good environmental management:

- ‘you should see the fish I catch from the streams running through the middle of my [banana] farm ... people come from all over Australia to fish - that wouldn’t happen if I was stuffing things up’ (VV) (and neither would he be keen to have these people on his farm);
- ‘I’d love it for people to come out here and see what a good job we do’ (QQ2);
- ‘Soil health is the new paradigm’ (FF);
- ‘Would love the city to know we did a wonderful job, because we do’ (HH).

Participants did not say the industry was without fault or that environmental regulations were unreasonable, but they were concerned that policy response to bad practice seemed to be ever more onerous legislation rather than using existing rules to prosecute known ‘cowboys’:

- ‘Bureaucracy in any place has a lot to answer for as it often slows things down unnecessarily, but there are bandits in the system who will stuff things for everyone and still get away with it despite regulations. They’re the dickheads who deserve to go to gaol’ (P);
- ‘We’re over-regulated and it’s unwarranted – why have a blanket approach rather than targeting the known offenders?’ (U2);
- ‘the [legislative compliance] bar just gets higher, making it more expensive for everyone except the cowboys, who continue to disregard it and so get a market advantage’ (XX);
• ‘[the government] is buying the green vote at the expense of reality’ (FF);
• ‘We need understandable and enforced legislation, otherwise it’s just spin’, Live cattle export-type shutdown could happen overnight in other industries too. Cane has to deal with social media and community perceptions over farming impacts on the Great Barrier Reef’ (S);
• ‘No one can justify bad practice, but why does a whole industry have to suffer for the sins of a few?’ (JJ1).

The above quotes illustrate a widespread and fundamental frustration recorded on numerous occasions and across different production sectors: while farmers have to deal with increasing levels of regulation associated with their legitimate business activities, often their critics (people and organisations who might not agree with particular aspects of productive land use) ‘operate outside the law’ (X2) with apparent immunity. That is, they appear to be able to use illegal protest mechanisms including trespass and fabrication of stories with impunity. Many participants simply could not reconcile this apparent hypocrisy, which often resulted in actual consideration of the issue being lost through frustration about the way it was delivered.

However, many were acutely aware of the need to address this issue:
• ‘bridging the rural/urban divide is probably more important than on-farm improvements’ (CC);
• ‘I guess the modern challenge is that we have more to deal with than just the landscape and climate effects’ (U1);
• ‘To eat, we either need to grow something or kill something, but that doesn’t mean environmental degradation ensues. I don’t think we’ve told that message terribly well’ (JJ1);
• ‘NRM is moderately mainstream, but very broad church and challenged by the ultra-green. That’s appropriate, but still need balance’ (OO);
• ‘I love seeing the health of the landscape improve under my management. I wish the health of the community was improving in the same way’ (X1).

A number of participants alluded to, and some specifically discussed the strategy of ‘keeping your head down’ (LL) or ignoring certain environmental issues, working on
the principle that ‘by the time the 3-year [political] cycle is over they’ve forgotten it’ (U1). The shortcomings of this approach were acknowledged though:

- ‘it becomes a habit, then people let good initiatives go by’ (U1);
- ‘If you got a DMP\textsuperscript{55} inspectors would come visiting, so everyone stopped getting them. Then the department cancelled them outright because they said no one was getting them so they weren’t needed’ (LL).

Concern was expressed at the general lack of processes directed towards improving broader community understanding of farming, along with mechanisms enabling inclusive decision making - ‘the whole NT community equates to a small town, so why isn’t the community better consulted?’ (II); ‘shouldn’t be “us & them” [city/country] - if we don’t work with them they will beat us, and we’d all lose’ (TT).

Whilst not all interview participants were actively involved with Landcare or community NRM groups, those who were spoke of the value of such groups. This included assisting landholders achieve better environmental outcomes; delivering funding streams that assist landholders to adopt technologies that improve NRM outcomes; greater good initiatives such as weed, feral animal, and erosion management; and through providing networks for peer-to-peer information sharing.

Participants also spoke of NRM bodies to help bridge the urban/rural divide, and to facilitate cross-industry response to emergent issues, including legislative change:

- ‘NRM groups are not the enemy ...doing a good job, independent arbiters in some ways’ (DD);
- ‘That 10 years [of national Landcare involvement] was the most exciting time of my life. We demonstrated real outcomes, and bridged the divide between farmers and scientists ... there are still people who only mix in their own groups. Some are going broke, some are making money, but running their resource down’ (U1);
- ‘some amazing things happen when we work together’ (TT);
- ‘Some people in conservation are hard case\textsuperscript{56}, like [name removed], but she lives here and is part of the community so we have to work with her because

\textsuperscript{55} Damage Mitigation Permit, issued by a government department for limited control of native wildlife.

\textsuperscript{56} Local slang, implying the person is difficult to work with.
This final point is important - it illustrates the attitudinal difference towards critics from within versus those from outside a community. There was more acceptance and preparedness to consider the views of someone local, and regional NRM groups provided the “tent” in which such discussion could be had. An additional point made was that ‘Organisations like [NRM body] bring educated people into the community who aren’t set in the local paradigms and stigmas’ (SS2).

There was some criticism that growers who innovate or who “do the right thing” rarely receive financial assistance, though it was generally recognised that this was due to policy settings by government.

Examples were also provided where NRM bodies demonstrated that production managers observe and understand impacts that could otherwise go undetected:

‘The [commercial] fishers realised the ... exploration impact on fish numbers – if they [the fishers] hadn’t been there it would have been too late. Fishers and farmers – they understand what’s happening much better than single or special interest groups’ (II).

Overall, regional NRM bodies were seen as a valuable asset by farmers, in some ways bridging the community capacity void left by retraction of other government services, and assisting cross-sector collaboration, including industry, conservation, local government, and community: ‘good land management is all about choice and community decision-making. You need sound knowledge to make good choices – science and local knowledge’ (UU).


Whilst Folke et al. (2003) state that change is not a disaster but simply a petty alteration of state, and Holling et al. (1998) point out that what might be a disaster for one system does not necessarily have to be one for another, I have previously discussed how, in the eyes of a farmer, a disaster is a disaster irrespective of its origin. All interview participants had experienced natural disasters, from tropical cyclones
through flood, fire and extended drought, but many had also suffered as a consequence of legislative or policy intervention. There were some who exited the industry consequently, though only one directly attributed their exit to a disaster event. Even in this case, it was the combination of circumstances at the specific time of the event that determined the impact, and subsequent outcome:

‘I didn’t go near the farm for 2 days [after Cyclone Yasi] as I knew what it would be like. At 56 years of age I didn’t want to start again, so I decided to sell. It was a conscious reasoned decision and I still feel good about it’ (E).

Cyclone Yasi was at the extreme end of the natural disaster spectrum, but a long-term farmer (LL) (whose farm Yasi’s eye passed directly over) stated ‘we don’t get droughts here, or fire or floods – just a bit of wind every now and then’. He went on to describe how two major cyclones in five years had been a catalyst for change, leading him to trellis his crops. He said he’d been ‘as low as he’d ever been after [Cyclone] Larry, but after Yasi I had direction and knew what to do’. This farmer disagrees with those in the community who think such events are best forgotten: ‘we have to remember – same with drought, soil erosion – people forget too quickly, then make the same mistakes’; a point reinforced by another farmer - ‘as a kid I remember my uncles talking about the 1918 cyclone’ (Q1).

This does not imply that long term impacts of extreme events like Yasi were not obvious: ‘people get jumpy when cyclones are around’ (VV); ‘we’ll never see the industry or the rainforest return to what it was in our lifetimes’ (WW); ‘insurance has gone through the roof’ (G); ‘don’t know if I would stay if we had another cat. 5’ (CC).

The cyclone’s impact was particularly severe on the emerging tropical fruit industry, with such an exodus of growers that organised marketing stopped and the industry body collapsed (T, VV). Again though, an appreciation of the overall situation was important to understand why this impact was so severe:

• the industry was at a point where a majority of growers had recently completed their transition from part-time farming supported by other incomes into full-time farming;
• the age demographic of growers was mid-50s to late 60s;
• the time and resources required to re-establish orchards, then look after
them for the 3 to 5 years until they came into production, was beyond many growers;

• farm sales, which had been occurring at good prices, stopped when prospective buyers realised how vulnerable the industry was;

• people who aspired to this niche farming lifestyle could now work five years in FIFO mining and buy a ‘gold plated one’ (WW) rather than develop a farm over many years through a parallel career, which had been the industry model up till then.

The impact of Yasi on other primary industries in the affected region (cane, cattle, dairy, small crops) was extreme, but nowhere near as catastrophic. As one producer described ‘I had 300 cows and 300 fruit trees before Yasi. They all lay down, but only the cows stood up again’ (XX). A consequence for the banana industry of two major cyclones within 5 years has been farm amalgamation, with larger growers buying smaller operators, leading to an overall increase in production. In some ways, this just accelerated a process already underway through market forces, and ‘overall, everyone was better off: big farms employ experienced staff, and smaller farmers get to have a regular income, weekends off, and time with their family’ (T).

While there has been considerable public discussion about the influence of climate change on cyclone frequency and intensity, it was not a dominant theme in interviews, either on the coast or further inland. Instead, the pervasive attitude was that farming in Australia has always faced uncertain weather which the industry has developed the skills to manage - ‘it’s been that way since the time of the Pharaohs’ (AA) - particularly now that the accuracy of short to medium term weather forecasts is so good.

In the extensive grazing sector, the impact of extended drought conditions varied, from ‘Drought doesn’t worry me anymore – make a plan for it and go - manage for worst case scenario’ (U1), through to ‘there’s no grass, all our stock are gone, we still owe the bank … we’re not sure what to do next’ (SS2). However, no one interviewed thought more generous drought relief was the answer. The over-riding sentiment was that ‘drought is part of the landscape and has to be managed for’, and many
expressed a sentiment that ‘drought policy can be corrupting and prop up bad business - some aren’t allowed to fail when maybe it would be better for everyone if they did’ (OO).

As ever in the world, disaster creates opportunity for some - ‘in tough times, strong hands receive from weak hands’ (J) - and there were those who prospered as a consequence of better prices for those fortunate to have product, while others had used the down time and NDRRA labour subsidies to improve their packing sheds in preparation for a return to production:

- ‘Employment assistance was the best part [of government assistance] as we could keep our staff, clean-up, and get ready for the return to production’ (CC);
- ‘Out of crashes come opportunities - we bought [another property] at $4.70 an acre mid-beef crash ... cut 1,000,000 [gidgee fence] posts at $1 post, and now it’s probably worth $200 acre’ (F).

Disasters can also occur on a personal level, and some people just seem to have a run of bad luck - ‘he lost his house in a fire, his 10-year-old son was sick a long time, and then his wife was diagnosed with cancer’ (F). In situations like this there were often examples of community support and fund-raising, even when the entire region was facing stress.

Exotic disease outbreaks can be disastrous - ‘one day you’re working, next day you’re not’ (DD), but for one grower the departmental response was even more onerous:

‘As a farmer I thought getting [exotic disease] would be the worst thing that could happen to me, but I was wrong. It was the department’s response. I would never call Biosecurity Queensland again, and it’s the same with the Emerald citrus growers’ (JJ1);

a sentiment recognised and acknowledged by other growers - ‘Cyclones knock you down, but not out, whereas biosecurity could knock you out’ (VV). Growers understood and agreed with the necessity of strong biosecurity measures and rapid response; the cause of their dissatisfaction was the harsh and inept treatment by government, which could have been avoided through dialogue and more inclusive communication processes. The complexity of this impact is illustrated in Vignette
Three, *Situational Awareness*; which also illustrates the importance of maintaining awareness in such a situation, of keeping an eye on the *bigger picture*.

An initial impetus for this research was my own experience with farming and disaster, and this was conveyed to participants prior to interview (see Appendix A. Participant Letter of Introduction). Individuals were asked about their own disaster experiences as part of the semi-structured interviews, so it would not have been a surprise if disasters had emerged as a major theme, but this was not the case. Disasters were a component of the interviews, but not a dominant one. In fact, participants were generally keen to progress discussion from the disaster event to its consequence, as described in the next section.

### 6.5 Dealing with it

When talking about past disasters and personal mistakes, the focus of many interviewees was on how they now do things differently as a consequence. Probably, those for whom past mistakes had been more catastrophic were available to interview, though some participants were clearly “teetering on the edge of the abyss”. Awareness of the inevitability of error was widespread, as was the need to learn from it rather than ‘*beat yourself up ... human error is the error, but adversity is making me a better manager*’ (TT). This farmer also talked about the need to keep one’s own counsel, because ‘*sometimes the negativity can get you down, like reading the Queensland Country Strife*’[^57], so sometimes you just have to *shut out the noise*’.

Many participants talked about the importance of reciprocity, and recognition of the benefits received from others, particularly where no clear obligation was involved:

- ‘*Every shed I visit I learn something, but I don’t just say thanks and walk away. I present them my point of view, and many say “great idea, why didn’t we think of that?”*’ (P);
- ‘*how hard is it for you to give back an hour in the afternoon when they’ve done work for you all day*’ (TT);
- ‘*I wouldn’t sell the recipe [for my production system] separate from...*’

[^57]: A parody of the popular weekly rural newspaper *The Queensland Country Life*.
my farm unless the new owner didn’t want to continue growing ... a matter of ethics’ (T);

- ‘chop-chop\(^{58}\) is now a dirty word, but earlier it was de facto insurance – [tobacco] growers gave to others affected by hail etc., and they paid back when they were able’ (DD).

The importance of relationships will be discussed further in Chapter Nine, but include the above examples in this theme as an important element of Situational Awareness: the action is deliberate and pre-mediated, but relates more to how the participants see themselves operating in the world than it does to an anticipated response. It is an important demonstration of the operational context of many farmers, and most were keen to progress the interview discussion to their individual learnings, and how they used these to make things work better.

6.6 Discussion and Conclusion

The examples provided in this chapter of participants’ strategies and actions to manage risk and uncertainty align with the four key principles for sustainable adaptation described by Eriksen et al. (2011), these being

1. Recognise the context for vulnerability, including multiple stressors;
2. Acknowledge that different values and interests affect adaptation outcomes;
3. Integrate local knowledge into adaptation processes
4. Consider potential feedbacks between local and global processes.

The farmers interviewed were confident in their ability to deal with the complexities of their situation, an attitude depicted through humour in Plate 6.1. The confidence farmers exhibited stemmed from a holistic understanding of their particular situation, knowledge of the resources available to them, and having strategies available to utilise these resources; which is in agreement with the view by Wisner et al. (2003) that while a climate-related event may be an external phenomenon, the actual risk is located in society itself, making access to resources (and knowing how to use them) a critical determinant shaping people’s vulnerability

\(^{58}\) An Australian term for untaxed, unregulated, illegal tobacco.
‘vulnerability is determined by social systems and power, not by natural forces. It needs to be understood in the context of political and economic systems that operate on national and even international scales’ (p.7).

Plate 6.1 An existential sign of the times? While dealing with the ‘here and now’ is an important part of everyone’s life, informed guesses generally improve the likelihood of success

Source: M. Thomson
Chapter Seven

Theme 2 – the Capacity to Plan

‘He, who every morning plans the transactions of the day, and follows that plan, carries a thread that will guide him through a labyrinth of the most busy life.’

Victor Hugo

Planning: the act of thinking about and then organising the activities required to achieve a goal. A very human activity; and like most human activities, some are better at it than others. Financial plans, strategic plans, operational plans, life plans, and bad plans – planning is something we all do, as natural as breathing. Like breathing, sometimes we do it consciously. Bookcases are full of official plans though, for which the printing of the plan sometimes seems to have been the end point of the process. Perhaps as a consequence, planning is sometimes viewed by industry as the realm of government and, by association, an excuse to do nothing.

Most people have a natural predisposition to action, particularly during times of crisis, operating on the “it’s better to be doing something than just sit here waiting to be run over” philosophy. The course of my professional career and farming activities has necessitated attendance and active participation on both sides of meetings (though never at the same time) where officialdom was being urged by landholders to action - to “do something!” This has provided the opportunity to understand the feelings of frustration by landholders with perceived government inaction, but has also enabled a better understanding of the complexity and precedence implications of official commitment. This real-world experience from both perspectives has also assisted a better appreciation of the occasional reticence of public officials to front hostile audiences and attempt to explain a complex situation. This type of experience was often the scenario described when the ‘P’ word was raised in interviews. Vignette Four illustrates the role of planning for one participant.
I’m five foot two and fifty kilos, so physically there are things I just can’t do - like throw a steer. So I have to be cleverer. And there’re other things I can’t do, like drive 130 km into town every time I need a part. You learn to make do and plan ahead. Growing up out here you sort of take that for granted, but other people – sometimes they never get it. I suppose my ex-fiancé fitted that category.

I love horses, and I always leave room at day’s end to ride – that’s my ‘out’. I’d use them for work, but reality is motorbikes are more efficient, and so are helicopters - and probably safer. It’s liberating here – me and my 50,000 acres, and it’s amazing how much you can get done in a day.

But I’m aware of the risks, living by myself, and breaking my leg. Eleven months on crutches – that was a challenge, but we wouldn’t have the kitchen mosaic (Plate 6.2) without it. Smashing tiles was therapeutic. I always thought I needed a bloke if I was to come home and farm, so life took a significant u-bend when I decided not to marry. I’m only 27 though, so who knows … I do all the cattle buying now and there’s social interaction there, though some of the agents are still getting used to it.

Fear drives everyone, that’s why people are such good sheep. But don’t be scared of being scared. My parents said “don’t join the noise” - recognise opportunity, and that doesn’t happen if you’re used to being told what to do. On the other hand, out here we can all be *Kings in our Grass Castles* – 135,000 farmers in Australia and 135 farm lobby groups – too much independence can be a problem too.

Mum and Dad are chalk and cheese, but great mates. Dad’s gotten cynical like most old cattle men, and sometimes I think it’d be easier if I were a son who never left home; but our industry needs innovation. We’re a strong management team, Mum Dad and me, and I’m pleased that being here has let them go off to do other things –
have something else to worry about. Corporates don’t give that flexibility or commitment.

We run two businesses: land and cattle. You borrow on land, and it appreciates. You can’t borrow on cash flow, but you need it to make the land business work. I enjoyed my time in banking – it taught me how hard it is to make a living, and financial literacy was definitely the skill to bring home and complement Dad’s knowledge. I’m numerically dyslexic, but that just made me work harder.

