Mackay Isaac Whitsunday
30 Year Sugar Industry Strategy
2015-45
Part A: Strategy
Central Region Sugar Group

April, 2015
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Foreword

We, the Central Regional Sugar Group, are delighted to present the Mackay Isaac Whitsunday 30 Year Sugar Industry Strategy 2015-45 for our region that sets our course for our great industry.

The sugar industry in the Mackay Isaac Whitsunday region was established over a century ago and the families of many of the pioneers of the industry are still part of today’s industry fabric. The industry has demonstrated exceptional resilience to natural disasters and global economic forces to remain a solid and significant member of our community and economy. Indeed, recent increased investment in the milling sector is testament to our past, current and future success.

A world of constant and accelerating change has and will continue to shape our industry both externally and internally. Political, economic, social, technological and environmental challenges abound and we need to be strong and flexible to turn them to our advantage. We also face a number of internal challenges around structure, labour, land and capital that present opportunities we can influence and invest in.

Whilst 30 years may seem a long time, such vision and planning is necessary to set a long term direction for those involved with and those who seek to influence our industry. Furthermore, such planning horizons are becoming common practice in the community and it is only through understanding our alignment with these other plans that we can successfully engage with them.

The 30 Year Strategy presents aspirational growth and diversification goals to double sugarcane production and generate half of our revenue from products other than raw sugar. Significant innovation will be required to deliver on these goals, along with workforce capability and resilience to deal with adverse events we will inevitably receive along the journey. At the same time we embrace and communicate effectively with our communities and governments and ensure all our operations are environmentally sustainable so that we retain our social licence to operate. Growth will also require investment in industry and common use infrastructure. To attract the required funds we must improve and demonstrate competitive returns on that investment.

Delivering on the strategic goals in this 30 Year Strategy will not be easy. Its publication is just the first step on the road. However, for the first time we have a long term plan and the Central Regional Sugar Group will focus, strive and advocate with a single purpose to deliver on our vision.

Paul Schembri
Chairman, Central Regional Sugar Group

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CANGROWERS Mackay

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Australian Cane Farmers Association

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CEO, Mackay Sugar Limited

John Pratt
EGM, Wilmar Sugar Australia
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1. **Introduction**

This *30 Year Sugar Industry Strategy* has been developed for the Mackay Isaac Whitsunday (MIW) sugar industry by the Central Region Sugar Group (CRSG) for the purposes of promoting and advancing the development of our commercially vibrant, sustainable and self-reliant raw sugar and sugarcane derived products industry.

**Who do we represent?**

CRSG is based in the Mackay, Proserpine and Plane Creek regions in North Queensland with sugarcane growing areas situated in the Mackay, Isaac and Whitsunday Local Government Areas.

**CRSG and MIW sugar industry**

<table>
<thead>
<tr>
<th>Farming</th>
<th>Manufacturing</th>
<th>Exporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>CANEGROWERS Mackay Area Committee</td>
<td>Mackay Sugar Limited</td>
<td>Raw sugar storage and an export terminal at the Port of Mackay</td>
</tr>
<tr>
<td>CANEGROWERS Plane Creek Area Committee</td>
<td>Racecourse, Farleigh, Marian</td>
<td></td>
</tr>
<tr>
<td>CANEGROWERS Proserpine</td>
<td>Wilmars Sugar Australia</td>
<td></td>
</tr>
<tr>
<td>Australian Cane Farmers Association</td>
<td>Plane Creek, Proserpine</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sugar refinery</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Racecourse Mill</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ethanol distillery</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Plane Creek</td>
<td></td>
</tr>
</tbody>
</table>

**What do we do?**

At a national level, CRSG works with the Australian Sugar Industry Alliance (ASA) to drive the development and promotion of policy advancing the commercial development of the Australian sugar industry. This is achieved through engagement with government, industry, service providers, community and other stakeholders, and by providing leadership to advance the sugar industry self-reliance, sustainability and viability.

At a regional level, CRSG engages with local government, industry, service providers, community and other stakeholders on key local issues that are necessary to enable the sugar industry in the MIW region to achieve its growth potential.

**Why a 30 year Strategy?**

The *MIW 30 Year Sugar Industry Strategy* seeks to set out how the MIW sugar industry will improve its position as a globally competitive, economically and environmentally sustainable industry based on sugarcane.

The 30 year planning period was chosen to align with Australian and Queensland Government planning horizons, especially with regards to the long-term view required for infrastructure and service delivery planning, for example, the Commonwealth Government’s Northern Australia development initiatives and Queensland Government’s goal of doubling agricultural production by 2040. Integration and alignment with these longer term strategies is important so that CRSG can be ready to play its part in the sustainable development of Northern Australia and Queensland.

In addition, the *MIW 30 Year Sugar Industry Strategy* covers a number of election periods, so it caters for a level of consistency and continuity and provides insight to inform government decision-makers as they change over the period.

The *MIW 30 Year Sugar Industry Strategy* is based on seven strategic themes that lend a high level focus to matters which are of ultimate importance to the industry as it strives to conquer external and internal challenges. Each strategic theme contains strategies and actions that are necessary to move the industry towards its strategic objectives and ultimately its vision, in Section 0.
<table>
<thead>
<tr>
<th>Strategic Goal</th>
<th>Target</th>
<th>Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GROWTH</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 1.1 Increase area of sugarcane production | +120,000ha | 1.1.1 Restore previous sugarcane growing land  
1.1.2 Secure and develop new sugarcane growing land  
1.1.3 Prevent loss of current sugarcane growing land |
| 1.2 Restore/increase sugarcane yield | +20t/ha | 1.2.1 Improve soil health with fewer inputs  
1.2.2 Plant genetically modified sugarcane varieties  
1.2.3 Improve irrigation & chemical use  
1.2.4 Reduce harvesting losses |
| 1.3 Improve investor confidence | Increase % of growers utilising forward selling  
Increase % of sugar sold under a certification scheme | 1.3.2 Sell majority of raw sugar under an accreditation scheme  
1.3.2 Continue improving market access to sugar importing countries  
1.3.3 Sell direct to food and beverage manufacturers |
| **DIVERSIFICATION** |        |          |
| 2.1 Develop alternative revenue streams to raw sugar | 50% of revenue from non-sugar products | 2.1.1 Advocate to retain RET and increase cogeneration from bagasse  
2.1.2 Advocate for biofuel mandate  
2.1.3 Attract other industries that benefit from renewable steam/electricity  
2.1.4 Commercialise 1-3 other biochemical products |
| **INNOVATION** |        |          |
| 3.1 Deliver productivity improvements | Significantly improve productivity every 5 years | 3.1.1 Research most promising productivity improvements  
3.1.2 Ensure widespread adoption to productivity improvements |
| 3.2 Deliver new commercially viable products | 1 product every 10 years | 3.2.1 Research most promising new products  
3.2.2 Demonstrate commercial viability of new products |
| **CAPABILITY & RESILIENCE** |        |          |
| 4.1 Engage a skilled and knowledgeable workforce | zero skill shortages | 4.1.1 Develop and maintain a MIW Sugar Industry Workforce Development Plan  
4.1.2 Develop career pathways in partnership with education providers |
| 4.2 Enhanced capacity to respond to adverse events | Return to normal production within 2 seasons | 4.2.1 Develop disaster management plan  
4.2.2 Industry viability / profitability enables rapid disaster recovery  
4.3.3 Manage risks of disasters on support industries |
| **COMMUNITY & ENVIRONMENT** |        |          |
| 5.1 Present a single community interface | High community satisfaction rating | 5.1.1 Deliver an regional PR strategy |
| 5.2 Effectively manage our natural resources and adopt sustainable solutions | Greater sugar production with less cost to the environment  
Carbon neutral value chain | 5.2.1 Regularly measure and report greenhouse gas emissions. Further improve efficiencies and reduce greenhouse gas emissions  
5.2.2 Encourage growers to engage in government programs to improve water quality  
5.2.3 Commitment to continuous improvement in sugar production, e.g. Best Management Practice, Bonsucro |
| 5.3 Promote positive health message about sugar | Positive public attitude towards the role of sugar as a natural part of diet | 5.3.1 Continue to engage in the national sugar nutrient strategy |
| **ECONOMICS & INFRASTRUCTURE** |        |          |
| 6.1 Determine and improve the economics of the sugar industry | 5-10% ROE | 6.1.1 Measure the economic contribution of the sugar industry annually, including flow on impacts  
6.1.2 Measure ROE for each stage of the supply chain  
6.1.3 Develop programs to improve ROE at each stage of the supply chain  
6.1.4 Develop alternative financing approaches for new entrants involved in expansion/diversification |
| 6.2 Attract investment for growth and diversification infrastructure | Investments made | 6.2.1 Identify required growth and diversification infrastructure  
6.2.2 Develop alternative financing approaches for growth and diversification infrastructure  
6.2.3 Attract required growth and diversification infrastructure investment |
<table>
<thead>
<tr>
<th>Strategic Goal</th>
<th>Target</th>
<th>Strategy</th>
</tr>
</thead>
</table>
| **6.3 Secure supporting infrastructure for growth and diversification**        | Infrastructure delivered           | 6.3.1 Identify required supporting infrastructure  
6.3.2 Develop alternative financing approaches for supporting infrastructure  
6.3.3 Partner with government and other industries to facilitate common infrastructure delivery, including a container handling facility at Mackay Port |
2. Vision, Mission & Values