But horses are the love, and working those big German and Canadian stables taught me the difference between riding and training horses - you have to be in the moment. I use that every day. I’m terrified of multi-tasking - chasing a cow you can only think one second at a time. One hundred percent attention required! And it’s meditative, being in the moment.

But plan ahead – make decisions when you still have options, one decision at a time. Not round the kitchen table, because there we sit in the same chairs as when we were kids and that’s how we act. And don’t make plans in the paddock – you say what you like in the paddock, but leave it there. You know that big decision made years ago? Well sometimes the world turns and it’s not right anymore and you just have to get that bit out of your teeth. We go somewhere neutral for decision-making; and we always make time for dream-building.

There’s often backpackers here, and they stay in the house. It gives back some of the kindness I received when travelling, and it’s mentally good for everyone having enthusiastic young people around. This German bloke though would never listen: New Year’s Eve, I told him to fuel the truck and we’d go into town. He came back and asked which was the diesel tank, but not before filling the truck with petrol. So I said “come inside mate and have a glass of milk”. He asked why, and I told him “because you’re going to learn to siphon”. We were great mates after that.

I made the decision to be involved in this business and in this community, and if a cashed-up buyer came along I’d probably just buy better country. It’s a lifestyle, but so is working at Bunnings, or banking and playing golf. They all require sacrifice.

I can have anything I want in life, I just can’t have everything. The trick is knowing the difference. And you know what? Put that last drop of water on the house lawn; because at the end of a long hot day, coming home to green grass is psychologically invaluable.
Though stereotypically atypical, Jane demonstrates that through planning, an individual can do whatever they choose to do. Jane has an older brother, but he’s elsewhere in the world and it’s Jane who has come home to run the property for her parents. The business has been restructured so Jane is rewarded for her commitment, but her brother is not excluded should he change his mind in future. People should be given opportunity, and rewards, but think twice before you lock the gate. Jane is operating effectively in a traditionally masculine environment through, rather than focusing on her limitations, thinking of alternate options. Jane looks for the opportunity in adversity. Jane makes plans, but through continual review knows when to modify them. She learns from prior experience, and reflects on these learnings to utilise them in her everyday life. She clearly realises the need to make big decisions, and to include relevant parties in the process, but also that the little everyday decisions are equally important. Like making a joke out of a mistake as you rectify it, and having an inviting green lawn at day’s end. Effective planning needs to extend beyond business if it is to deliver a satisfying life.

Many interview participants had undertaken quite formal farm planning processes, often through or assisted by their industry associations, Department of Primary Industry staff, or private consultants. These plans usually included both the physical development of the property and development of the farm business, often included quality assurance systems and aspects of conservation management, and always spanned extended temporal horizons. They also included contingencies for when things went wrong. It was apparent that individual commitment to these formal plans varied, with emphasis often placed on the visual components such as maps, which were often displayed prominently.

In some cases, the planning had been undertaken with either direct financial assistance or regional provision of specialist services by government; or subsidised by government and delivered through a regional NRM body or industry association. This process began in the mid-1990s as part of the neo-liberal transition from provision of direct farm extension services sought to foster self-reliance in the
management of risks (Cheshire & Lawrence, 2005). Since the mid-2000s the focus of farm planning has shifted towards minimising undesirable environmental outcomes either through pro-active planning processes, or as a legislative requirement; with assistance usually delivered by government but through industry associations. Terminology varies across industries, and includes Best Management Practice BMP, Whole Farm Plans WFP, and Farm Management Systems FMS; but the common underlying principle is adoption of a whole-of-farm approach that integrates production values with demonstrated good stewardship, largely driven by increasing community concern over the environmental impacts of agriculture, particularly for water quality impacts on the Great Barrier Reef.

The sugar cane industry program is badged Smartcane BMP, which a grower described as ‘a license to farm in the future’ (I). This perspective was reinforced by a December 2015 media statement by the industry body that ‘government would have officers visiting and monitoring farms and they would be targeting growers not in the BMP program’ (Sparkes, 2015). Interviews with the industry body prior to this media statement, revealed a view that there was initial resistance to formal planning as a combined consequence of farmer age demographics – ‘farmers did things and they could tell me what they did but ISO9000 required them to write it down’, and ‘being told they were killing the reef got people’s backs up’. This early reticence has been addressed through highlighting the production advantages of good record keeping, and the emergence of smartphones as on-the-go record keeping tools, rather than the farmer having to sit down at a computer at day’s end. It is also a consequence of industry recognition and farmer acceptance of the need for bridging social capital to maintain an industry future.

There has also been government support for formal property succession planning. Initially this was a component of a broader social justice scheme to assist farmers with very limited options exit the industry with dignity, but which today is widely accepted as another requirement of good farm planning.

In the coastal areas of Queensland many landholders were part of the detailed Disaster Management Planning subsequent to Cyclone Larry, and a number reflected
that these plans enabled the impressive and effective response to the much larger event of Cyclone Yasi at both community and enterprise scales.

Lorenz (2013, p. 8) points out that ‘Resilient social systems do not only try to encounter disasters by detailed planning but rather acknowledge uncertainty resulting from increased system coupling and interaction’, and most farmers indeed did describe a less precise, often undocumented, but none-the-less important component of their planning process – the need to maintain the flexibility to accommodate both other agencies agendas, and the unknown. This can be illustrated through a personal learning experience while working in Aboriginal communities: the difference between wasting time, and waiting time.

> I did a lot of bush trips with six to eight people at a time. I’d be up early, packed, then drive around like a mad thing trying to get everyone and their dog into the vehicle and away, which could take between a half and four hours. We’d finally get away, with me exhausted. One day an elderly fellow took pity on me and said “wait”, so we sat and drank a cup of tea. In due course, the people who had to go to the clinic came back, the lost item was found, the sick child assigned to a relative, the phone call was made, the message conveyed to the community office; then somehow this cosmic alignment became apparent and we picked everyone up and headed off, happy and relaxed. Whilst I never quite understood the mystic bit whereby it’s time became apparent, I learned to trust it would happen, and could spend the wait time productively rather than wasted.

Many interview participants had identified this vital component of planning from a much earlier age, or, as in the subject of Vignette Four, A Girl Needs a Plan, been brought up with the concept.

### 7.1 Plan the Future, not the Past

Darnhofer et al. (2010) suggest it might be useful to identify the heuristics (or rules of thumb) farmers use in decision-making, for while financial accounting provides valuable insights into a farm’s cost structure and profitable activities, it is necessarily backward-looking in a context that can change in unpredictable ways; so the value of these ‘lessons from the past’ in future decision-making is not assured (Darnhofer,
2014, p. 473). So what heuristics did the interviews reveal?

Surprisingly, it was the *lessons from the past* that were major determinants in participant’s decision making, but not in a recipe-like fashion to reproduce success. Many farmers were avid record keepers, from rainfall and temperature through to production and returns; and quite a few demonstrated a sophisticated knowledge of past trends in property and produce prices, and the events that determined the movement. This was particularly the case for larger, established farmers, many of whom were third or fourth generation farmers, with the over-riding intent being the ‘need to keep options open, which depends on making the right decisions along the way’ (QQ1). This perspective was often tempered by the reality that ‘you can’t plan from the grave’ (AA).

The ability to apply past learnings to current situations was demonstrated at various scales, from a 40-year cycle in grazing property prices through to a planting regime to exploit periods of better prices that only became evident after thorough analysis of past seasonal returns. There was also an element of instinctual planning, whereby past experience provided a clarity of focus:

- ‘Straight after Yasi my feeling was “here we go again”. I knew I just had to get started, but I also knew straight away that I wasn’t going to replant rambutan’ (T);
- ‘Being able to deal with life is your ability to develop systems to deal with complex variables of the situation. People get into trouble because they can’t think holistically. I hate detail, but I know my limitations’ (U1).

7.2 The Path of Least Resistance

Successful farm planning was often more centred around what could be relied on to work, rather than on maximising output. The plans participants described made effective use of available resources, rather than being aspirational strategies reliant on yet to be acquired mechanisms or technology. This ability to work with what you’ve got and to make what you’ve got work for you was apparent at various scales and across temporal dimensions, but often came down to achieving balance between effort and return. This balance is described as the *path of least resistance*, and three
key components of the strategy are illustrated through specific interview excerpts.

1. Conflicting demands on time and available resources will need to be managed to achieve the best outcome:
   - ‘You can’t go to town to get a part ... make do with what you’ve got’ (TT). Here, time is the limiting factor, so use it wisely. If you can get by without, or reschedule, that’s what you do. There was also an implication that racing off to town “at the drop of a hat” could be act of avoidance or procrastination;
   - ‘The difference between good and bad farmers is basically timing – a half day can make all the difference’ (FF). It is important to maintain a strategic perspective and not get lost in the moment, that is, doing something just for the sake of doing something, or because of an arbitrary schedule;
   - ‘You cut your cloth according to your income’ (AA) - work with what you’ve got, and don’t over-extend yourself.

2. Choose a system or process that can be relied on to work:
   - ‘I’m not sure trellising is the cyclone answer, and the pruning requirement would be too much labour’ (Q1) – acknowledging that while his current management regime had shortcomings, he was not going to change to a possibly better system until it was proven;
   - ‘pencil pushers are dime a dozen, but an ignorant old bugger who knows cattle will always ensure there’s cattle to sell’ (AA) – it’s what you know, not what you think you know that’s important; and demonstrated expertise and competence is more reliable than theory;
   - ‘we’ve tried a lot of different things, but keep returning to the same old thing – come on cows, need more calves’ (X2) – this comment from an innovative family that had tried many new things, many of them successful, but they had never forgotten the core of their business;
   - ‘I always waited till a property was overstocked before buying the next one so I didn’t have to finance the stock’ (D1) – a measured, rather than an opportunistic approach to growth;
   - ‘You can only try three or four times with big [crop] plantings, then you run
out of money’ (U1) – so before you start something new, do your research and consider the risk.

3. When planning new systems or activities, make sure to consider on-going cost and labour requirements:

- ‘do it once, do it right’ (WW) – time spent fixing things is not productive, and the uncertainty that accompanies not being able to rely on something is an additional source of stress, because ‘you can always rely on something to go wrong at the worst possible time’ (WW);

- ‘good partnership agreements are as much about the exit arrangements as they are the purpose for which they’re set up’ (X1), so think through the entirety of any process from beginning to end;

- ‘I installed a backup generator after Larry … [expensive, but] it paid for itself after Yasi as we would have been 21 days without water’ (T). The experience and learnings of one disaster were incorporated into planning his new cropping venture;

- ‘I can’t afford someone else, so I’ve set it up this way over 15 years’ (B). This person operated in an area with limited access to labour, but also operated to a very high standard which would not be easy to match. Recognising this, the business operation was planned around the individual capacity;

- ‘I know I’m over-capitalised, but we can run the whole show with two people’ (U1) – where access to labour can be limiting, reducing risk justifies increased capital expenditure.

7.3 More than just me

Formal planning processes were also evident in succession planning, particularly where accommodating more than one child necessitated additional property purchase. Many spoke of the importance of establishing a financial vehicle capable of navigating unknown futures, such as retirement or family marriage breakups.

A component of such transitions was inevitably at what point did the reins change hands? Most favoured a gradual transition, even when the incumbents had
themselves managed properties from a young age. Such decisions were driven by issues such as experience versus enthusiasm, but overwhelmingly by the desire to maintain both the asset and the relationship within and between children: ‘It must be hard watching yourself operating 20 years ago’ (X2), speaking to her husband about their son’s increasing involvement in the farm; ‘my old man got a lot smarter after I turned 30’ (U1); ‘it’s the 3rd generation farmer who succeeds … but they succeed on the hard work and experience of their predecessors’ (J).

Concern for, and inclusion of others outside of direct family in decision-making was also evident in planning – almost as an obligation (though not an arduous one). Examples included the inclusion of staff in recreational and social events, social and professional relationships with neighbours, and awareness of how others in the district were “travelling”, though R, who works in a community support role, pointed out that ‘when people tell you they’re concerned about someone, they could often be facing the same situation themselves’. Possibly, this trait is related to what psychology resilience educators call nobility, which reflects needs for self-esteem, self-worth, freedom, order, and purpose in life. Nobility reflects a need to give back to society, so part of resilience is the need to be altruistic (Richardson, 2002).

Possibly, individuals are valued as a consequence of the relatively low population, though I did not find evidence of any diminished attitude between farms in more settled coastal districts compared with those in remote western regions.

7.4 Stick to the plan, man

A repeat of the quote from D1 that ‘you have to stick to something, whether it’s a bank, sheep or cattle - chopping and changing and chasing things never works’ also could be interpreted as a warning against innovation or chosen change, but that was not the intended message. The important point being made was not that change was undesirable, but that reactive change without adequate thought or consideration of consequences was unwise; in other words, you need to plan things, not simply react to circumstances. This same view was put forward by many farmers from many industries, almost all of whom had made deliberate, and in some cases, extensive
changes over time in their farm practices.

No interview participant was ‘chasing rainbows’ (L) or looking for a ‘silver bullet’ (G) solution to their situation, though many farmers described situations where such an approach had been the undoing of another farm. Often, the situation so described occurred when situations were desperate, implying that such an approach was almost one of ‘last resort’ (H2). Conversely, examples were given in which success had ultimately been achieved after suffering hardship through sticking to a proven methodology ‘we cut costs to the bone and did no maintenance till things came good’ (AA).

A long-term agricultural consultant talked about ‘planful people, who therefore have external markers to refer to … such as when to start and when to stop’ (KK) – almost like a plan for a plan. Such a nesting of plans did seem to be a common attribute of many successful farmers. Many of these strategies are well illustrated by the preceding vignette (Four), as are some of the important tools that assist those involved to negotiate potential pitfalls of the planning process, such as ‘say what you like in the paddock, but leave it there’ - don’t let your temper or your ego lead you into rash decisions; and don’t make decisions ‘round the kitchen table, because there we sit in the same chairs as when we were kids and that’s how we act’ (TT) - respect the individual and their right to have a different point of view, irrespective of the contextual relationships.

The importance of sticking to the plan was evident from the comment that ‘you have to play the full 80 minutes to be successful – many games are won or lost at 79 minutes. Decide what you’re going to do, and stick to it’ (LL).

What happens though when an unprecedented event occurs, one for which there is no plan? Natural disasters such as cyclones are devastating, ‘but there’s a timeline. The issue is in your control and you can make decisions … and arrange your finances to aim for that – an end point’ (JJ). But some socially-derived disasters59 are unprecedented, such as the 2011 decision to immediately ban live cattle export from

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59 I use this term to describe a disaster that occurs as a consequence of a decision made within society.
Australia to Indonesia, or the immediate quarantining of Far North Queensland banana farms once the presence of Tropical Race 4 Fusarium disease was suspected. These events might have been foreseeable, even predicted; but being outside of individual farmer’s experience meant that they could not forecast the timeline, nor could they adequately manage the factors contributing to the timeline

‘we wrote the phytosanitary protocol in two days to get our fruit back on the market [after the farm was quarantined], but it took the department two and a half weeks to approve it! You just don’t have control. But you do have the $1.1 million fine if you stuff it up’ (JJ).

This inability to be able to predict or control timelines was a critical difference between natural and legislative disasters, but the implications for individual resilience are equally applicable to events such as financial recession or global events. Farmers have no metric to decide whether or not to stick to their plan in such situations.

7.5 Discussion and Conclusion

Primarily farmers plan to simplify management, improve productivity and include biodiversity and ecological issues in farm decision making (Agriculture Victoria, 2016), and plans include individual farmer’s aims around profit, lifestyle, family wellbeing, sustainability of production and more. Plans assist farmers to manage the impact and complexity of the many variables outside their direct control, particularly through recording experiences – their own and others - (both in writing and through memory), which in turn provides an opportunity to weigh up or consider options when making decisions.

Whilst some individuals had more developed and formal plans than others that they were evidently working to, it would be reasonable to conclude that planning was an integral part of everyday life for virtually all of those interviewed, and that these plans contributed to their ability to deal with uncertainty, and hence to their resilience. Farmers were always wondering “if I do this, will that happen?”  This perspective aligns with the statement by Lorenz (2013, p. 9) that

‘Social systems are aware of being within an environment with a given history
and with certain expectations of the future and are able to learn and act forward-looking in anticipation of future states’.

However, it was also apparent that some people were better at planning than others, and some people at times felt ‘lost in their plans’ (WW), particularly if the plan was perceived as a formula that should not be tampered with. Whilst this attitude was limited, it did seem more apparent when farm plans had been developed externally with limited input from the actual farmer, where there was sometimes a tendency to see plans as ‘set in concrete’ or not to have a Plan B; whereas more ‘planful people’ used and adapted plans in response to changing circumstances. This observation leads us to the next theme – the Capacity to Adapt.
Chapter Eight

Theme 3 – the Capacity to Adapt

‘That which does not kill us, makes us stronger’

Friedrich Nietzsche

Following on from, and closely intertwined with an individual’s capacity to plan, is their capacity to adapt the plan; because the nature of disasters is that they happen suddenly and without warning – ‘natural disasters always involve some element of surprise’ (Kühlcke, 2010, p. 671). Adaptation is a process of deliberate change in anticipation of or in reaction to external stimuli and stress (Nelson et al., 2007), that is, knowing when to change the plan without falling into the down-ward spiral of continual reactive adaptation previously mentioned. Vignette Five illustrates a somewhat unusual example of adaption.

Vignette Five: Time for a change

During the 1980-90s my Australian Plague Locust Commission (APLC) work entailed extended solo biological survey through remote Australia, regularly visiting the same areas and properties. Central Australia might be geographically large, but as a human community it’s more an extended village. While the odds of regular unscheduled encounters with the same person might seem slim in such a vast region, I became used to how often they actually happened. Perhaps because of the sparse population, assisted by the harsh physical environment, friendships developed easily.

The reputation of one fellow (let’s call him Mac) preceded him. Mac ran sheep on the very edge of the desert, and on my first transit I was struck by the number of dingo carcasses strung up at every gate. This wasn’t particularly unusual at that time, but the sheer number indicated a very strong commitment to dingo control. I travelled this property many times – the desert/pastoral interface being prime locust breeding country - and it was always the same. Inevitably, one day I met Mac.

Nietzsche’s work has been associated with fascism and Nazism, but this appears a consequence of the reworking of his unpublished writings by his sister, who became the curator and editor of his manuscripts after his death, as Nietzsche was explicitly opposed to antisemitism and nationalism (Golomb & Wistrich, 2002). Expressions gather their own meanings as they enter the popular lexicon, particularly when used and reinterpreted by successive generations and cultures. This quote was specifically included because it was used repeatedly by a number of interview participants.
The APLC was well-regarded by landholders, and “chasing grasshoppers” generally sufficed as both explanation and validation of one’s presence, allowing the conversation to move to more interesting topics such as the weather and the state of the country. But with Mac the conversation quickly turned to dingoes: their numbers, their viciousness, the lack of support and commitment from government and other landholders for coordinated dog control, the decrepit state of the dingo barrier fence, the callow nature of the beast. Mac was evidently a man consumed by dingoes and their destruction, and feeling pretty alone in the world on this mission. Adjoining properties, far flung though they were, had long ago switched to cattle, but Mac was adamant that he was going to win this fight. And so it went every time I met him.

One day, a fellow Field Officer returned from survey with an amazing story: he’d met Mac along the road and there, in the front of his Toyota, was a dingo pup. Alive. With a collar! So next survey I called by his house and sure enough, it was unmistakably a dingo, and unmistakably a pet. But the real surprise came when I shook Mac’s hand - he’d lost that wild (mad?) eye. I didn’t have to ask what had brought about the change - straight up he said “if you can’t beat them, join them”. He’d switched to cattle, dingo impact on his herd was now manageable, and “they [dingoes] are quite a nice animal when you take the time to get to know them”.

I never found out what changed Mac: whether it was a slow realisation that he was never going to win that fight, or if something in that one pup’s eye had caught him? For certain though, Mac was a happier man - awake from a bad dream and enjoying life. People have the capacity to change, to reinvent themselves, and to surprise others, and they do it when they’re ready.

Societies, in addition to responding to current or perceived disturbances, also have ‘the capability of defining and working to achieve a desired system state’ (Nelson et al., 2007, p. 412), but the focus of this study is the behavioural changes or adaptations individuals use to improve their chance of a successful outcome. Generally, such adaptations do not occur in isolation, they are influenced by the individual’s agency; that is, the specifics of their situation, family, community and industry; and sometimes it is through the discovery of their vulnerability that actors make sense of a situation and develop capacities to cope with it (Kuhlicke, 2010). These two perspectives - the adaptiveness of the individual and the adaptation or transformation occurring through interaction between individuals - are difficult to
separate, but the latter will be better addressed in theme 4: Social Connectedness (Chapter Nine). The actual adaptive capacity of individuals is a result of both social, physical and economic elements combined with the ability to mobilise these elements; and adaptation is a continuous stream of actions, decisions and attitudes that inform decisions, and can operate on a continuum from minor change through to transformation, that is, a fundamental alteration of the nature of a system (Nelson et al., 2007)

Agency can be seen as the capacity of people to manage, utilise, and enhance those resources available to them in addressing locality-wide issues (Brennan, 2007; Bridger & Luloff, 1999; Luloff & Bridger, 2003), and Brennan (2008, p. 59) believes such an ability to be ‘the cornerstone of resiliency’. Nelson et al. (2007, p. 395) state that a lot of the theoretical and empirical research on resilience derives from a disciplinary focus different than that of adaptation, and argue that ‘resilience provides a useful framework to analyse adaptation processes and to identify appropriate policy responses’.

Planning practitioners recommend thinking of planning as a cycle, not a straight-through process (MindTools.com, 2016). A vital component of this planning cycle is regular review and reflection on progress towards a goal; that is, a feed-back mechanism that enables experience to be translated through reflection into concepts, which in turn are used as guides for active experimentation and the choice of new experiences. Kolb (1984, p. 38) describes this as a four-stage experiential learning cycle in which ‘Learning is the process whereby knowledge is created through the transformation of experience’. The four progressive stages of Kolb’s Learning Cycle are illustrated in Figure 8.1.

Whilst all interview participants demonstrated that they both made plans and regularly reviewed their plans, the adaptations and sometimes transformations they made as a consequence were often quite different. Adaptation is not necessarily the same as innovation, nor does it have to be either spontaneous or premeditated, though I found examples of each. I recorded instances demonstrating successful adaptation in very different circumstances: from the measured and conservative -
‘the opportunity to freehold the property was once-in-a-lifetime – I had to do it’ (B); through to the entrepreneurial - ‘we bought the property cheap during drought, then cut a million fence posts off it at $1 each’ (F); and some, as in Vignette Five, approaching epiphanous.

A few people described well-developed what if contingencies; that is, predetermined trigger points at which they adjusted their plan. These tended to be larger and longer established farm businesses, many of which had undertaken professional training courses relating to farm planning and management. In one such case, the adaptation was not to follow industry trends:

‘[our company’s] success comes from being measured - last land craze we sat back and did nothing. Draw from experience, consolidate, don’t get ahead of yourself or borrow too much. This was the rule broken in the last 15 years that destroyed many businesses’ (AA).
Such rigour paid dividends for this farm, but others had successfully speculated in this same market, but their situation had different dynamics and demographics. So the capacity to adapt was important, but it was always the individual circumstances that determined how and what adaptation occurred. There were some general attributes that did seem to apply across the breadth of this theme though, which will again be described through examples.

8.1 Pay Attention

Many interviewee participants stated (and considerably more inferred) that while agriculture was not difficult - ‘it’s not rocket science’ (D1) – it does require attention to detail and astute, timely decision making:

- ‘It looks easy, but it’s not ... organising paddocks so you don’t run out of grass ... dealing with livestock is un-predictable and accidents will happen’ (AA);
- ‘We try to make lots of little profitable decisions’ (X2);
- ‘if there’s a $0.30 differential between Townsville and Brisbane I’ll send to Brisbane, because it only costs $0.24 extra to get them there’ (U1);
- ‘[it’s] about being aware and making the right decisions ... we talk about it all the time’ (HH).

People who demonstrated the attribute of paying close attention to detail considered it essential for their business success, because ‘Most people don’t know where their business is at or what it’s worth’ (X1). Application of this attribute was not restricted to property management, it was about keeping your eyes open in everyday life - to be aware of opportunities and to avoid pitfalls; which was well-illustrated by the comment ‘[driving around the country, I see] so many things that could be fixed easily if only the local member was paying attention’ (UU).

Paying attention was in fact regarded as an essential life skill: ‘We always taught the kids to accept responsibility / blame. By taking risks, they know their capabilities and what the cut-off point was’ (U1, U2). Whilst not a tangible asset like financial liquidity or natural resources, being able to pay attention is clearly one of the less-tangible elements that contributes to an individual’s adaptive capacity.
8.2 Maintain flexibility

Change is a fundamental aspect of any system, and the level of system adaptedness changes as the context changes (Nelson et al., 2007). Maintaining flexibility equates to keeping one’s options open when responding to change, and this desirable state was actively pursued by many:

- ‘Don’t get locked into survival feeding, don’t go on agistment – sell down, keep young cows, make sure everything is always saleable. [name supplied] last year had to put beasts into a feedlot to get them to a saleable weight - I would never let that happen’ (U1);
- ‘I always keep a paddock spare’ (B);
- ‘Try to put yourself in the best position to understand what may happen, and counteract unfavourable weather conditions’ (RR).

These regimes clearly empowered the individuals and allowed them to feel, and believe within themselves, that they were in control of their destiny. Whilst still exposed to danger, they ‘also have the ability to transform them into manageable risks’ (Kuhlicke, 2010, p. 688). Contrast this to the situation in which

‘[He] sent six decks to Biloela [agistment] to calve, and just settled them in when the place sold and the new owner wanted them off in 2 weeks. Nothing he could do but bring them home to no grass’” (M).

Here the person being discussed was already under stress through lack of grass and no local agistment options. He had stretched himself to get his breeders somewhere safe, only to be put back in the same position minus the freight cost. This does not mean agistment per se is a bad thing, as ‘I’ve learnt through agistment – 10-12 properties at any one time over the past 20 years’ (X1); rather that ‘it’s hard to get certainty with agistment deals as they’re 99% relationship and dealing with people’ (X1), so when you don’t have options you are more vulnerable.

Many people described the negative psychological impact that a lack of options generated, which equated with the situations described by Brown and Westaway (2011, p. 325) wherein a country or household ‘having low adaptive capacity is likely to have high vulnerability’. Some of the situations so described were:
• ‘As the season got worse and late 2013 / early 2014 stock prices plummeted some people had no option but to shoot stock, and this lack of options really affected people – their sense of hope disappeared’ (Y);
• ‘When people have sold all their cattle, have no feed and there’s no rain forecast – they have no options, and then fear kicks in and mental health issues follow’ (RR);
• ‘When people are travelling OK they can wear criticism, but when people feel they’re cornered and have no options, they react badly … they come out fighting’ (QQ1).

To avoid being placed in this situation, some maintained flexibility through scale ‘the alignment of our four properties gives drought protection and economy of scale’ (D1); some through farm diversification into alternate crops, other farm enterprises, and in two cases farm tourism; while others achieved it through off-farm investments and alternate businesses including a motel, two local hotels, a (farm) engineering works, and an automotive repair shop.

In some instances, the diversification was a strategic business decision, whereas in others the option pursued was simply through seeing an opportunity. For (BB1) it was both: their seasonal labour requirement of 35 to 40 people was compromised by their remote location, so they used an historical rural inn licence to establish a fully serviced accommodation venture focussed on young travellers, and changed their farming operation to accommodate backpackers new to Australia: ‘farm work is now based on 2 hr shifts, rotate them in/out of the sun and sometimes build up to a full day’s work over many weeks’.

But for many people, it appeared that their over-riding mantra was one of flexibility, summed up by (HH) ‘If worst comes to worst, we are employable people and we know how to work. We’re not frightened by change’.
8.3 Go the extra mile

No one worked a nine to five day: ‘when you work for yourself things change – it’s not 9 to 5’ (P). Even participants in their seventh and eighth decade described situations where they sometimes put in long days, whereas those younger took this as a natural part of the job, and not a particularly disagreeable one either. Putting in extra effort when it was required was something that had to be done to secure outcomes, or even to prevent previous effort from being eroded.

Sometimes this was sheer excitement ‘I was out there every afternoon [his recently purchased farm] while still helping the new owner all day [in the business he had just sold]’ (P); sometimes to take advantage of an opportunity ‘I had taro experience and now I had the land available’ (T); sometimes through pride ‘their farm is always a picture of neatness and organisation ... a great hostess with freshly made cakes, scones, and pikelets ... they are very proud of their operation’ (Q1, Q2); sometimes through obligation ‘the bonds established with neighbouring properties ... have endured for the past century and are typical of the North Queensland cattle industry [when describing collaborative fire-fighting efforts]’ (U1); and sometimes because there was simply no other option ‘I do 10 km of fencing a year [by himself] just to stay in front’ (B).

An earlier description of an interview indicated the need to wait for the participant to return home late and unload cattle, and that the situation generated no stress or anxiety. The atmosphere was very much one of everyone doing what had to be done - a part of the job, a part of life, just what happens. What would have felt out of place would have been if someone was not happy about the situation and made it apparent. The feeling was one of “a problem shared is a problem halved”, and this visibly built and strengthened bonds between people.

8.4 Pull your belt in

Whilst linked to the previous heading, the necessity to “ride out” tight economic times through deliberate austerity was also something experienced by the majority
of those interviewed. Often this was a consequence of some disaster, either climatic or market-driven, and again the majority of people interviewed were obviously only those who had “come through” or survived such events:

- “[after the black sigatoka disease outbreak] we had to get back to basics – 35 acres of the best bananas we had, smaller workforce, and gradually built up again ... to get debt-free and have control over our life gain” (P);
- ‘finances were tightly controlled [by the bank] in my younger days ... no Christmas hams, so I learnt how to do my own’ (N);
- ‘after the 1973 crash ... bullocks fell from $250 to $50 a head and that went on for 4 years ... we did no maintenance till things came good. We were all much younger and reckoned we could ride it out, and we did’ (AA).

Many of those interviewed described this ability as the major difference between family and corporate farms: that family farms are ‘better able to control costs’ (FF) and ‘hold on in tight times’ (BB1) as they can ‘cut their cloth according to their income’; though this comment was followed immediately by ‘not many get that these days’ (AA). This last remark was not directed solely towards farmers, though neither were they excluded from his assessment.

8.5 The past is a tool

‘There have been three different but important phases in the family’s history: My grandfather had the establishment phase. He was a visionary sort of guy and introduced 32-volt power to the homestead [and] started developing the place with windmills and wells. Then, my father in the 60s and 70s, the heyday of the beef industry, took it further and did a lot of development in terms of pasture and more water establishment and also subdivision and fencing. But I think the challenges for my wife and I, our era from the 80s onwards, is we had more of a community involvement phase and that’s where we started seeing more [external] interest in how the land was managed and how that affected us in regulatory impact as well. I guess the modern challenges we have is how to deal more with than just the normal landscape and climate effects that the earlier people had’ (U1).

Not all farmers interviewed had thought about how their farm circumstances had
changed over time quite to the degree as (U1), but every person talked about the lessons history could provide. These were far-reaching, from the obvious interaction between seasonal conditions and markets, through to the impacts of market regulation, corporate agriculture, generational change, and changing climates:

- ‘It’s in our best interests to manage for the next year and year after. If we take too much out of it this year, we won’t be able to work with the land next year. It’s all a balance for abundance’ (RR);
- ‘the irrigation was built for tobacco, and tobacco was a regulated industry, but that didn’t stop its collapse’ (BB2);
- ‘people said if tobacco goes Mareeba dies, but in reality, it left a great legacy’ (DD);
- ‘Farming is complicated, especially when setting up from scratch, so big endeavours have big risks … and there are plenty of examples of big ag getting this wrong’ (T);
- ‘some people reach an age where they get comfortable and don’t want to change, some run out of energy to change, and some need new “legs” to continue to implement change’ (OO);
- ‘[my husband’s] family has been here so long that we know it all works out in the end, but sometimes at the expense of one generation for the benefit of others’ (SS2);

The past, like any tool, did need to be used appropriately and with skill to be of real value:

‘The problem with using historical patterns to make predictions is we know these patterns are changing - the past is becoming less of a guide to the future, making real time modelling increasingly important. Seasonal climate forecasts will never be perfect, but they don’t have to be’ (RR).

### 8.6 Dealing with Failure

The capacity to adapt to failure is included although no interview participants mentioned it. Many talked about business ventures they had tried but were no longer involved in, and these included different crops; innovative grazing and management regimes; new marketing systems; and separate stand-alone business
ventures either aligned with their farming operation or completely separate from it. Not once did a participant describe the lack of success as a “failure”; not when they had lost money on the venture, and not even where a decision was made to stop farming altogether ‘I felt good about the decision to sell. It was a conscious, reasoned decision that included lifestyle opportunities and freeing up finance’ (E). These were regarded as life experience, something to learn from, a consequence of trying new things, even a disaster; but never failure. Whilst people interviewed primarily were still farming, participants did include some who had left of their own choosing and one who had exited as a consequence of a bank foreclosure.

8.7 Discussion and Conclusion

Adaptation is a process rather than a list of actions and measures that address specific threats, and successful adaptation requires going beyond one-off measures and questioning the assumption that every adaptation will be beneficial (Eriksen et al., 2011). There is extensive literature on the concept of adaptation in response to environmental change in social-ecological systems, particularly with respect to climate change (Adger, 2006; NATO Science for Peace and Security Series, 2007; Smit & Wandel, 2006), and Folke (2006) describes adaptive capacity in such situations as a source of resilience.

Adaptability (or the adaptive capacity) of human systems can be defined as the capacity of ‘any human system from the individual to humankind to increase (or at least maintain) the quality of life of its individual members in a given environment or range of environments’ (Gallopín, 2006, p. 300); particularly when human systems are capable of learning and technological progress. Therefore any fundamental analysis of vulnerability needs to take into account how people construct their own vulnerability (Kuhlicke, 2010), as people are capable of preparing for the unknown through combining different types of knowledge, particularly local knowledge, which is considered by many as a ‘more adaptive and more appropriate way of dealing with environmental threats and instabilities’ (p.687).

Brown and Westaway (2011, p. 323) state that agency is ‘clearly related to adaptive
capacity’; and aligns with a characteristic Brown (2016, p. 124) describes as resourcefulness - ‘the capacities and agency of different social actors and their social ecological system to manage and shape change in both positive and negative ways’.

This capacity to adapt by interview participants was important at many scales, for as Magis (2010, p. 402) points out

‘Members of resilient communities intentionally develop personal and collective capacity that they engage to respond to and influence change, to sustain and renew the community, and to develop new trajectories for the communities’ future’.
Chapter Nine

Theme 4 – Social Connectedness

‘Resilience rests, fundamentally, on relationships’
Luthar (2006, p. 780)

This was undoubtedly the most complex and interwoven theme to emerge from the interviews. It includes people’s connection to family, to communities, to their livestock and industry, and to where they live, as well as how they view themselves in relation to the world.

This came as no surprise, as human lives are typically embedded in social relationships with kin, co-workers and friends across their life span, and ‘no principle of life course study is more central than the notion of interdependent lives’ (Elder, 1994, p. 6). In their work on the role of networks in transforming Australian agriculture, Dowd et al. (2014, p. 559) state ‘that individuals with stronger, more informed and more effective networks have been generally regarded as more resilient to generic change events than those with weaker ties’, and when these relationships are established and maintained ‘increases in local adaptive capacities materialize, resiliency becomes possible, and community can emerge’ (Brennan, 2008, p. 59).

This theme is closely aligned with the role of social capital and networks (described earlier in Chapter 4.3 (Capital Ideas) in supporting adaptive capacity, though Brown and Westaway (2011) point out that increasingly scholars emphasise the importance of an individual’s agency in these situations, that is, the capacity of an individual to act independently and to make one’s own free choices.

This chapter has deconstructed the theme into major components which are illustrated through interview excerpts, though in many cases (as illustrated in the next vignette) there was usually more than one component at play.
My Irish Great-Grandfather was flooded two years in a row in Maryborough, so north he went to the mouth of Mossman Gorge (Far North Queensland). He gave the river flat to his brother because he was over floods, and I’ve been picking up rocks ever since. That was 1883, and in 1894 he was chair of Mossman’s new grower owned sugar mill. And I was chair when Mackay Sugar bought it in 2012, so I suppose we’ve been there at the beginning and the end, and now the industry’s future is outside individual growers or regions control.