Everything the CRSG does should be inspired by our vision, mission and values. Our vision is a description of our industry as well as a motivational statement for what we aspire to. Our mission describes our purpose, what we produce, our customers and single main goal. Our values represent core priorities in our culture and drive our behaviour.

Our Vision

Producing multiple products from sugarcane combining worlds’ best practice, environmental responsiveness and global competitiveness.

Our Mission

The MIW sugar industry grows sugarcane to produce raw and refined sugar as well as a range of by-products including steam, electricity, biofuels and base chemicals. Our primary markets for raw and refined sugar are developing nations where sugar consumption is rising, whereas our domestic markets are supplied with refined sugar and electricity. Bio/base chemical production and biofuels are anticipated for both domestic and international markets. CRSG is committed to doubling production by value and further diversifying revenue streams in a sustainable manner by 2045, mindful of our proximity to the Great Barrier Reef and the communities in which we operate.

Our Values

Our values are:

- Focus on the end customer.
- Co-ordination and co-operation between industry participants.
- Financial and environmental sustainability throughout the supply chain.
- Commitment to research and development.
- Credibility, integrity and professionalism.
- Open and effective communication with government.
- Community consciousness.
3. Our Industry Today
4. **Outlook & Challenges**

The MIW sugar industry faces a number of internal and external challenges. External challenges are largely outside the industry’s direct control whilst internal challenges concern inputs to or components of production. These challenges form the basis of our strategic responses to sustain and grow the industry in the region.

4.1 **Future Outlook**

Most outlooks for the global sugar industry are understandably focussed on the next few years and longer outlooks beyond five years are rare.

Historically global sugar consumption has been steadily increasing at a rate of 2-3% per annum. While there is a wide range of consumption growth across the developed and developing countries, this growth rate is expected to continue. Even though developed markets such as Japan and Australia are experiencing a flat or even slight decreased outlook in sugar consumption, markets such as Asia, East Africa and the Middle East are experiencing strong growth. The Asian market is experiencing strong growth in sugar demand as a result of increasing population and rising per capita incomes. Roughly half of the world’s future population growth is expected to be in Asia. Population growth together with Asia’s burgeoning middle class will inevitably lead to increased sugar demand in the future.

Current world price levels are hurting Brazilian producers with prices below cost of production threatening the short term viability of some mills and leaving many financially unstable. Market forces dictate that either; these producers will be forced out and supply will be squeezed or importers will buy at these levels and stockpile the surplus, either way the price will rise sooner or later. Unless sugar prices increase above current levels, Brazil’s production levels will remain at or below current levels.

Thailand’s North East and other Southeast Asian countries have potential to expand further, even at current price levels. India’s Maharashtra state also has capacity to expand. China on the other hand is experiencing a major increase in cost of cane and a massive reduction in beet sugar production. Both of these factors will contribute to an expected production at or below current sugar levels going forward, which will require further raw sugar imports to meet the deficit.

New projects in Southern and Eastern Africa are expected to boost production by 5-6 million tonnes over the next few years switching the region from a net importer to a small net exporter. Middle East, North and West Africa are expected to remain net importers with limited expansion in output.

With prices at their current levels Brazil does not have the incentive or capital to invest in production capacity leaving Thailand and India to carry the majority of the growth burden. The abolition of quotas in the EU in 2017 will allow the region to contribute more to world output, helping to cap any move higher in world prices. When world prices are above the 23USc/lb level there will be a larger range of producers that will willingly invest in production capacity.

Given this outlook, on the basis of a constant US$ outlook it is expected that world sugar prices will need to move back above 20USc/lb per pound over the next few years to stimulate the production required to keep up with the growth in demand, particularly in Asia.
4.2 The Challenges we Face

4.2.1 External Challenges

External challenges are those faced by the industry that are largely uncontrollable. However, strong advocacy by the industry can have some influence and this generally requires significant effort and resources.

<table>
<thead>
<tr>
<th>Area</th>
<th>Challenge</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Political</td>
<td>Changes to the Renewable Energy Target</td>
<td>Advocate for retention of the existing or improved policy on which past and future investment decisions have and will be made (Diversification)</td>
</tr>
<tr>
<td></td>
<td>Biosecurity and the cost of protecting sugarcane crops from pests and disease</td>
<td>Ensure Australian authorities maintain the highest standards of biosecurity (Capability &amp; Resilience)</td>
</tr>
<tr>
<td></td>
<td>Biofuels policies in competitor markets (Brazil, Thailand, India, Philippines)</td>
<td>Advocate for comparable biofuels policies to competitors (Diversification)</td>
</tr>
<tr>
<td></td>
<td>Water – access, cost, storage and distribution/location</td>
<td>Advocate for appropriate investment and fair and equitable pricing (Economics &amp; Infrastructure)</td>
</tr>
<tr>
<td></td>
<td>Urban encroachment and lack of industry involvement in town planning, resulting in:</td>
<td>Advocate for protection of quality agricultural land and appropriate buffer zones (Growth)</td>
</tr>
<tr>
<td></td>
<td>• less land being available for cane farming</td>
<td>• Advocate to assist milling/processing companies to recognise the strategic value of buffer zones and to minimise the loss of sugarcane land to urban development (Growth)</td>
</tr>
<tr>
<td></td>
<td>• residential encroachment into buffer zones around the mills, resulting in competition for infrastructure and residential complaints</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Road transport infrastructure inadequate in some areas, and encroaching on buffer zones</td>
<td>Identify and advocate for road improvements where they will make a difference (Economics &amp; Infrastructure)</td>
</tr>
<tr>
<td></td>
<td>Easements and right of access to transport cane on new rail tracks that run through private farms</td>
<td>Strongly defend right of access (Economics &amp; Infrastructure)</td>
</tr>
<tr>
<td>Economic</td>
<td>Price competition from international low cost producers</td>
<td>Focus on lowering costs of production and lean manufacturing, or improvements to higher valued product attributes (Growth, Diversification, Innovation)</td>
</tr>
<tr>
<td></td>
<td>Volatile price of sugar and the high Australian dollar</td>
<td>Diversify into domestic priced products produced from sugarcane (Diversification)</td>
</tr>
<tr>
<td></td>
<td>Competition from Thailand, who has a similar freight cost advantage to Australia, in Asian markets</td>
<td>Focus on lowering costs of production or improvements to higher valued product attributes (Growth)</td>
</tr>
<tr>
<td></td>
<td>Australian based food and beverage manufacturers favouring lower priced sugar imports from developing nations to drive down domestic prices</td>
<td>Enhance value proposition through superior quality (Growth)</td>
</tr>
<tr>
<td></td>
<td>Vulnerability to labour competition from other industries (e.g. mining)</td>
<td>Develop workforce plan and sell the benefits of a career in the industry (Capability &amp; Resilience)</td>
</tr>
<tr>
<td></td>
<td>Having to pay for sunk infrastructure multiple times (e.g. water)</td>
<td>Advocate for appropriate public-private investment models and fair and equitable pricing (Economics &amp; Infrastructure)</td>
</tr>
<tr>
<td>Social</td>
<td>Obtaining and maintaining a social licence to operate</td>
<td>Strive to meet the communities expectation of a sustainable sugar industry and develop a strong and proactive whole of industry public relations program (Community &amp; Environment)</td>
</tr>
</tbody>
</table>
### 4.2.2 Internal Challenges

Internal challenges are those the industry can have more influence on.