It’s a good place to farm, and the mouth of the Gorge was a good spot to own when ILC built the Mossman Gorge (Indigenous eco-tourism) Centre. Sugar’s still important to the town, but with the Port (Douglas) just down the road and Mossman Gorge Centre up and running, there’re new opportunities in town. I’m growing cocoa and making chocolate. Everyone likes chocolate - wouldn’t that be a good souvenir? TOs (Traditional Owners) not working at the Centre could grow cocoa across the river and sell exclusively through Voyager’s resorts at Uluru and Mossman. Particularly older people who don’t work in the tourism side. That’s what North Australia wants – high value products that everyone has got a hand in – not cheap bulk commodities for export. We have to be smart.

Dad was the first farmer to pay Aboriginals a full wage, before the referendum, and they remember that. Mum’s lived next to the community for 50 years and never locked her door. They look out for her. That Centre has given real opportunity to people, and they’re going to own it.

Pride and ownership is important to everyone, and that’s why Reef Regulations did so much damage: you tell farmers they’re destroying the place they live in and then expect them to work with you? Come on! It was buying a green vote at the expense of reality, and the big-stick approach killed collaboration. It’s hard enough to get a start in farming, and we’re not encouraging young people to try.

But if we are going to open up new country for farming, it has to benefit the people who live there – not some multi-national.

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61 The Indigenous Land Corporation is a corporate Commonwealth entity, established in 1995, with the purpose of assisting Indigenous people to acquire and manage land to achieve economic, environmental, social and cultural benefits.

62 In 1967 Australians voted overwhelmingly to amend the constitution to include Aboriginal people in the census and allow the Commonwealth to create laws for them.
It’s the same with sugar marketing: Low GI sugar started in Mossman – I got talking to a bloke on a mill tour who turns out to be a food chemist. We have to work better together and not get greedy. BSES was the best sugar research body in the world, and the industry stuffed it. Sugar marketing is currently transparent and protected, but no guarantees after 2017. If we lose that I’ll stop growing cane. But it looks like I’ve got the two canegrowers associations talking about our marketing future. If we don’t, growers will just be slaves to the multinationals, so it’s important we all try to prevent that. And getting cane to talk to WWF was a good move – we were never going to get anywhere just blueing.

I started growing papaws 20 years ago because a mate needed work, and now I make more out of them than cane. Cocoa is good too. The seedlings are tricky to grow, but there’s this girl in NSW who grows them for me. She started out wanting some for natural therapies, and one thing just led to another. She gets all sorts of new plants in now and sends them to me. I’m planting finger and yasou limes. Most new opportunities come through personal networks. There’s lots of opportunity and I do love farming, but I reckon I could live anywhere.

Although a third generation, well-connected sugar cane grower, Don continues to look beyond his established industry position for opportunity. He recognises that opportunities present through the personal contacts he makes; but more importantly, that his ability to successfully pursue them is determined by his existing and possible social connections; for example:

- New horticultural endeavours through a woman who contacted him to source cocoa for natural remedies;
- Starting papaya production to provide work for a friend, but now it earns him more than cane and he is expanding production;
- Cocoa as a new crop, and the potential for boutique chocolate through his farm’s location next to the visitor centre - for both himself and the indigenous community;
- Amicable and fair sale of a portion of his farm for the visitor centre, supported by his long-standing family relations with the local Aboriginal community (Don voluntarily set aside and maintains an
area of his farm containing a traditional burial area still in use today, and ensured this parcel was included in the ILC transaction);

- The continuity of the family connection with the town’s principal employer – the sugar mill; and pursuit of innovative opportunities for it;
- As Chair of an industry peak body, recognition that executive changes within the industry now provide opportunity for factional alignment to better address future challenges, and the pursuit thereof.

There is an honest, approachable, yet unassuming manner evident when meeting Don that encourages knowledge-sharing and collaboration; and trust. Don has not used his situation for personal gain, rather there is a sense of ‘this is who I am, and because of that, this is what I do’.

9.1 Family Relationships

‘Be prudent, marry well’ (AA). This is a strong statement, and one I expect many in our society could take offence at, particularly if interpreted as either chauvinistic, a business transaction relating to dowry, or some other old-fashioned anachronism. None of these were the intent. The advice was provided by the patriarch of a large multi-generational family company, and it was core to his belief of what is essential in life - family. It was not said flippantly. This was a person of few words, and he chose them carefully and with intent, and the interpretation on reflection of the interview was:

- life on a western Queensland cattle property can be arduous and is not for everyone, so if you intend to stay, make sure your life partner will be prepared to stay with you;
- both you and your partner have a fundamental and enduring responsibility to the children of your union;
- his family is the most important thing in his life, and he would defend them absolutely;
- a good partnership is the greatest asset to help you navigate life’s challenges.
The family (in all its forms) is the basis of all human societies and social structures (Goldsmith, 1978), so not surprisingly almost all interview participants spoke readily, and in many instances passionately about their immediate and extended family; and post-interview I was often reminded of Montagu’s (1942) belief that it is human beings who make a family - not the quantity of them, but the quality of them. Descriptions of family were sometimes frank and unembellished, but usually displayed genuine appreciation of the relationship - ‘you can’t put passion in a bottle, but it’s easier to maintain it when you have a supportive partner and good health’ (F).

There was widespread awareness of the complexity of family dynamics, particularly the interplay over time and transitioning of responsibilities. For example, the old truism ‘My old man got a lot smarter after I turned 30’ was made by (U1), closely followed by ‘my kids think Dad’s getting old, but I’m only now realising how things work’. This was followed by a detailed description of his current internal argument with himself over the need to give youth its head versus the strategic intervention of wisdom, and how difficult it was to get this balance right; and particularly the ‘need to set up an investment structure so the kids can buy us out, but if they have a bust-up or divorce the asset is protected.

This issue of succession planning was evidenced in many interviews, and many had engaged a formal process, though this did not guarantee a successful outcome - ‘my neighbour spent a lot of money on succession planning but it doesn’t seem to have worked. Something’s missing’ (LL). At the heart of every situation though was a genuine desire to “get it right” for all family members and the asset, though these two aspects were not always in alignment: (X1) talked about how his ‘Dad gave me the greatest gift – the ability to go out on my own’ at 19 years of age, and while he would like to afford his son the same opportunity, the ‘transition to [his son] is always running into busy [sic] and not formalising’. Partly this related to financial risk when such large amounts of inter-connected capital were involved, partly it was because the people currently in charge were still in their prime and enjoying what they were doing, but there was widespread awareness that the ‘risk with family ventures when someone wants to exit ... can be dramatic and more damaging than shareholders in
a corporate situation’ (DD), and while everyone wanted to prevent this, most could recount instances where things had gone badly for people they knew.

Sometimes though, grim situations had delivered good outcomes: Industry sources estimated that the two category 5 cyclones in the Tully district had reduced banana grower numbers by 30%, but now

‘Many small banana growers work for [large producers] and wish they’d done so years ago. They make a wage now, they get holidays and time with their families, and [the large producers] benefit from a stable and experienced workforce’ (T).

Other industry members also discussed the advantages of working for larger corporate entities, such as the ability to work in the industry without having a capital base, the experience gained from moving around between properties, and having a secure income. But when it came to the ability to survive, no one thought that the future was going to be one dominated by corporate agriculture, as families and family farms ‘provides a really solid base for the area and anyone who comes and buys property next door, they tend to stay’ (U1).

The examples in this section reflect the value of both human and social capital in resilience processes: Human capital - the development and refinement of individual skills through learning and experience; and social capital – particularly bonding social capital, through deliberate adoption of strategies to effect business security and succession while valuing and maintaining relationships.

9.2 Business Relationships

The importance of moral capital was evident in most conversations relating to business decisions, and particularly as a contributor to the trust required when conducting business over extended distance. Ethical business relationships were deemed important irrespective of the type and scale of farm enterprise, though exactly how they manifested did vary across industries. In horticulture, ‘your neighbour is your competitor and that’s probably always going to be the case’ (T), as producers often supply an over-supplied market with limited shelf life, and one day can make a huge difference to grower returns – ‘gold for shit, and shit for gold’ (WW).
As a consequence, many horticulturalists have developed strategies to cope with what most described as a one-sided and opaque relationship with their markets. There were elements of trust required and demonstrated, but often these were qualified through deliberate moderating mechanisms:

‘Horticulture marketing is not a fair system. I go to my [Melbourne] wholesaler at the beginning and end of every season. It’s expensive, but pays off - they know I’m involved. The horticulture code [of conduct] doesn’t work because farmers will deal with the devil they know. Most of the burn stories are from when someone new comes into the market. Investment would increase if profitability improved, but that would need transparent dealings, and I can’t see that happening under the current system.’ (DD).

There were many examples given of attempts in horticulture to develop more equitable systems through collaborative marketing, but these were often viewed by other growers as ‘someone trying to take over the world’ (BB2), and most had foundered through concerns about bridging social capital effects (better the devil you know than the devil you don’t). It was more common for these concerns to be implied, rather than overtly expressed. There were exceptions, of course, and usually these were where the proponents were in a position to exert significant market pressure, such as a major banana-growing family who now ‘market from all over north Qld, which gives them on-ground knowledge [about product supply]’ (VV). This family corporation ‘work with the end-user rather than against them … they know what the retailer wants, and deliver it’ (P).

What was of particular significance is that this marketing service is made available to other banana growers, most of whom have ‘nothing signed on paper, we just choose to do it and they do a really good job’ (VV). This family’s skill is not confined to marketing – ‘they always headhunt good people and get the right person in the right place’ (LL), and as a consequence are held in high esteem by both the industry and the local community. The family has invested heavily in building their bridging social capital which, in turn, also benefits other growers through access to provision of linking social capital; but both are heavily dependent on their demonstrated strength in moral capital.
Reputation, market support and ethics was not restricted to large farms. In one instance a farmer was ‘assisting [name supplied] to develop her propagation business ... It’s crucial to the industry future [and] run as a separate business on my farm, so she is on hand to work for me too’ (LL). Another grower contemplating the sale of his farm ‘wouldn’t sell the recipe separately unless the new owner didn’t want to continue with [crop], as this would ruin the market for all – a matter of ethics’ (T). This grower had developed a high return farming system that conceivably could be more valuable than his actual property, but while important, money was not the only factor in his decision-making.

In extensive grazing, one family had assisted a couple who previously worked for them to secure equity in another farm they were buying, which the couple then managed through a flat63 business partnership: the skills and commitment of the young couple were retained in the business, and they got a start on the property ownership ladder - a mutually beneficial relationship. I asked why this model was not widespread, and the response was that they had ‘never met anyone else we would consider being in partnership with’ (HH). Other people are interested in the concept, and both parties have done MLA64 presentations on the model, but the key was evidently finding the right fit between people, and this was a rare thing.

A successfully retired grazier explained the balance between business and morals as ‘You need morals, but you also need to be a business man and look for the opportunity - when someone is doing it tough is the time to buy, and vice versa when selling’ (D1). Later in this interview a name came up, who was described as ‘a hard man’ – the implication being that this person was seen to profit too much from other’s adversity, possibly seeking out such situations, and thereby lacking in morals. The implication was that he would not be trusted in business transactions.

Many established industries like sugar and beef often work on a pooled market price, though there were instances of developing specialisation and niche markets here as

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63 Flat meant no hierarchy – all partners were deemed equal in decision-making.
64 Meat & Livestock Australia Ltd is a producer-owned, not-for-profit organisation that delivers research, development and marketing services to Australia’s red meat industry.
well through such innovations such as low GI65 sugar and organic beef. Many spoke
of the increasing professionalism ‘that farmers don’t get credit for … we have to think
on our feet and make decisions every day that are worth more than individual
[government employee] salaries’ (JJ1); and while established commodities like sugar,
wool and eggs had experienced past government intervention to stabilise prices, its
cessation was generally seen to be for the better:

- ‘It’s not up to government to create the customer, but government can be
  an enabler through market access’ (W);
- ‘Opening up of the cane industry created opportunities for growth which
  were previously stifled’ (L);
- ‘The wool floor price was a good idea @ 400c, but got greedy and it became
  a price setter. Wool growers were the puppet and the industry body was
  milking the system’ (X1).

The last comment referred to a quasi-autonomous non-governmental organisation
(QANGO) to which the government had devolved power, which was viewed very
differently by the same farmer when speaking of contemporary industry bodies: ‘the
1970’s [beef] crash was because we were reliant on only the US market. Now, thanks
to MLA, we have 20-30 markets and so are less vulnerable. MLA do a fantastic job’.

The importance attached to industry bodies was not consistent, with some held in
high regard, while others were deemed necessary, but not of great importance. It did
appear that the value attached to such bodies was commensurate with the degree
of individual involvement, with some participants actively working to increase their
effectiveness. A commonly espoused deficiency of industry associations was in their
inability to improve understanding between city and country perspectives, as
evidenced by the live cattle export ban; though the blame for this decision was
placed squarely with the federal government. It appeared that a fundamental role of
industry associations was to build bridging social capacity on behalf of industry, but
their capacity to do so was variable.

Farmers generally spoke well of industry-focused government staff in regional
locations, but were often less impressed with their performance the more distant

65 Glycaemic Index is a relative ranking of carbohydrate in foods according to how they affect blood glucose levels.
the decision-makers were physically located:

- ‘the local officers were tremendous, but Biosecurity Queensland can be very brutal on individuals’ (DD);
- ‘the Flinders River irrigation idea had a lot of interest, but the moratorium on development on top of the 10 years to develop the plan plus another 4 years to release water meant that interested producers in their 20s were now in their 40s, and had either moved on or changed direction’ (Y).

Previous discussion addressed the importance placed on loyalty, consistency, and good relationships by farmers: ‘important attributes – stick to agents / banks rather than chop and change. Relationships are important, and they build a regional sense of commitment and community’ (F), for example:

- ‘Backpacker labour in Tully is working well, but we should provide more leisure facilities for them e.g. basketball courts / movies / a bus to the beach’ (CC);
- ‘[Satisfaction] comes back to people and relationships’ (S);
- ‘Successful individuals can inspire others and the model spreads by imitation, not top-down instruction’ (EE);
- ‘We hadn’t much sheep experience but [mentors] grew up with them and mentored us through the process’ (HH);
- ‘I’ve thought about ways of growing my skill set through extending the model - that’s partly why I’m talking to you today’ (JJ1).

Some also spoke though of sectors they did not trust, and why:

‘I have a fear and worry of consultants who have failed in their own enterprises, then see a niche market of people who are unsure of their own decisions and milk this uncertainty ... I don’t use consultants’ (F).

### 9.3 Relationships with Others

As you travel west from Queensland’s relatively settled east coast, population numbers fall quickly. Obviously, farmers are aware of this, and in most cases resigned to it, but that doesn’t mean they don’t seek and enjoy the company of others. My
impression, developed over many years of work in Central Australia, is that these communities are actually extended villages, where people know each other and stay informed of individual’s movements and activities. And like villages anywhere, they maintain connections to neighbouring villages and beyond.

Another impression was that when you meet people, you tend to get a more three-dimensional view of who they are. What is meant is that it is harder for people to present and maintain a façade than in larger cities, where human interaction can be more easily restricted to a time and place and avoid the third dimension of knowing about their interactions with others you already know. For example, a butcher in Longreach sold tickets at the RSL club Friday nights and ran the pony club on Sundays. Of course, this happens everywhere in the world, but when there are fewer people to talk about, the same names are more likely to occur. As a consequence, people’s reputations are open to scrutiny, so embellishments need to be made with care. As another example, an opportunity to interview one prominent member of the grazing industry only came about, I believe, through my long-standing friendship with his nephew who had worked on his property many years previous – his endorsement of me carried weight.

Understanding the importance of these behaviours and relationships is fundamental to understanding the relationships between people in Northern Australian agriculture. It is why the *handshake* banana marketing agreements described in the previous section work. It is not a fool-proof system, and people still take advantage of others, but to maintain standing and build relationships that can provide support in times of need - what other people think of you is very important. A successful farmer with involvement in cane, cattle, broadacre cropping and mining described his ‘fundamental concern with opportunistic people who take advantage of others’, and was concerned that in our modern age the ‘independent arbiter of God has been replaced by the dollar coin’ (J).

But at the other spectral end from this philosophical concern was a grazier describing

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66 ‘While it is true that place and locality are important components, community is far more than a geographic location’ (Brennan, 2008, p. 58).
a drought relief parcel she’d received containing ‘a package of hand-made biscuits with a note and my name written on it’ (QQ2), and how this personal connection had touched her, and ‘demonstrated that people genuinely care’.

From the outside, farming can appear hard and overtly masculinised, particularly extensive grazing, but in both prior experience and through these interviews many examples refuted this. A rangeland researcher described (positively) how the industry had become ‘feminised’ during his 25-year career, and how the relationship between pastoralists and conservation managers was now ‘excellent’ (EE). A cane farmer described how his ‘Dad was the first grower ... to pay Aboriginais the full wage, and they remember that’ (FF). Despite distance, people seemed able to connect with the right person when needed, such as during a relationship breakup where it was ‘good to be able to talk to someone outside the family, but someone who understood the industry’ (suppr.).

Central to all of these stories was the importance of relationships, reputation, and trust. Trust was built and maintained through all the elements of social capital. It is a strategy for building resilience that people understand and value, and because ‘new opportunities come mostly through my personal networks’ (FF).

9.4 Community Relationships

Looking beyond inter-personal relationships was the farmer’s relationship with their communities – local, state and national. There was considerable mention of the growing disconnect and lack of understanding between urban communities and farmers, though one person did point out that ‘the city / bush divide can be just as real between [local town] / bush as between Canberra / the bush’ (QQ1). The impact sectoral groups like conservation and animal rights organisations have on farm businesses was of particular concern, and many were obviously struggling to understand their perspective, or precisely what it was that such groups were hoping to achieve: ‘it’s one thing when an attack comes from a foreign nation, but when it comes from within ...’ (AA) – in reference to the 2011 ban on live cattle export to Indonesia. Many were obviously dismayed that often, sectoral lobby organisations
‘seem to operate outside the law with impunity’ (X2).

Farmers were acutely aware of their declining political influence and subsequent vulnerability to organised lobbying – their declining linking social capital. For example, ‘a live cattle export-type shutdown could happen in other industries overnight, and the cane industry needs to deal with social media and community perceptions’ (S). As a consequence, and aided through the mediation of some regional NRM groups, many primary industries have now moved beyond entrenched opposition to environmental lobby groups, as demonstrated by the Reef Alliance: a QFF, WWF and regional NRM bodies collaborative Great Barrier Reef wide approach intended to advance farmer practices beyond industry BMP and fast track the implementation of innovative practices: a deliberate strategy to build bridging social capital. In May 2016, this alliance delivered a $56 million Australian Government investment in Queensland industry (more information is available from www.qff.org.au/the-reef-alliance-growing-a-great-barrier-reef).

In regards to the Reef Alliance, an industry member reported that ‘trust is still variable - at a recent event WWF said without warning that BMP doesn’t go far enough’, but as a consequence the Alliance has developed a ‘no surprises policy that’s working a bit better, though the individual grower relationship with WWF will take a long time to change’ (S) (see Stehlik (2010)).

When I asked farmers about the future though, there was strong agreement that farmers need the community as much as the community needs farmers: ‘things would be a lot worse if we just left each alone - we need each other. We just need to improve interaction and understanding’ (QQ1); and ‘we will only get the sympathy vote for so long’ (UU). Many growers expressed fundamental agreement with both environmental and animal welfare legislation, though many blamed government failures to enforce existing regulations as a reason ever-more onerous rules were introduced – ‘we need regulation follow through by government to deal with the cowboys, otherwise it’s just spin’ (S).

An example given demonstrating the value of community was early Darwin society, where the ‘Chinese, Japanese, Greeks, etc. outnumbered Caucasians, but everyone
needed each other’, and that ‘this strong sense of identity continues today without having actually achieved anything other than all living in a remote city’ (II). This person went on to ponder whether a lot more Australian communities were like this in the past, ‘but Darwin has held on to it’ as a consequence of its physical isolation.

A number of farmers had recently received on-farm assistance from volunteer-based organisations such as Blazeaid, which had its genesis in the devastation of the Black Saturday bushfires of 8th February, 2009, and whose slogan is ‘Not just rebuilding fences, but rebuilding lives’ (see www.blazeaid.com). When these farmers described their experiences, it was apparent that both the recognition of their difficult circumstances, and the willingness of complete strangers to assist ‘at their own expense’ (M), were of equal, if not more value than the actual physical work undertaken – ‘they had their own caravans, chainsaws, cooking gear, everything! All I had to supply was somewhere to park their van and a bit of meat ... and we had a few good nights swapping yarns’. Some concern was expressed over well-publicised events such as hay runs from southern states to western Queensland which were ‘more about the Guinness Book of Records than supplying hay’ (L); along with other mixed messages ‘the Blazeaid-type response is confused – they offer help but advocate against foreign investment, which for some sectors is the future’ (SS2). These instances reinforced the importance of avoiding competing agendas when delivering such services if enduring social capital is to be achieved.

It was possible to interview one past and two sitting mayors of predominately rural communities (who were also farmers), and each spoke of the importance of local government in contemporary and future community prosperity. In particular, the importance of maintaining sound relations with the two other tiers of government for provision and maintenance of essential infrastructure was described – ‘local government is a business, and the mayor’s role is to get money – not fight with them’. The importance of community relations was also emphasised - ‘If you don’t have trust and respect on both sides, you can’t have the hard conversations’ (UU). This perspective was endorsed by farmers undertaking developments, with comments such as ‘The right approach makes things go smoothly, and there are no unreasonable impediments from council’ (P).
9.5 Global Relationships

Farmers were not convinced their future was as Asia’s food bowl, though many saw opportunities in the growing Asian middle class, particularly in beef. A significant number were already involved in international trade, and agreed ‘the clean green image of Australia gives a premium no question, but premium on a fair price, not on an over-inflated domestic price’ (P). Also, the need to pay attention to contractual arrangements was recognised, as ‘Asians are very good business people’ (U1).

Foreign investment in Australian agriculture was a popular topic, but unlike some of the alarmist media headlines about foreign ownership, most farmers pointed out that there was no difference between today’s Chinese money and the nineteenth and twentieth century British and American investors – ‘they can’t take the dirt home. Since Federation Vestey’s have owned it, then Americans, Japs, etc. People who complain are often demonstrably not good managers’ (U1).

Whilst there have been spectacular examples of foreign investment gone wrong (see Chapter 3.1 The Historic Challenges of Northern Australian Agriculture), the American King Ranch development in Tully was described as ‘the exception, and Robert Kleberg [the owner], at that time world’s fourth richest man told my father that their success was because they sought the advice of local people already doing it’ (J), and King Ranch was seen as ‘a benefit to all ... the Americans got in and worked, leading by example’ (E).

Many believed that foreign investment was essential to northern Australia’s agricultural growth, as ‘Industry will be hamstrung if we rely solely on Australian investment ... the dollars have to come from overseas’ (AA, J, T, U1). A warning though

‘The current push for an expansion of northern agriculture will be by corporate entities, and this is the reason it will fail, as it will be by people without local knowledge making decisions from a central office’ (T).

Almost in acknowledgement of this warning, many talked of the opportunity and benefits of marrying Australian industry experience with foreign investment, and

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67 The Vestey Group (Vestey Group Ltd) (formerly Vestey Brothers) is a privately-owned UK group of companies.
that possibly this was the key to a successful agricultural expansion in the north. Instances of this already happening were given - ‘a Chinese entity has approached a large landholding in the area wanting to buy the land but leave it under current management for the next 20 years’ (PP), though ‘at the moment more speculation than real sales’ (OO).

There were other warnings though, including ‘sometimes money can affect integrity’ (HH), and ‘around the world, big ag usually only returns enough to keep growers there, not to help them grow’ (J). However, through the sale of the Tully sugar mill to a Chinese corporation, ‘Foreign investment has provided dignity for people to leave the land – we have to be grown up about this’ (F).

Overall, farmers saw more opportunity than risk in foreign investment, though there was concern about maintaining appropriate balances - ‘we do need to retain control’ (FF) was a common statement, as were suggestions like, ‘requiring majority Australian partnership’ (BB1). However, there was recognition that ‘Australia is not the only stable democracy in the world … Asia will look elsewhere if we don’t do it’ (Z), that ‘not many Chinese are going to want to live out here … they prefer more settled areas’ (UU), and that ‘Northern Australia is more akin to a developing country than the rest of Australia’ (C). A key criterion for successful foreign investment and industry engagement was thought to be ensuring good human relations and maintaining your reputation – ‘people want a picture of you before they pick up the phone and ring’ (JJ1) – strong bridging social capital.

Immigration was another topic raised with respect to the future of agriculture, and many pointed out that they were farming in Australia as a direct result of either their parents or grandparents emigrating from Asia, England, France, Ireland, Italy, Scotland, or Spain:

- ‘Australia is closing itself in … I wouldn’t be here without immigration (DD);
- ‘Immigrants – yes! We’ve thrived on it, from the Italians to the Hmong. There’re high numbers every year at nationalisation ceremonies … large numbers of Indians now, and they’re good
Part of this discussion related to contemporary limited labour availability, and part was concerned with maintaining the viability of regional communities. Whilst today’s backpacker travellers do provide essential labour for farms and regional businesses, it is an itinerant population vulnerable to external influences such as adverse publicity or change in the value of the Australian dollar. Many farmers talked of the opportunities for regional population growth through the permanent settlement of refugees, particularly of ‘people from rural areas who want to live here rather than wealthy people from cities’ (UU). Also, it was pointed out that under current immigration policy

‘You can’t sponsor someone into agriculture without a degree. There are thousands of categories, but the only two applicable here are manager or mechanic, not head stockman etc. It’s not about resourcing, we need policy that encourages people to live out here’ (X1).

9.6 Relationship to Place

Despite mobility and globalisation processes, place continues to be an object of strong attachments for people, with almost 400 papers published within the 40 years prior to 2010 (Lewicka, 2011). Whilst the term sense of place has become something of a modern buzzword, used to describe everything from a warm fuzzy appreciation of a natural landscape to the selling of home sites in urban sprawl (Cross, 2001), the propensity of people to develop a sense of belonging, commitment, identity and community to, and through, where they live is universal. In fact, Faulkner (2014) (in Brown (2016, p. 123)) found that a sense of place was a critical precursor for community resilience, and was rooted not just in physical space, but amongst community and relations. The work of Cox and Perry (2011, p. 395) into communities affected by wildfire emphasise the ‘critical importance of place not only as an orienting framework in recovery but also as the ground upon which social capital and community disaster resilience are built’, and Hanna et al. (2009, p. 31) posits ‘place can be seen as a materialisation of social capital’.
Australia’s contemporary community is increasingly cognisant of the importance of place to its Traditional Owners, with the term *caring for country* concomitant with Aboriginal land management, and

‘*Over the last few decades there has been a resurgence of effort by Aboriginal landowners to maintain their cultural responsibilities and knowledge, pursue socio-economic development opportunities, as well as to protect the bio-cultural values of their ancestral country*’ (Moritz et al., 2013, p. 1).

Evidence of ever-more widespread acceptance of the concept was the Australian Government naming their 2008 $2.25 billion investment in sustainable land management *Caring for our Country*, with the intent to work with governments, regional and local communities, industries and land managers to achieve an environment that is healthier, better protected, well managed, resilient and can provide essential ecosystem services, particularly in a changing climate (Commonwealth of Australia, 2008).

Throughout the interviews, farmers talked both overtly, and sometimes through association, about the importance to them of where they lived and farmed - ‘*Being with country is very important ... not necessarily the Aboriginal context, but being close to the land - It’s a very human thing*’ (OO), but was this in any way different to someone who has consciously chosen to live in inner-city Sydney because of the associated life-style and amenity attributes?

Fortunately, it was never the intention to answer such a complex question, but the interviews did reveal that many farmers have consciously thought about where they live and why it is important to them; and demonstrated that they value and respect both the place where they live and the community which they are part of despite any shortcomings or compromises that this choice necessitated:

‘*If I really wanted to make money I’d move the whole operation to [another property he owned south of the tick line and closer to transport and markets], but I’ve got an emotional attachment to this place and that’s not going to change, so my market is live export and the meat trade*’
His wife obviously concurred with this strong sentiment, as she described telling the GABSI\(^68\) team involved in capping artesian bores near the station homestead ‘if you don’t get this right my garden will die, and if my garden dies then I will leave, and our marriage will end. No pressure, but ...” (X2).

This commitment and obligation was beyond maintaining a productive landscape ‘the families [established in this district for more than 100 years] love the lifestyle, they love the industry, they love working with cattle, they love working with the landscape’ (U1). An older grazier from Queensland’s western downs was considering retirement options and spent a few weeks in Townsville where he knew people and health facilities were readily available. At the end of that time he told me ‘it’s a nice place and I’ve enjoyed myself, but I couldn’t wake up every morning and not see that big [western] horizon’ (N).

This sentiment was not restricted to those born to their area: a Victorian-born resident of the Northern Territory described how from his first visit, he’d ‘always been attracted to the cleanliness of the desert’ (EE); while a Brisbane-born Far North Queenslander described how after his first visit to the region at 18 years of age he ‘fell in love with the place and the people’ and decided that ‘I was going to buy some land and live here ... It just took me 25 years to do it’ (WW). While it is plausible that a strong attachment to a place could decrease resilience if a disaster forces relocation (Norris et al., 2008), it is simultaneously plausible that those same attachments increase the likelihood that the individual and community as a whole has the will to rebuild after a disaster, which was evident in the cyclone-affected areas of Far North Queensland.

A number of pastoralists also discussed their responsibility to their livestock, and in some cases this duty-of-care extended to pride, attachment and affection; which shouldn’t surprise anyone who has visited the Brisbane Ekka\(^69\) and seen the care

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\(^68\) The Great Artesian Basin Sustainability Initiative is a joint programme between the Australian, New South Wales, Queensland, South Australian and Northern Territory governments to provide funding support to repair uncontrolled bores that threaten the long-term sustainability of the Great Artesian Basin.

\(^69\) The Ekka is the annual agricultural show of Queensland. It was originally called the Brisbane Exhibition; however, it is commonly known as the Ekka, which is a shortening of the word exhibition.
lavished there on stock. Interviewee (U1) described his adult daughter’s attachment to the property was ‘because her animals are here and she wouldn’t sacrifice them for a better social life’. A grazier talked proudly of her ‘52 years of breeding experience ... you can’t buy that again if it’s sold’ (F), then went on to describe a nearby farm tourism operation where

‘He might have cash in the bank from his tourism, but his animals have to be looked after first, not last; and that’s not happening. You have to be there when the animals need you, not when it suits you’.

The sentiment expressed in such instances was strong, much stronger than simply maintaining the financial investment. It was about responsibilities and obligations, and morals; which is why (F) thought it essential for children to grow up with pets and for them to always ‘feed the animals before they eat themselves, so they know their responsibilities [to animals]’. There was obvious commitment to the responsibilities of stewardship.

9.7 New blood

‘I did some orchard work in my youth and loved the lifestyle. They were big Italian families and included me in making their own wine, eating their own food ... but land values make it hard for outsiders to enter [agricultural] industry ... Industry needs to talk about alternate finance options, but it’s not happening (S).

This interview participant was not a farmer - he works in an advocacy and policy role for a prominent agricultural industry body. He is articulate, and understanding of the diverse community views around farming and the environment; and he has been prominent in bridging the gap between production and conservation perspectives in Queensland. He loves agriculture, and says ‘the best part of the job is kicking the dirt with farmers’. Perhaps one day he will be kicking the dirt on his own farm? What was apparent was that while not born to a farm, (S) has an affinity with agriculture and is positively influencing its future.

All industry, in fact all life, benefits from innovation and interaction – from ‘new blood’. There are many examples in agriculture, with improved breeds, clever
mechanisation, more sustainable farming practices; but Northern Australia starts from a low resident population and, in some regions, a declining farm demographic. Previously discussed was the circularity of needing more people to justify increased spending on infrastructure to, in turn, attract more people; but in some areas and industries the more immediate challenge is to retain numbers.

Farming does appeal to people, as both a lifestyle and an industry, and (S) is an example of this appeal. An extension officer (NN) ‘grew up in Adelaide and went ringing because I loved riding motorbikes, found I liked the industry, so after 3 years went to Roseworthy Ag college as a mature age student’, and numerous instances of people entering agriculture through their own initiative but assisted by others were recorded. A formal partnership whereupon a young couple bought equity in a new property with their previous employers was described previously; (U1) tells of a young fellow who worked for him for three years, loved the life, but didn’t have ‘the wherewithal to buy a place. But he married a nice girl, did his electrical contractors licence then went to Longreach where he did well’. He’s now bought a block near (U1), and tells (U1) that ‘his success was due to what I taught him; but he had a work ethic, ability and vision’. This relationship illustrates the two sides of the equation: earning the respect that convinces an established farmer to provide assistance. There were no examples provided of assistance being offered without some demonstration of commitment first, and a pastoralist observed that the opportunity for this to happen ‘is declining - people don’t go bush for a year like they did in [name supplied] day’ (AA).

The opportunities that might arise in an expanding Northern Australian agriculture paradigm for locals skilled in particular industries to collaborate with foreign investors for mutual benefit. A possible mechanism for agricultural expansion supported by many in industry included:

- ‘Corporate dollars + local expertise are the only way to make it [industry expansion] work. There’re plenty of young guys around keen and enthusiastic who would love the opportunity. It’s not a role for government facilitating this ... you need the willingness of the person to do it’ (P);
- ‘Corporate grazing already do this - use experienced people, which provides a
development process for people in the pastoral industry, but they progress people who do things the way they want them done’ (KK);

However, some observed that there is ‘Risk in rolling out this model out as probably will get some free riders’ though this risk could be ameliorated through ‘making managers more than managers through having a stake in the operation’ (U1).

Certainly, more is required than buying a farm and putting a manager on. A fruit grower observed that ‘Many Asian agents [from the central produce markets] have bought tropical fruit farms, but they all seem to fail as they put managers on who don’t understand the reality’ (LL). Another risk was that the ‘chain of decision-making communication is vital, and this could be a risk if overseas owners need to approve important decisions like when to supplement, destock, etc.’ (TT).

Concerns were also expressed about large corporate developments and what impact they would have on the regional community and industry, for example, ‘Where are the opportunities for young farmers to get involved in something like IFED? I asked [Member of Parliament] in a public meeting about the proposal and was publicly humiliated by him, but he didn’t answer the question’ (FF). Notwithstanding these concerns, many participants were of the opinion that future agricultural expansion will be through private endeavours rather than state-sponsored initiatives - ‘North Australia hasn’t been developed by government, it’s been done by private companies in the main’ (MM), and there will be opportunities in such expansion for both experienced and novice (but enthusiastic) participants.

New blood does not necessarily equate with small or niche farming either: one of Queensland’s largest banana-growing families only started in 1983 when ‘Dad was an electrician at … which was automated in 1982, so he bought a farm’ (VV). However, it remains ‘difficult to recruit professionals for regional areas’ (MM), and ‘hard to attract people [meaning professional and technical staff] with three year contracts … and there are no cadetships now’ (NN) (see Chenoweth et al. (2013) for a discussion of the challenges and ethical dilemmas around professionals living and working in rural and remote Australia). A solution to this conundrum requires a

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70 See Chapter 3.2 Contemporary Challenges to Northern Australian Agricultural Aspirations.
whole of community response, as often

- ‘The problem enticing professionals is usually wives and children – quality of life - and that is a role for Local Government. I tripled Parks and Gardens budget when elected and we won Tidy Towns. Perception is everything – have to look good’ (UU); although
- ‘Assistance to move to remote areas is not obvious in the current push. How to attract people without perverse outcomes? Chinchilla is offering residential blocks for $1, but will this work, or will it be a rural ghetto? Who actually pays for essential infrastructure?’ (W).