<table>
<thead>
<tr>
<th>Area</th>
<th>Challenge</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Structure</strong></td>
<td>• Need for cost efficiencies to drive further vertical integration</td>
<td>• The nature of the industry demands more vertical integration with entities invested throughout the supply chain further invested down the supply chain (Growth, Innovation)</td>
</tr>
<tr>
<td><strong>Labour</strong></td>
<td>• Attracting, developing and retaining talent to the industry / knowledge and skills</td>
<td>• Develop workforce plan and sell the benefits of a career in the industry (Capability &amp; Resilience)</td>
</tr>
<tr>
<td></td>
<td>• Compete for labour with other industries</td>
<td></td>
</tr>
<tr>
<td><strong>Land</strong></td>
<td>• Protection of good quality agricultural land from other farming uses</td>
<td>• Ensure that the profitability from growing sugarcane precludes alternative farming uses (Growth)</td>
</tr>
<tr>
<td></td>
<td>• Inefficient use of sugarcane land</td>
<td>• Explore incentives to ensure sugarcane land is as productive as possible (Growth)</td>
</tr>
<tr>
<td></td>
<td>• Poor availability of ideal land for sugarcane growing</td>
<td>• Develop expansion plans and alternative varieties &amp; techniques for growing on land with different attributes (Growth, Innovation, Economics &amp; Infrastructure)</td>
</tr>
<tr>
<td><strong>Capital</strong></td>
<td>• Availability of capital for reinvestment and expansion</td>
<td>• Develop long term relationships with financial institutions and develop business plans to attract capital (Growth, Economics &amp; Infrastructure)</td>
</tr>
<tr>
<td></td>
<td>• High capital cost of plant and equipment</td>
<td>• Explore the costs and benefits of all transport options (Economics &amp; Infrastructure)</td>
</tr>
<tr>
<td><strong>Technology</strong></td>
<td>• Extension and take up of new technology by farmers</td>
<td>• Continuous focus on benefits of technology and incentives for take up (Growth, Innovation)</td>
</tr>
<tr>
<td><strong>Financial</strong></td>
<td>• Improving the financial sustainability of sugarcane farming</td>
<td>• Continuous focus on financial sustainability initiatives including managing price risk (Economics &amp; Infrastructure)</td>
</tr>
</tbody>
</table>
### Part A: Strategy

<table>
<thead>
<tr>
<th>Area</th>
<th>Challenge</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Increasing the size of the farming unit to achieve economies of scale</td>
<td>• Explore incentives for farm aggregation, or program of purchase, aggregation and lease (Growth, Economics &amp; Infrastructure)</td>
</tr>
<tr>
<td></td>
<td>• Financial capacity of farmers to invest in technologies that improve productivity and quality</td>
<td>• Explore the use of incentives or cost sharing to ensure investment occurs (Growth, Economics &amp; Infrastructure)</td>
</tr>
<tr>
<td></td>
<td>• High cost of irrigation, including the cost of electricity and water</td>
<td>• Research ways to improve efficiency and reduce costs through on farm provision using alternatives (Innovation, Economics &amp; Infrastructure)</td>
</tr>
<tr>
<td>Environment</td>
<td>• Adverse environmental sustainability perceptions of sugarcane growing practices</td>
<td>• Best Management Practice adoption • Promote more information on environmental sustainability success stories (Community &amp; Environment)</td>
</tr>
</tbody>
</table>
5. Possible Future Scenarios

To assist in focussing strategic priorities a number of future scenarios have been developed for the MIW sugar industry. These scenarios are based on a number of assumptions to demonstrate what may be a range of possible future industry outcomes.