9.8 Discussion and Conclusion

The importance to each person of where they lived, how they lived their lives, and how they interacted with others was evidenced throughout the interviews. The characteristics described closely align with a one described by Brown (2016) as rootedness – which she uses to describe a person’s identity and belonging through place: not just physical place, but also amongst community and relations. Raymond et al. (2010, p. 433) also describe a ‘valid and reliable measure of rural landholder attachments’ through a five-dimensional model of place attachment, these five dimensions being: place identity; place dependence; nature bonding; family bonding; and friend bonding.

Each of these dimensions were evidenced in my interviews, along with the additional (though linked) dimensions of business, and aspects of the business such as livestock; which supports the importance of social connectedness as a mechanism to realise change being a determining element of resilience. Lyon (2014) analytically disentangles the interwoven strands of a place and suggests that the physical, emotive, and cultural elements of place shape social resilience in the face of crisis, and I am prompted to repeat the observation by Marshall et al. (2011, p. 154) that

‘factors that make resource-users dependent on natural resources (such as attachment to occupation and place, education, employability, environmental attitudes, local knowledge, and the quality and extent of formal and informal networks) act to influence resource-users in their decisions to adopt strategies that could enhance their capacity to cope and adapt to climate variability.’
However, this concept is still ‘relatively underrepresented in social ecological systems and human development literature’ (Brown, 2016, p. 123)

Fundamental to this theme of social connectedness is theory related to human and social capital, particularly the multifaceted conceptualisation of capitalised assets (Stokols et al., 2013). Contained within this theme are examples of research participants utilising bonding, bridging, and linking social capital to assist them in managing the complexities of living their life and running a business, particularly when these two activities are intricately connected through remote geographic location and isolation. The value of moral capital was also strongly evidenced as a critical determinant of that lubricant of social life – trust (Putnam, 2000), whose importance was also enhanced through the effects of distance and low human population. The over-riding sense from this theme was the importance of self-efficacy to the individuals, articulated through self-belief in their own capacity, that is, their personal agency.
Disasters happen, and it is not only natural events that cause them. They are also the product of social, political and economic environments, and Wisner et al. (2003, p. 4) explain that there is a danger in treating disasters as something peculiar, or as events that deserve their own special focus.

'It is to risk separating “natural” disasters from the social frameworks that influence how hazards affect people, thereby putting too much emphasis on the natural hazards themselves, and not nearly enough on the surrounding social environment'.

As the interviews were read, and reread, two things became apparent: First, while participants were prepared to talk about their personal disaster experience, no one dwelt on the subject and most were keen to progress the discussion to other topics; Second, almost all interview participants, no matter what their individual circumstances, declared at some point that there were other people worse off than themselves. At first, this was interpreted as a mechanism to avoid being seen as someone complaining about their circumstances, or keeping a ‘stiff upper lip’; a public show of ‘we’re alright, we’ll manage’. Perhaps at the cognitive level, people were setting the event into a broader perspective in which their position did not seem so terrible after all – a transformational coping style often associated with hardiness as a personality style (Maddi, 1999).

But with time and repetition, particularly when it was obvious that the circumstances of some were especially grim and that hard (possibly irreversible) decisions were being made, it became apparent that this statement of others being worse off as something more. It seemed that this statement related strongly to the participant’s personal sense of Agency and their perception of how the world operates:

- Life can be hard - there are no guarantees of success;
- Ultimately, it is up to the individual to find their own way through; and
Feeling sorry for yourself is not going to change things; but

This should not preclude one from feeling compassion for and helping others.

Though no one used the actual word, I began to see this as an expression of the *right way to do things*; or to be more precise, a *fair* way. When people feel that they are being treated fairly, that their uniqueness is understood, that they have a sense of belonging and that their voice will be a part of the decision-making, *‘then they will feel included’* (Dillon & Bourke, 2016, p. 7). When participants discussed the impact of natural disasters, these were regarded as an inevitable (if unwelcome) part of life that had to be dealt with; but when talking about human-induced (that is, preventable) disasters, fundamentally they were saying that it was not *fair* and as a consequence they felt more removed from the broader community than just geographically. As Brown (2016, p. 112) describes, the important part of the issue was not so much ‘*what should be done, but how ought decisions be made*’, that is, it affects perceived moral capital.

Following this line of thought, and particularly when considered in association with the four emergent themes, it became apparent that it formed part of a larger operating paradigm, but one I struggled initially to contextualise. Exposure to Renn’s71 (2015) work on risk governance provided clarity on this concept of fairness: *‘the people who suffer the consequences of decisions are the best judges of their impacts, and therefore their fairness’*. This statement lead to an understanding that the perceived *fairness of decisions* was actually a two-way process through which interview participants interacted with their world. More importantly, this *perception* of fairness (not some absolute and therefore measurable aspect) was often a fundamental operating principle of their world that contributed to their individual resilience. When interviewees pointed out that there were others in a worse situation than themselves, there was an implied sense of inclusion and belonging: life might not be fair and some individuals were

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dealt better hands than others, but where individual choice was available, making a fair decision was an indicator of someone’s character, and as such, significant.

When talking about fairness, Renn and Webler (2011) describe the need to distinguish between substantive and procedural fairness: an activity or decision is judged fair if the outcome does not privilege some at the expense of others (Substantive fairness), and if the decision-making process provides sufficient possibilities for all affected parties to be heard and represented (Procedural fairness). Modern democratic societies with pluralistic value systems tend to emphasise procedural justice over substantive fairness, and consensus has emerged in democratic systems to apply the egalitarian principle to procedural equity; whereby providing equal opportunities for all parties involved to influence the decision-making process is seen as the universal yardstick for evaluating procedural fairness. An agreement that procedural fairness is confined to equal representation of each affected party has gained wide acceptance (Renn et al., 1996).

But what does an individual think when they perceive that such a universally accepted principle is not delivering Substantive Fairness for their situation, or not even being applied? How does it impact on their perception of agency in the broader system?

The concept of fairness is well established in formal considerations of justice, and Tost and Lind (2010, p. 21) point out that injustice can inspire action for change, and lead individuals to seek power for prosocial ends, particularly when ‘negative interpersonal treatment or the violation of moral mandates, activate [an individual’s] alarm phase’. However, for individuals who do form a judgement of unfairness, ‘positive experiences, such as unexpectedly considerate and respectful interpersonal treatment or the support and protection of moral mandates, are unlikely to activate [the] alarm phase’. The concepts of fairness and justice are not necessarily interchangeable though, a distinction which is illustrated in the following vignette.
He turned over in the air as he passed me. Forty feet; and landed face down but with his forearms propped to protect his head. I’d tied that knot, and it had slipped off the rod he was pulling up. We’d forgotten the harness and I said we’d go back, but he’d said ‘it’s only a five-minute job’ and up he’d gone. Couldn’t get the house on the radio and no phone here, so my daughter raced off in the Toyota. I held him in my arms. He was unconscious and his leg stuck out at an unnatural angle and so did his arm, but I knew he wouldn’t die. Don’t ask me why … I just knew.

Years later both the doctor and nurse separately told me that my son should have died. But that day, cradling him in my arms as he lay broken in the dusty shade of the windmill for the hours it took for the ambulance and then the helicopter to arrive, I just knew he wouldn’t. Maybe he’s too much like me – pig-headed and won’t be told what to do – or maybe it wasn’t his time.

He’s back to help run the place now and would prefer me to clear off and leave him to it; and I will, but not completely, not yet. My dad gave me the reins when I was about his age, but he was there in town to offer timely advice when I needed it, or maybe drop a hint about the blindingly obvious I kept running into. Because you can’t put an old head on young shoulders and anyways … why would you want to. We need both. Sometimes it’s best to go like a bull at a gate, and sometimes it’s better to let the dust settle before you climb out of the truck to open it. The trick is knowing the difference.

Not that I really want to leave. His kids are the fifth generation of us here and you don’t easily walk away from that. It’d be nice to live somewhere green though, and see more of the world. It’d be nice too to reflect on things, maybe write a book; because when I look back a lot has happened in this life of mine, and it’s not over yet. Maybe I would like it too much and not come back; maybe?

I think it was hardest for my wife – she’d heard the helicopter go over, then half an hour later heard it go back. She hadn’t seen him, hadn’t held him; but had to sit in the car for the hours we drove to the hospital. I’d held him, and that helped.

He was back up that windmill his first-time home. Three months in hospital and I turn around and there he is, 40 foot up. I asked if he was trying to get back on the horse but he said ‘No, just seeing if it brought any memories back’.
This vignette brings together the four themes of my research and illustrates an essential element of the concept of fairness. It demonstrates situational awareness (when to stay, when to go), the capacity to plan (setting it up so he can come and go), the capacity to adapt (the accident, the changed situation, the return), and social connectedness (to the land, to his family, including recognition of the hardship the life imposes on his wife). But nowhere does he say it wasn’t fair. It is what happened, and it must be dealt with, by both father and son.

In fact, the father wondered about a mate who fell 10 feet from a windmill and was straight up walking around, yet died next day from a suspected blood clot. ‘Where’s the justice in that?’ he asked.

None of the interview participants were asking for something for nothing, but they were asking for a fair go. Fairness is a fundamental principle of Australian society, and the popular understanding of what this means closely aligns with the preceding academic understandings. Giving someone a fair go is probably the principle a majority of Australians will agree on. It affects attitude; the ability to cope and not feel abandoned; of being part of the broader society, and indicates that one has a recognised and valued role and responsibility in that society.

If we think of the thread of fairness, the above would constitute its use as a noun. To thread is also a verb: to join together, or find your way through, and it became apparent that fairness was the thread that joined the four themes of resilience – see Figure 10.1. The thread of fairness could be, to use a weaving analogy, the weft thread that brings together the diverse warp threads of community perception with respect to what could constitute an agreed fair or just outcome for Northern Australian agricultural development.

This concept is supported by the temporal model of Rupp and Paddock (2010, p. 246)\(^2\), whereby ‘discrete events at the individual level merge to form individuals’

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\(^2\) Their model derives from Folger and Cropanzo’s (2001) Fairness Theory, which argues that perceptions of
multifoci justice perceptions, shared multifoci justice climate, and ultimately overall justice climate’. It is also supportive of the idea that ‘justice can go beyond social contract theories [to identify] institutional arrangements to seek practical solutions that increase justice as experienced by actual people in the world’ (Sondak, 2010, p. 349).

After all, as Masten (2001, p. 227) points out ‘Resilience appears to be a common phenomenon that results in most cases from the operation of basic human adaptational systems’, so long as those systems are protected and in good working order. But if those systems are impaired then the risk of problems increases, particularly if the hazards are prolonged. Also, Norris et al. (2008, p. 146) remind us to be mindful that ‘the concept of resilience does not erode into a justification for denying help to individuals or communities in crisis’ for, like social capital, ‘resilience is an easy concept to co-opt as a basis for arguing that community-based interventions are unnecessary’.

_unfairness are formulated through a cognitive process that evaluates an event in terms of the presence or absence of injury or harm, the commission or omission of discretionary conduct on the part of the entity responsible for the injury or harm, and whether or not an ethical or moral standard was violated by such conduct. A key component is the notion of accountability: injustice requires a perpetrator._
Figure 10.1  Discovering fairness as the connecting attribute between the four resilience themes
10.1 Fairness and Trust

In an increasingly complex world, individuals are not able to inform themselves about all threats that they face, so trust is employed to manage personal risk through externalised faith, particularly if the individual knowledge about the hazard is low (Wachinger et al., 2013). Trust is used as a shortcut to reduce the necessity of making rational judgments based on knowledge by selecting trustworthy experts whose opinion can be considered as accurate (Siegrist & Cvetkovich, 2000). This is particularly important in times of crisis, where trust in authorities is necessary if their advice is to be accepted. But the fundamental affective dimension of trust – that lubricant of social life (Putnam, 2000) - involves honesty, integrity, goodwill, and lack of vested interest, all of which can be influenced or diminished by an individual’s perception of fairness.

Davoudi et al. (2012, p. 306) point out that there are always some people who gain in the process of resilience building while others lose, and so ‘we cannot consider resilience without paying attention to issues of justice and fairness in terms of both the procedures for decision-making and the distribution of burdens and benefit’. But at the policy level, if adaptation to environmental change is solely concerned with maintaining future flexibility, some people, communities, or ecosystems may incur a heavy price in the present, and Nelson et al. (2007) state that while this fundamental trade-off between equity in process and equity in outcome are central questions of governance,

‘Inclusion of vulnerable sections of society and representation of vulnerable social-ecological systems within decision-making structures is an important and highly under-researched area’ (p. 410).

The importance of trust rose time and again in interviews, and while it figured strongly in each theme, it was particularly evident in the Social Connectedness theme through theory relating to human and social capital (see Chapter Nine). People are more likely to accept the described ebb and flow of burdens and benefits if they trust the individuals and institutions involved, and the best time to build trust is before it is required – incrementally, and in the day-to-day interactions between people and
their institutions. This requires deliberate and sustained investment in all forms of capital:

- Maintenance and enhancement of material capital so the community does not feel physically diminished;
- Development of human capital so people have the skills and capabilities to act in new ways;
- Attention to bonding social capital so discrete sectors feel identified, secure and supported, but not polarised or in direct competition with other sectors for resources;
- Continual renewal of bridging social capital so resources, competencies and connections are effectively shared between heterogeneous groups;
- Moral capital, essential if hard decisions are required that will require trust, and for the cultivation of virtue and justice (from Stokols et al. (2013)).

10.2 **Implications for Policy**

It is apparent that the individuals currently involved in Northern Australian agriculture are doing so with their eyes wide open\(^73\). That is, they are aware of their operating environment and its associated risks, and in the main are happy to continue their involvement. This is an important point to establish with respect to the current enthusiasm in the press and political circles for a rapid expansion of Northern agriculture: it would be very easy to believe that Northern Australia’s “time has come” if one just read newspapers, whereas this research shows that contemporary northern farmers have a realistic perspective of the situation. They do not see themselves in some serendipitous alignment of forces outside their control that are about to bestow largesse or a “River of Gold\(^74\)”.

Participants also recognise that they need to keep their eyes open, because there is another side to the story of northern development currently being promoted that

\(^73\) An Australian colloquialism, meaning one is totally understanding and aware of a situation, including associated problems. It can also indicate that all may not be as it seems: there could be something lurking in the shadows, figuratively or literally; or there may be a bigger agenda at work that needs to be considered; or someone could be trying to pull the wool over your eyes, that is, deceive you.

\(^74\) Title of the 1967 book by Hector Holthouse describing the wild days of the 1870s Palmer River gold rush on Cape York, and a term that has entered the regional vernacular to describe unforeseen wealth.
isn’t so sexy, so exciting, so intoxicating - it’s called reality, and it has precedence in history. There are many past grand endeavours that have come to nothing, but farmers in the main are aware of them, have thought about what went wrong, and they try not to repeat past mistakes. Recognition that northern farmers are keeping their eyes wide open is an important component of this study, and I can think of no better way of conveying it as an attribute than through the vernacular, which is so often more succinct yet descriptive than formal language.

Continuing with the vernacular, it is also apparent that many farmers will continue to be involved in agriculture come Hell or high water\textsuperscript{75} - they are excited by the future, and they see opportunity there. Whilst not a special breed, these farmers do have the advantage of experience (their situational awareness); they can plan for contingencies and can adapt their plans as either opportunities or the unexpected arise; and they are sufficiently connected to their social and physical environments to draw appropriate support when required.

Farming carries risk beyond the control of individual enterprises or even entire industries, but making calculated business decisions in the face of uncertainty has not been an historic impediment to farmers having a go. They understand their world, and they make it work. There are many risks outside their control, but they can develop strategies to buffer these. Their real risk comes from things outside their knowledge, experience and intuition. This is no different for most people in life to a greater or lesser extent; for example, the developed world’s communities are being challenged by the robotisation of many jobs, as new technologies change the way our world operates\textsuperscript{76}.

But not everyone has an overt external intention being applied to grow their world in the way that an expansion of Northern Australian agriculture is being currently promoted. The White Paper on Developing Northern Australia demonstrates that

\textsuperscript{75} Another colloquialism, almost biblical. It implies ‘I will succeed in this situation come what may’. It conveys an attitude of determination, of resoluteness, of a willingness to endure whatever trials and tribulations are encountered along the way without losing sight of the goal.

\textsuperscript{76} Frey and Osborne (2013) of the Oxford Martin Programme on the Impacts of Future Technology at the University of Oxford looked at 702 types of work and ranked them according to how easy it would be to automate them. They found that just under half of all jobs in the USA could feasibly be done by machines within two decades.
this is a clear policy intention, and what communities decide when they make policy is meaning, not matter, and science alone cannot settle these questions of meaning (Stone, 2012).

While most farmers see opportunity in an expanding agricultural sector and are generally supportive of the initiative, they are in the main looking at the matter. There is a responsibility on those making the policy to think beyond today and guard against perverse outcomes for affected participants, and to ensure the community is appropriately involved in and truly understands the development and expression of this meaning, because the consequences of actions and measures ‘must be considered within the much broader social and environmental context; trade-offs and the potential for negative outcomes over space and time must be recognised’ (Eriksen et al., 2011, p. 17).

The affected community in this case is all of Australia, and Australia operating within a global context. The small number of farmers who comprise the tiny part of the five percent of Australians currently living in the north pales into insignificance against the current world population; but these few farmers are the ones who have the knowledge, skills and ability to make the present situation work; and this experience will be critical to the success of any agricultural expansion. The likelihood of achieving a sustainable outcome will be enhanced if measures are implemented that enable this local capacity to be both recognised and utilised, that the voices of vulnerable groups are heard in decision-making processes that affect their interests, and that these interests are not diminished in the face of strong or vocal lobbies. Such an approach could also assist in avoiding some of the problems with the concept of sustainable development described by Brown (2011) (and previously discussed in Chapter 4.2), but particularly that the concept can be deliberately vague and slippery, making it difficult to operationalise.

Recent years have seen a ‘dramatic increase in urbanites’ interest in local food’ (Cleveland et al., 2016, p. 99), exemplified by the success of farmer’s markets, community-supported agriculture, local distribution hubs, and life-style television
shows such as SBS Australia’s *Gourmet Farmer*\(^{77}\). Accompanying this have been increasing demands for health, animal welfare and sustainability, and there is a plethora of ways that agriculture has sought to demonstrate that it can meet consumer expectations, from labelling and sustainability certification through to traceability and regional landscape agreements. Yet consumers’ level of trust in agriculture has been dropping. This trend parallels the post-productivist agricultural trends in many parts of the developed world, with an inclination for people with pro-environment views to support agriculture, but only *‘because they view it as a better option than development, not because they value it per se’* (Cleveland et al., 2016, p. 99).

Cleveland et al. also point out that *‘living in a rural area, growing up or living on a farm, and having social contact with farmers are associated with support for farmers and trust in their ability to farm in environmentally friendly ways’* (p. 90), but most Australians do not live in or adjacent to a rural area. The vast expanses and low resident population of Northern Australia diminish post-productive agricultural influences in all but peri-urban areas and the more settled districts of Queensland’s Wet Tropics and Atherton Tablelands, and it is conceptually difficult for many urban Australians to comprehend the reality of northern agriculture; particularly when their exposure is more likely to be through adventure travel shows that often emphasise and mythologise the *frontier nature* of the north.

The challenge for Australian society is to bridge this cultural divide, to build understanding of and respect for the perspectives of various community sectors, and to develop trust in each other’s ability to make the right decisions, because ignorance\(^{78}\) currently exists on both sides, and particularly a lack of understanding of what the other party wants. Therefore, the existing divide should not be interpreted as disempowerment of northern farmers, rather it is a constraint on Australians being able to collectively make informed decisions.

\(^{77}\) SBS television, now in its 4\(^{th}\) series [www.matthewevans.net.au/what/gourmet-farmer](http://www.matthewevans.net.au/what/gourmet-farmer). An interesting facet of this program is its emphasis on networks and mates.

\(^{78}\) Ignorance is used here as a neutral term, to indicate a lack of understanding or awareness.
10.3 The Benefit of Including Fairness in Policy

Farmers are farming because they want to farm, and in many respects, they are more than capable of continuing to do so. To some degree, all society should do is let them get on with it without undue or unreasonable constraint, other than the obvious ones of abiding by the law and respecting their responsibilities as land managers for good environmental stewardship. But when any group of people (and not just farmers) abide by the rules of a society and contribute to its well-being, society has a responsibility to recognise and value their role, on some occasions support it, and to (within reason) ensure that they are neither forced out of their role, nor forced to continue in it against their will.

There are many options for northern development. Every scenario has its champions, and its critics; but in making these big policy decisions, providing Procedural Fairness for the decision process will not be enough: neither for the individuals who will be most affected (the residents), nor for the landscape and industries in which they will operate. The endemic knowledge of the landscape and how its rural industries operate will need to be considered and included as a deliberate act. Perhaps this point is better illustrated through consideration of some specific examples which were raised in interviews:

1. If a non-resident corporation could purchase and control both the management and long-term destiny of vast tracts of Northern Australia without consideration of local community views and aspirations, would this be considered fair on the regional stage?
2. If the Australian Government were to allow a foreign entity to invest in Northern Australian property, industry or infrastructure without assisting them to properly understand the unique operational parameters of the region (that is, knowledge that a local would be reasonably assumed to have), would this be considered fair on the international stage? Would the principle of *caveat emptor* be accepted and no grudges carried forward?

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79 The principle that the buyer alone is responsible for checking the quality and suitability of goods before a purchase is made.
3. If a development or legislative change compromised the ability of future generations to enjoy the lifestyle and values available today, how would history judge us? Specifically, consider the free-holding of leasehold land which delivers a one-off return to the state, but in so-doing transfers the opportunity for future higher value transactions into private hands.

4. When the filming of a rogue operation outside Australia shut down live cattle export and seriously impacted the legitimate livelihoods of thousands of Australians, had proper consideration been given to the decision’s ramifications, and precautionary processes enlivened to prevent repetition?

The four themes identified in this thesis are personal attributes, but not stand-alone ones: fairness is what relates them back to the broader agency; and this dual focus on agency and structure, the individual and wider society, is a distinctive feature of social research (Oliver, 2012). Fairness is the micro component of the macros issue of unintended consequences from policy: individual farmers are distant from the policy-makers, but suffer the consequences. Fairness is different from equity and power, and it is not a synonym for either dis-empowerment or entitlement, because fairness can also be an enabler of the resilience individuals derive from the implementation of their various strategies; because risk acceptability is less about accurate probabilities than it is about subjective values and the perception of distributive justice (Renn, 2006).

There are risks and benefits associated with an expansion of Northern Australian agriculture, but these risks and benefits are not mutually exclusive. Public deliberation needs to go beyond a narrow focus on minimising risk to achieve a narrowly defined benefit, because as Gross (2007) explains this will enable the social system to be resilient to ignorance and non-knowledge, and thereby resilient to hazards that are not imaginable because they are beyond the system’s horizon of expectations. Public deliberation needs to investigate opportunities to maximise benefits in ways that build local capacities and enhance resilience to risk (Wong, 2015), but this deliberation will need assistance in understanding that change is a normal part of the persistence of systems (Lorenz, 2013). Policy processes that enable this thinking while preventing the hijacking of decisions by vocal or well-
organised lobby groups are required, because including affected publics in decision-making processes will help solve many barriers to change, improve resilience, and ultimately produce better decision outcomes.

Historically, humanity has put great faith in technological innovation to help transform societies and improve the quality of life, along with the belief that the free market would deliver innovation and improve the quality of life for everyone. Whilst there are many instances where this experiment has proved disappointing, and it is now acknowledged that purely technical or structural solutions will not provide absolute protection against the negative impacts of natural hazards (Schanze et al., 2008), society has not lost confidence in the technological fix.

However, while the ‘spread of material wealth ... is closely tied to the maintenance of the social peace enjoyed by western countries’ (Westley et al., 2011, p. 763), economic and population growth have compromised many of the planet’s ecosystem services, and today’s connected global society increasingly rejects the continuation of such practices.

Academics, scientists, and policy-makers expect facts and figures to carry an argument but, to the surprise of the proponents, emotion often wins over reason in public debates. Westley et al. state that expert-driven, centralised, and top-down approaches to solving these problems are not nimble enough to effectively address the challenges, which are characterised by high levels of complexity and uncertainty; but neither are traditional, disciplinary-based research approaches. Rather, they suggest that new forms of knowledge integration and generation capable of including diverse ideas and viewpoints are required to bring research and action into closer proximity. Brown (2016) suggests a resilience approach might provide the analytical insights into such maladaptation, and help formulate policies which avoid them. However, as Berkes and Ross (2013, p. 17) point out

‘An integrated concept of community resilience is not only about theory; it is equally about practice: How can adaptive capacity, self-organization and agency be supported and fostered through processes such as community development and community-based planning?’
In the landscapes of Northern Australia, development of an integrated model of community resilience will require the overt inclusion of existing farmers and their individual perspectives. While not suggesting that farmers’ current agricultural practices represent the pinnacle of sustainability (there are many past, and not so past, examples of mistakes made) the aspiration of the majority of farmers is to maintain their resource, their landscape, and their communities. An appreciation and inclusion of this knowledge will benefit and enrich policy decision-making.

Farmers have the demonstrated capacity to survive and prosper in their landscape, and as Oliver (2012, p. 381) points out ‘both individual and society matter, as they exist on different ontological levels, possess distinct properties and cannot be subsumed into one another’; and work by Eraydin (2016) pinpoints the importance of endogenous capacities to regional resilience. Importantly, Hanna and Vanclay (2013, p. 146) point out that the ‘obligation for governments and companies to engage impacted communities is recognized in international law’. While their discussion was about indigenous people’s rights in Brazil, the principle is equally applicable to Northern Australian communities (and one interview participant did state that Northern Australia had more in common with the developing world than the first world).

The understanding of resilience as a lived individual actor experience that has become evident through this study has also enabled recognition of the possibilities for the perception of fairness to bring together all the factors at play. In the same way that ‘resilience cannot be directly observed or measured – hence they refer to it as a metaphor’ (Brown, 2016, p. 161), fairness can be a metaphor for ensuring a deliberate process for the engagement, consideration, and inclusion of impacted communities is adopted for policy development, particularly for policy that bonds communities and cultures within their environment.

10.4 The Need to Extend Fairness through Governance

It has been described how a decision made based on one television documentary had profound and far-reaching impacts on the Northern Australian beef industry, but
if we were to look at the situation from the perspective of an Australian living in an inner-city area – confronted by abhorrent images of animal cruelty – the immediate cessation of live cattle export was arguably an acceptable response to a situation they could not condone but had no power to influence. It was an emotional response, not a reasoned response. But the experience is indicative of the power of a small but motivated and focussed sectoral group to influence voters, and thereby direct policy decisions. With this in mind, consider then the contemporary aspirations for Northern Australian agricultural development:

- The area is a long way from where the majority of Australians live;
- Very few people live there, and even fewer are farmers;
- There are limited opportunities for social engagement or sharing of perspectives between Australia’s urban majority and its northern residents, a situation exacerbated by currently inadequate NBN infrastructure;
- The nightly news reminds everyone that the planet is in crisis.

So why not lock up the one remaining piece of ‘pristine’ country before it gets completely trashed? (See Dale (2013); Dale (2014) for a more detailed consideration of Australia’s “North-South Cultural Divide”).

Individual farmers have no control over livestock slaughter in another country, but they do directly bear the consequences of subsequent policy decisions. Whose responsibility then is it to ensure that divergent perspectives are properly communicated between and adequately considered by all parties so that the full ramifications are properly considered and understood before decisions are made?

- Is it the elected governments’, usually lacking any on-ground community presence or perspective, and ever-mindful of the 24-hour news cycle;
- Is it the various agricultural industry representative organisations, invariably under-resourced and trying to respond simultaneously to a myriad of issues;
- Is it the individual farmers’, working hard to remain solvent, and usually limited in their ability to spend time understanding the entirety of an issue?

Verweij et al. (2006, p. 839) describe the usual outcome of such complex and competing multi-player situations as one of extremes, with ‘an unresponsive
monologue’ at one end and a ‘shouting match amongst the deaf’ at the other; whereas what is actually required is
‘a vibrant multivocality in which each voice formulates its view as persuasively as possible, sensitive to the knowledge that others are likely to disagree, and acknowledging a responsibility to listen to what the others are saying’.

Whilst Verweij et al. describe this approach as ‘clumsy’, they believe society must strive for it ‘if we value democracy’; though they recognise that ‘getting there and staying there is, of course, not easy’.

### 10.5 Opportunities to Improve Fairness through Governance

There is one crucial difference between contemporary aspirations for Northern Australian agriculture and that of previous eras, and that is the existence of Regional NRM Groups. There are 56 regional NRM organisations across Australia that act as delivery agents under the National Landcare Programme (Australian Government, 2016), and they are the only community-based organisations with the sole purpose of working with all stakeholders to address large and complex natural resource issues at the landscape level - building collaboration, gathering and sharing information, and brokering funding for on-ground work. This work is done in a planned and integrated manner which results in effective and efficient delivery of government programs that leverages investment from a wide range of community, industry and business partners.

The membership base of Regional NRM Groups includes local government, Traditional Owners, Landcare and Catchment groups, agricultural industries, conservation groups, and other land managers; and provides a platform for enduring links into communities through community-selected governing boards typically supported by organisational capabilities built over the past 20 years. This broad membership has been shown capable of achieving a balanced, middle ground approach to identifying and implementing desired social, economic and environmental outcomes, while providing value for money for Government investment without the overhead of other agencies or companies.
Since their inception Regional NRM Groups have built partnerships with industry, community, government and other sectors to address complex NRM challenges that span large areas and impact on economic opportunities, social wellbeing, and environmental assets; such as Great Barrier Reef water quality through The Reef Alliance (previously described in Chapter 9.4 Community Relationships). More and more people now understand governance to represent a wider set of processes of bargaining and negotiation among differing interests in society that lead to public and private good outcomes (Dorcey, 1986), and Regional NRM Groups are uniquely placed to achieve a new future for governance of Australia’s natural, agricultural and community assets.

They also have the potential to provide a trusted third party perspective and authentication between Australia’s dispersed regional communities and its predominately urban population, one that could provide valuable opportunities for information sharing and understanding. This view is amply supported by literature recognising a strong imperative for building and engaging social and human capital as a precursor to effecting the changes that will lead to improved resource condition, and building adaptive capacity that will enable communities to respond more effectively to future sustainability challenges (Argent, 2011; Curtis et al., 2014; Dale, 2013; Dale et al., 2013; ISSC/UNESCO, 2013; Larson, 2006; Larson & Brake, 2011; Sayer et al., 2015; Smajgl & Larson, 2007; Taylor, 2010; Vella & Dale, 2013; Verweij et al., 2006).

Though community-based NRM alone will not address Australia’s natural resource challenges, given the complexity of landscape processes and the multiple decision makers who influence landscape outcomes, Regional NRM Groups alone have the demonstrated requisite to build and maintain social capital in rural areas. This provides strong rationale for governments to support the basic infrastructure required to sustain them as they continue to explore better ways of ensuring regional communities are represented in legitimate, effective and fair governance of Australia’s rural environments.
Chapter Eleven

Discussion and Conclusions

‘Since it is the writing itself that leads to insight, we must become used to starting off in a state of unknowing and letting the writing lead us to whatever memories we require’.
Sheila Bender 2015

This thesis has not been an attempt to predict the agricultural future of Northern Australia - that will manifest in its own time and way. Agriculture is, and will continue to be, an important component of the North’s economy and identity, though its scale, ownership, and focus could develop in myriad and possibly unexpected ways.

That Northern Australia will not develop in the same way as the more populated south is a reasonable assumption - it is so different geographically, climatically, and demographically; and the Australian community now operates in a globally connected and informed era very different from that of the colonial expansion in which the south of Australia was settled and developed. Nevertheless, it was important to consider and understand the region’s history and development context as a significant influence on past and present aspirations for northern agricultural expansion; in the same way that an understanding of contemporary global trends and influences was also required. It was important, not to understand agriculture, but to understand the operational context and perspective of the farmers presently involved in Northern Australian agriculture.

That agriculture will continue to be a part of this landscape is also a reasonable assumption - Northern Australia is vast, and capable of accommodating a breadth of development scenarios including intensive and extensive agriculture, along with the light\textsuperscript{80} touch of conservation management. Australian agriculture is an industry with an impressive track record of speedy and successful technology adoption, and will

\textsuperscript{80} The setting aside of areas for conservation management would be seen by many as a lower impact land use than agriculture, mining or urban development, that is, a lighter touch. In some instances, though, setting aside areas for conservation management can exacerbate weed and feral animal problems, change fire regimes, or deliver other unintended negative outcomes. In reality, all land requires management and commensurate resource allocation if the anticipated outcomes are to be achieved.
continue to change with advances in genetics, sensory systems, remote sensing, and internet/device connectivity; while automation and customers’ ability to trace food from farm-to-fork will change supply chains (Hajkowicz & Eady, 2015).

What is unique to today’s era is that there exists an enhanced opportunity to consider and debate development options before their adoption - should Australians as a community choose to do so. Such a debate should be informed and guided by the lessons of history, along with the contemporary wisdom and experience of others around the world, facilitated by communication technologies and social media enabling whole-of-community participation, to collectively agree on a shared future. But the big risk in this opportunity is that the voices of the few with direct experience and practical understanding of the reality of agriculture in the north could be lost, overwhelmed, or disregarded in the conversation. This risk needs to be recognised, and actively addressed.

11.1 Resilience and Northern Australian Agriculture

Change is unpredictable, and so communities are unlikely to have full knowledge of the kind of changes to anticipate, or the intensity or ultimate impact of those changes (Magis, 2010). There has been increasing interest in and invocation of the notion of resilience within communities to better manage such change over recent years, and the concept has entered national, regional and local policy discourse. Whilst acknowledging that the resilience concept ‘suffers from imprecision of definition and conceptualization, which in turn weakens its purchase as an analytical or explanatory tool’ (Martin, 2012, p. 26), the observation by Hassink (2010) that the study of regional resilience is fraught with methodological and philosophical difficulties and therefore ‘its contribution is relatively limited’ (p.45) is at odds with the enduring and expanding cross-professional interest in the concept, on-going community use of the term, and its copious representation in literature; some of which is described in Chapter Two.

Resilience’s malleability and capacity to bring together multiple disciplines and understandings does in part explain its persistence and importance to individual,
community, and social sustainability. Christopherson et al. (2010) suggest that maybe, the attention to resilience is a response to a generalised contemporary sense of uncertainty and insecurity, and a search for formulas for adaptation and survival; perhaps because processes associated with globalisation have made places and regions more permeable to the effects of what were once thought to be external processes. People look for a safe (imagined) past where they knew the rules – because they don’t know the rules of the future.

But change has happened before in agriculture and will continue to happen, and it is possible that some of society’s emerging fears around issues such as robotisation of the workforce will deliver real benefits to a dispersed and regionalised northern agriculture, enabling farmers to perform jobs like extensive weed surveys or resource monitoring which are currently either unaffordable, or onerous on the individual if done manually. The actual ability to capitalise on that particular innovation though is likely to be hampered by present NBN internet service delivery, which is a particular disservice to rural people for whom improved internet would enable better planning and adaptation capacity, help improve family connectedness, and facilitate increased situational awareness.

However, were a fast, universal broadband network to become available to all Northern Australian residents tomorrow, it would not be a panacea for the challenges faced by the region’s farmers. The history of northern development described in Chapter Three demonstrates the gradual but inexorable nature of development, and this is unlikely to change in the future; particularly the influence of national and international drivers and the sometimes piece-meal, and often politically-influenced, official approach to development and infrastructure provision. This retrospection, or ability to re-experience the past, indicates that narrow-based development manifestos are unlikely to achieve their envisioned success, which should be both noted and remembered by today’s policy mandarins and business entrepreneurs. But while the future of Northern Australia is rooted in this past, and it provides valuable lessons, the region’s future will become known in the complex milieu of a global society.
It is for this reason that Chapters Three and Four of this thesis contain extensive consideration and analysis of policies, past and present, associated with developing agriculture in Northern Australia: this material provides an ‘introduction’ to the broader context of the study, clearly shows that aspirations for northern development are not a new phenomenon, and illustrates both the intended and unintended outcomes of policy over the entirety of European settlement.