Table 5.1: Mackay Isaac Whitsunday Sugar Industry Future Scenarios

<table>
<thead>
<tr>
<th>Metric</th>
<th>Units</th>
<th>2013</th>
<th>2045</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Business as Usual</td>
<td>Doubling Production</td>
</tr>
<tr>
<td><strong>Structure</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Growers business units</td>
<td>Number</td>
<td>1,117</td>
<td>1,000</td>
</tr>
<tr>
<td>Area harvested</td>
<td>Ha</td>
<td>107,461</td>
<td>110,000</td>
</tr>
<tr>
<td>Harvester groups</td>
<td>Number</td>
<td>214</td>
<td>190</td>
</tr>
<tr>
<td>Operating mills</td>
<td>Number</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Co-generation capacity</td>
<td>MW</td>
<td>110</td>
<td></td>
</tr>
<tr>
<td><strong>Production</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sugarcane crushed</td>
<td>Tonnes</td>
<td>7,862,217</td>
<td>8,500,000</td>
</tr>
<tr>
<td>Raw sugar</td>
<td>Tonnes IPS</td>
<td>1,179,221</td>
<td>1,300,000</td>
</tr>
<tr>
<td>Molasses</td>
<td>Tonnes</td>
<td>206,074</td>
<td>223,000</td>
</tr>
<tr>
<td>Electricity Generated</td>
<td>kWh</td>
<td>186,882,089</td>
<td>202,000,000</td>
</tr>
<tr>
<td>Electricity Exported</td>
<td>kWh</td>
<td>89,133,315</td>
<td>96,400,000</td>
</tr>
<tr>
<td>Ethanol</td>
<td>MI</td>
<td>60 (a)</td>
<td>90 (b)</td>
</tr>
<tr>
<td>Biodunder</td>
<td>Tonnes</td>
<td>N/A (c)</td>
<td>Same as 2013</td>
</tr>
<tr>
<td>Biochemicals</td>
<td>MI</td>
<td>None</td>
<td>1 product</td>
</tr>
<tr>
<td><strong>Employment</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Labour force (including seasonal)</td>
<td>FTE</td>
<td>1,238</td>
<td>1,000</td>
</tr>
<tr>
<td>Apprentices</td>
<td>FTE</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td><strong>KPIs</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Area Harvested per Grower</td>
<td>Ha</td>
<td>96.2</td>
<td>110.0</td>
</tr>
<tr>
<td>Average Tonnage Cane per Grower</td>
<td>Tonnes</td>
<td>7,039</td>
<td>8,500</td>
</tr>
<tr>
<td>Tonnage Cane per Harvester group</td>
<td>Tonnes</td>
<td>36,739</td>
<td>44,737</td>
</tr>
<tr>
<td>Tonnage Cane per Hectare Harvested</td>
<td>Tonnes</td>
<td>73.2</td>
<td>77.3</td>
</tr>
<tr>
<td>Tonnage Cane per Mill</td>
<td>Tonnes</td>
<td>1,572,443</td>
<td>1,700,000</td>
</tr>
<tr>
<td>Tonnage Cane per Tonne IPS Sugar</td>
<td>Tonnes</td>
<td>6.7</td>
<td>6.5</td>
</tr>
<tr>
<td>Tonnage IPS Sugar per Hectare</td>
<td>Tonnes IPS</td>
<td>11.0</td>
<td>11.8</td>
</tr>
</tbody>
</table>

Note: (a) Based on annual production capacity of Sarina plant, actual production not for publication. (b) Potential expansion capacity of Sarina plant. (c) Not for publication.

Source: ASMC, AEC

5.1 Business as Usual

In the business as usual scenario there is a shrinkage in the number of grower business units and harvester groups of just over 10%. At the same time the area harvested decreases by 7% due to urban encroachment and other uses. There is also an increase in sugarcane yields of 5%.

All five existing mills are still in operation but with slightly reduced tonnes of sugarcane crushed. Sugar yields have reduced slightly as has electricity production from the reduced levels of bagasse. One additional biochemical product is in commercial production. The workforce has reduced by 20% due to ongoing labour reducing capital investment but the number of apprentices has remained constant due to the need to ensure adequate skill and knowledge retention.
5.2 Doubling Production

This scenario examines the slightly more than doubling of sugar cane production. The average size of farms grows to 160ha and the average tonnes per harvester group almost doubles. Sugarcane yields have increased by almost 20%.