The increasing social complexity that accompanies the world’s growing population, some of which is referred to in Chapter Four, will continue to deliver contested possible futures. Prospection\textsuperscript{81} however is a ubiquitous feature of the human mind (Seligman et al., 2013). This ability of people to ‘\textit{pre-experience ... the hedonic consequences of events they’ve never experienced by simulating those events in their mind}’ (Gilbert & Wilson, 2007, p. 1351) is clearly at work in the imagined futures for Northern Australia. As Seligman et al. describe

\begin{quote}
\textit{\textquoteleft these prospects can include not only possibilities that have occurred before but also possibilities that have never occurred—and these new possibilities often play a decisive role in the selection of action\textquoteright} (p. 119).
\end{quote}

While no one group is likely to determine Northern Australia’s ultimate destiny, it is of paramount importance to consider and include the imaginings of those already living and working there. It is important because of the specific regional knowledge and understanding that they hold, and it is important if Australia is to maintain its reputation as a fair and compassionate society.

In reality, the question of a community’s resilience is an old and enduring one, and individuals understand that their individual ability to successfully respond to change is enmeshed with this collective resilience, which in turn is a composite of the numerous heterogeneous entities and individuals that compose the community, and their interaction. Through their own words, and describing their individual lived experience, interviewed farmers in this study understand resilience as not an immutable characteristic that an individual or a community has or does not have, but as a process that emerges from malleable resources.

\textsuperscript{81} The generation and evaluation of mental representations of possible futures.
This final chapter returns to the research questions and, by drawing them together, reflects on the opportunities for using resilience thinking in the better development of policy. This is followed by a consideration of the limitations of the research findings, and then some thoughts about possible future research.

11.2 Revisiting the Research Questions

Returning to the research objective and questions, the broad aim was to determine whether a study of the context, personal strategies, perspectives and operating environment of individuals within Northern Australian agriculture (now and in the past), could identify and understand the factors and strategies that contribute to or enhance an individual’s chance of achieving what they perceive as successful outcomes. A further aim was to determine whether these factors and strategies might be used to improve planning and policy outcomes, particularly in the consideration and reduction of industry risk.

Because it was an understanding of how farmers think about and interact with their situation and of the inter-relationships around this thinking that was required, it was particularly important that this knowledge was sourced directly – the individual’s lived experience - rather than filtered through a pre-existing theoretical construct, because as suggested by Lorenz (2013, p. 10)

’social resilience does not mean that the system changes as fast as possible or perpetuates its structure under any circumstances, but that the new structure in the case of change involves sustainable variances that enable the system to persist into the future under any given terms’.

The study was necessarily broad. I came to it with a breadth of relevant experience: as a farmer, a marketer, an industry advocate, an active NRM regional body participant, a researcher who had provided both government and industry policy input; and as a land use planner and northern resident who had worked with and been interested in the people of Northern Australia and its agriculture for a very long time. Yet still I had only a superficial understanding of why farmers stuck to such a hard game – what made them resilient. In consideration of all the above, a grounded
theory approach was selected because of its potential to portray fullness of experience, reveal taken-for-granted meanings, and because it had the *grab* to help people explain what they see.

The breadth of the study also precluded a quantitative analysis between geographic and demographic aspects. Possibly, at a finer scale, there are differences in individual resilience strategies between farmers of different commodities, and between farmers of different regions, gender, education, and ethnic derivation. Possibly every farmer is different from every other farmer. However, the prior experience of the investigator had established a perception of universal high level resilience accord, and this remained the focus.

Whilst the study commenced initially with two specific questions, as it transpired they were answered conjointly. The specific questions were:

1. What factors affect a farmer’s decision to stay farming in Northern Australia?
2. What are the strategies farmers use to deal with risk, adversity and uncertainty?

There is a lack of detail about such questions in the literature, particularly of detail from a farmer’s perspective operating in Northern Australia. This dearth of specific regional knowledge, experience and understanding has certainly contributed to past policy alignment not always achieving desired outcomes or, in some cases, not even starting with desirable goals. This deficiency has been exacerbated when decisions are made from major metropolitan centres geographically and culturally removed from the region. Further complicating the situation, the physical and cultural diversity of Northern Australia mitigates against a *one size fits all* policy response, and suggests that a diverse and rich array of bespoke policy responses might be required under an over-arching intent.

The other very real risk though of not including regional understanding in policy is that processes are more vulnerable to being hijacked by sectoral lobby groups or those with strongly held views, as demonstrated by the 2011 live cattle export ban. The future of a region and its residents should not be jeopardised through a policy-maker’s failure to properly understand, or even worse, to operate on assumptions.
Though this thesis is unlikely to change policy direction or development, it does demonstrate that it is possible to understand the context through the perspective of those currently involved in the activity rather than assuming an understanding exists. To achieve this understanding though requires deliberate effort.

This thesis was first about achieving a meaningful understanding and appreciation of these individual processes – their resilience; and second, how this understanding might contribute to northern development. Direct involvement of stakeholders was important because they possess knowledge of the local environment and their management strategies have been developed and adapted, often over generations; then shared and re-adapted between families and across industries. Such forms of knowledge might fall outside formal science frameworks, but are demonstrably effective and useful when applied in the local context by experienced practitioners.

Farming requires farmers, and successful farming requires a connection with and understanding of the country, the community, and the business environment. In so far as farming is a lifestyle, it is one in which the participants are aware of the associated hardships and risk that the lifestyle can impose; and farmers prepare for and work their way through these using a variety of inter-connected and hard-won strategies. This interaction between farmers, their industry, and their broader operating environment is well-developed, and its consideration as a lived individual actor experience in this study has contributed the four described themes of Situational Awareness, Ability to Plan, Ability to Adapt, and Social Connectedness. These themes illustrate some of the resilience strategies farmers use to survive in what can still be described a hard game.

The real risk for Northern Australia’s farmers though, and particularly for an agricultural expansion, comes from agents that are largely beyond individual farmer’s personal resilience processes and strategies. These are the global perspectives and influences of an urban population with diminishing understanding of agriculture, and particularly agriculture in a Northern Australian context. Farmers cannot hope to control these influences, but they can appeal to their sense of fairness to increase the likelihood of endemic knowledge being valued and not over-
looked.

11.3 Limitations

This is not a psychological study. There was no attempt to understand, define, or describe my participants at a psychological level. Rather, the research focused on providing the farmer’s perspective within a Northern Australian agricultural context.

The term resilience crosses many academic and professional disciplines, and has widespread use in the popular lexicon. It was this persistence of the word and its ultimate flexibility that made resilience suitable as the central refrain for the investigation of what makes a farmer *stick*?

As a consequence of this research, it has become apparent just how important the detailed understanding of the specifics of their situation is for farmers to succeed, but this did not require *getting inside their mind*. Whilst many coping and adaptation strategies were common between regions and industries, it was always the detail in their understanding and application that made the difference in the success of the enterprise. Whilst this study was broad and across a large geographic region, it was not exhaustive, and this also needs to be remembered. The resilience strategies described may have application to other areas, but any extension will need to be applied with care – because regional context is so important.

While no attempt was made to ensure a representative sample of every farming demographic was interviewed (as described in Chapter 5.4.3), the very fact that no farmer interviewed self-identified as being an indigenous Australian demands attention, and explanation. During the almost forty years this investigator has worked with farmers in many regions of Australia, not one has self-identified as being an indigenous Australian. The obvious question of “why not” probably will not have an easy answer, and was certainly beyond the scope of this study. Requests for interview were made to several indigenous organisations, and interview times confirmed. However, in all instances these arrangements were cancelled by the interviewee. This cannot be interpreted as a reluctance to participate on their behalf, rather, having lived and worked in indigenous communities, I understood that
continual emergent problems always will take precedence over some academic research enquiry.

11.4 Theoretical Contribution

Brennan (2008, p. 61) tells us that ‘Resilient communities exhibit adaptive capacities, established networks, infrastructures, and alliances that allow the community to plan for its needs and build on its strengths to achieve desired goals’. By describing resilience from the bottom up and through the actual words of those involved, it has been shown that these same interactions are at play at the individual level. Whilst not surprising, it has been important to establish this through the words of those involved for two reasons:

1. So that this understanding is not based on an assumption; and
2. To provide an authentic bridge between the academic interpretation of farmers resolve and the farmers themselves.

This study has established a credible association between the academic resilience text and the applied practices of Northern Australian farmers. The value of doing so is not so much a furthering of resilience theory, but a demonstration of the importance of relating theory to people coming through adversity: both the processes they use, and what resilience looks like on the way through, particularly when there is unlikely to be an end-point to the process. For as Richardson (2002, p. 319) describes

‘Resilience or energy comes from within the human spirit or collective unconscious of the individual and also from external social, ecological, and spiritual sources of strength. Resiliency and resilience can be seen as simple and practical applications to everyday living’.

The perception of Fairness does offer a Grounded Theory contribution to resilience theory. It moves away from the testing of models of resilience and considers instead what comes from lived experience.

This work describes the resilience process in the words of those who have lived it. The research participants have acted without thinking of it as a process with some
beginning, middle and end – it has been a part of their life; but they have known they were not alone in the experience. Such experience is a part of every human life, though the rawness of the direct interaction with nature that many farmers experience can be diminished when people live further from or are insulated from the cause and effect of seasons and the physicality of life. While everyone’s situation is different, there is usually comfort in knowing that there are others shoulder to shoulder, sharing the load. But there is a real risk when this relationship is put at risk through perceptions of unfairness. People can feel alienated from their broader society, and as a consequence their valuable knowledge and understanding might be either with-held or excluded from important decision-making processes. Even worse, they can be openly ignored when freely offered. This is important, and an appreciation and inclusion of such knowledge is more apparent in a model of resilience developed from the bottom-up.

Whilst documenting, considering and understanding these tangible contributors to individual farmer’s resilience, the critical importance of fairness to farmers became apparent as a connecting concept and translational instrument between their personal worlds and their relationship with the broader community. It is proposed that an understanding and consideration of fairness from the perspective of those directly impacted could be an enabler of analytical insights into social ecological systems, and therefore should be an essential consideration of policy development relating to northern development.

It is the Thread of Fairness that provides opportunity for building relationships and improving understanding in both directions - between farmers and the broader community – through paying attention to perceptions of fairness. This opportunity became evident through the understanding of resilience specifically as a lived actor experience, and the consideration of fairness is further proposed as a metaphor for ensuring a deliberate process of engagement, consideration, and inclusion of impacted communities in policy development.

The concept and reinvention of social ecological systems resilience theory have been driven to an extent by biological scientists who do not always understand the
importance of social relationships and capital, these being more usually researched and analysed by social scientists. This thesis shows that there is a wealth of knowledge and experience at play in farming - some innate, much hard-won, and while a lot of it is directed towards reducing risk in a complex and highly variable physical environment, it is also directed towards reducing risk in the social environment, and particularly towards building and maintaining social capital. Social factors such as attachment to place, lifestyle, industry, local knowledge, family, community standing and networks are every bit as important in these social ecological systems.

This research indicates that success in agriculture is rarely achieved overnight, and it is not usually a job someone can just do for a couple of years as part of a career smorgasbord. But a core finding of this thesis is that individual success can be assisted by tying analysis of adaptability, resilience, and vulnerability in the biophysical systems to a better understanding of these same features in social and economic systems, and by considering this information in situ.

### 11.5 Future research considerations

An understanding of the resilience experience of Traditional Owners currently engaged in agriculture would be useful in facilitating further industry engagement, as it cannot be assumed that their experience and views would parallel the participants in this research. However, a particularly exciting opportunity lies in the further exploration of Gammage’s (2011) postulate that pre-European Aboriginals were farmers without fences, who shaped the landscape in ways that facilitated plant and animal yield, and were adaptive to the physical constraints and opportunities of regional soil, plant and animal qualities. It is just possible that such an approach could rediscover fundamentally different ways of farming Northern Australia, and that these ways might bridge the current sectoral disconnect between aspirations for a productive landscape, and for the preservation of ecological values.

Community-based NRM organisations now occupy a unique position in Australia’s landscape management, with established relationships and respected
communication processes that span the productive, conservation and community sectors. Their ability to be the vehicle for exploring fairness as a contributor to regional policy development and delivery is worthy of further consideration.

Finally, application mechanisms for policy development utilising bottom-up information would be desirable, but not easy. It would be resource intensive and require careful management to avoid consultation fatigue, but a truly inclusive process owned and driven by the community would have less chance of delivering perverse outcomes than the more-often used top-down approach.

11.6 Concluding remarks

This thesis had its genesis in disaster – a personal disaster – and consequently contains aspects of life and understanding derived through having lived through the experience. The phenomenological nature of the study then uses, in their own words, the lived experience of individual farmers as the basis for qualitative analysis of their resilience strategies. The study has deliberately attempted to avoid an overly academic re-interpretation of either the strategies, or of the language used to describe them. It was always the intention that interpretation be informed by resilience literature, rather than filtered through it.

This thesis research shows that everyone experiences disasters to greater or lesser degrees - they are a part of life. For some, a particular event might be life-changing, whereas for their immediate neighbour it could be of no consequence; because every person experiences it in the context of not only the event, but of their personal situation prior to and subsequent to the event. It then becomes another component of the individual’s lived experience, which they can consider and draw on in future. How an individual responds to a situation does not make that person better than another, for we are all at the mercy of natural and social events, and that which is the undoing of one can provide opportunity for another. The individual’s response is not some badge of honour that can be weighed and compared on a resilience scale.

However, an awareness of one’s situation in life; the ability to plan accordingly, and then to be able to review and adapt that plan; and at appropriate times call on
friends, family or the community for support - this does assist farmers to cope with uncertainty and contributes to their life experience which, as the saying goes, makes them stronger. Whilst this is applicable to people everywhere, it does need to be remembered, particularly in situations where the voices of a few could easily go unheard. There is a need to ensure fairness is a part of the policy process.
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Appendix A. Participant Letter of Introduction

Dear [NAME OF PERSON],

My name is Keith Noble and I’m doing a PhD through James Cook University in Townsville, looking at resilience in North Australian agriculture. During the 1980/90’s I spent many years living and working in central Australia, till in 2000 we bought a tropical fruit farm at Tully. I thought that was going to be me till the end, but two big cyclones in five years put paid to that idea and the tropical fruit industry generally, so I am re-inventing myself through this study.

I started my study with the idea of better understanding why people stick to agriculture when it’s such a hard game, but then the whole ‘North Australian development’ agenda came to the fore, leading me to think there might be some relevant lessons from history for this latest push, along with the possibility to better align policy to deliver real outcomes for residents and industry. I’m not confining myself to any specific industry or region, though there are some financial and practical limitations to how far I can go in this particular study. I am interested in talking to a range of producers, as well as allied industry professionals such as researchers, extension officers, NRM personnel, stock and station agents.

By way of introduction I’ve attached four papers: (1) a PIA journal article outlining some of my early thinking as way of orientation, (2) my CV, (3) an information sheet on my project, and (4) a consent form that I ask participants to sign. I also have a website that has some discussion-starters you might like to look at: http://www.agmudmap.org.

The interview is in the form of a semi-structured discussion that usually takes around 2 hours to cover some key points, but it’s not a questionnaire and we really can talk about whatever comes up along the way. I do like to audio-record the interviews to assist my memory during analysis, though I can do without should participants prefer. Anonymity of participants is guaranteed unless they specifically agree to being identified. The project has ethics approval from the university.

I hope this finds you well, and that you will consider my request favourably, and that rain isn’t far away.

Kind regards,

Keith Noble
PhD Candidate, James Cook University

E. keith.noble2@my.jcu.edu.au
Appendix B. Participant Project Information Sheet

INFORMATION SHEET

PROJECT TITLE: “The Future of Agriculture in Northern Australia”

You are invited to take part in a research project about the opportunities for Northern Australian agricultural industries to plan for and manage impacts (including, but not limited to, environmental, social and economic risks) through improved resilience at all scales – individual, enterprise and industry. The research project is particularly interested in collecting and considering past, present and future perspectives on the topic.

The study is being conducted by Keith Andrew Noble and will contribute to his PhD study at James Cook University, Townsville campus.

If you agree to be involved in the study, you will be invited to be interviewed. The interview, with your consent, will be audio-taped, and should take between one and three hours of your time. The interview will be conducted at a venue of your choosing, and will follow a semi-structured format. By this, I mean that I will have a list of topics for discussion that I will introduce by “starter” questions, but our discussion will not be constrained to these questions. I will also provide you with the opportunity to introduce additional topics or expand upon any discussion should you wish.

There may also be a questionnaire that I ask you to complete, either at the time of interview or subsequent to it. The questionnaire should take approximately 20 minutes to complete, and is intended to provide a reference point across industry sectors. I will ask your permission before offering you the survey.

In some cases, a focus group session may be organised to which you may be invited. In this case you need to be aware that confidentiality in focus groups cannot be guaranteed, even though we may ask participants to respect the privacy of others.

Taking part in this study is completely voluntary and you can stop taking part in the study at any time without explanation or prejudice.

If you know of others that might be interested in this study, can you please pass this information sheet on to them so they may contact me to volunteer for the study.

Your responses and contact details will be strictly confidential, and no names will be used to identify you or the business enterprise or organisation which you represent with this study unless you explicitly agree that your name, or the name of the enterprise or organisation which you represent, can be identified.

The data from the study will be used in my PhD thesis and any related publications issuing from the study. Again, you will not be identified in any way in this or related publications unless I have your explicit approval. Should you choose to agree to either you or your enterprise or organisation’s identification in this study and any ensuing publications, I will provide you with a copy of the proposed publication for your consideration and approval before it is released.

If you have any questions about the study, please contact Keith Noble, Alison Cottrell, or David King at the numbers listed below (Alison and David are my PhD supervisors).

Principal Investigator: Keith Andrew Noble
School of Earth & Environmental Sciences
James Cook University, Townsville
Phone: (07) 4781 6937
Email: keith.noble2@my.jcu.edu.au

Supervisor: A/Prof. Alison Cottrell
School of Earth & Environmental Sciences
James Cook University
Phone: (07) 4781 4653
Email: alison.cottrell@jcu.edu.au

Supervisor: A/Prof. David King
School of Earth & Environmental Sciences
James Cook University
Phone: (07) 4781 4430
Email: david.king@jcu.edu.au

If you have any concerns regarding the ethical conduct of the study, please contact:
Human Ethics, Research Office
James Cook University, Townsville, Qld, 4811
Phone: (07) 4781 5011 (ethics@jcu.edu.au)

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Appendix C. Participant Informed Consent Form

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Appendix D. Project Ethics Approval H5355

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Appendix E.  Project Ethics Amendment H5355

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