Two new large capacity mills are required to process the additional cane which increases the average cane crushed throughput per mill to 3 million tonnes. Electricity production is conservatively doubled but is heavily dependent on the Commonwealth and State Government’s renewable electricity policies. Molasses production is increased in line with tonnes of sugarcane produced and ethanol and Biodunder are proportionately increased but not grown. By 2045 3 other biochemical products are in commercial production. Employment in the mills has increased due to the two new mills but the new mills require less labour than existing mills. The number of apprentices has increased to ensure adequate skill and knowledge retention.
6. Strategic Themes

The challenges faced by the MIW sugar industry are best grouped and dealt with through a strategic theme framework that enables the partitioning of strategic objectives, strategies and actions.

At the centre of any industry strategy must be the customer. This is an important focus since at all stages in the supply chain firms must strive to satisfy their customers’ needs and expectations. As customer’s needs and expectations change the industry must adapt in order to remain competitive.

Each strategic theme is considered in relation to answering a number of questions:

- **Current Situation: Where the Industry is now?** The current situation using an evidence base of the current challenges within the theme area.
- **Strategic Response: Where the Industry wants to be?** The strategic response that the MIW sugar industry is aiming to achieve.
- **Strategic Goals, Targets & Strategies: How the Industry is going to get there?** The strategies the Industry needs to pursue to achieve strategic goals including the targets that will indicate progress towards achievement.
- **What needs to change?** The required actions\(^1\) that need to be taken to implement the strategies.

Case studies are also presented that reinforces that the industry has done this (or something similar) before.

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\(^1\) More detailed action planning will take place as part of the CRSG’s 5 year business plan.
Theme 1: Growth

This strategic theme concerns the future growth of the industry especially around sugarcane production. There are two components to growth; increasing the area under sugarcane production and increase the productivity (tonnes of sugarcane per hectare) of the current areas of sugarcane production.

Current Situation

In 2013, almost 8 million tonnes of sugarcane and 1.2 million tonnes of sugar was produced in the Mackay Isaac Whitsunday region (Table 5.1). Over the last 15 years the area of sugarcane harvested has been in trend decline reducing on average 1,756ha per annum and reducing from a peak of 126,728ha in 2000 to 89,669ha in 2010 before recovering to 107,461ha in 2013 (Figure 6.1). The large drop in 2010 was accounted for by significant amounts of sugarcane unharvested (20,300 hectares) due to adverse weather conditions.

Sugar produced, measured as tonnes of IPS has similarly been in trend decline reducing on average by 10,142 tonnes per annum (Figure 6.3). Sugar production is volatile due to climatic conditions during the growing and harvesting season. Production at the mill also relies on efficient recovery of sugar. In the last 15 years sugar production was highest at 1.424Mt in 1999 and lowest at 0.875Mt in 2010, coinciding with the fall in area harvested. 2011 was also a poor production year due to adverse weather and the relatively poor quality of the standover sugarcane.

Yield is measured either through tonnes of sugarcane per hectare harvested (Figure 6.2) or tonnes of IPS sugar produced per hectare harvested (Figure 6.4). These measures are volatile depending on climatic conditions during the growing season.

In the first seven years of the 2000s sugarcane yield was recovering from a low of 56.6tc/ha in 2000 (orange rust affected crop), but never reached the average of the
1990s of 95t/ha, produced with the variety Q124 that was ideally suited to conditions in the region. Since 2007 there has been a general declining trend with a low of 63.3tc/ha in 2011 followed by recovery in 2012 to 79.6tc/ha. The boost was as a result of growers having confidence to invest in fertiliser and irrigation due to higher sugar prices, favourable seasonal conditions and generally improved confidence in the industry.

During the period 2003 to 2007 sugar yield was increasing, hitting an all-time high of 11.95t/ha in 2007 followed by four years of decline to 8.45t/ha in 2011. Since then it has recovered to 11.72t/ha in 2012 and 10.97t/ha in 2013.

**Strategic Response**

Reversing the declining production and meeting the goal of doubling sugarcane production in the region requires a two-pronged growth strategy that increases the area growing sugarcane and improves yields. Doubling production requires significant future investment, based on investor confidence and attracting new investment in the MIW sugar industry.

New technology, greater economies of scale and vertical integration will also be important enablers of growth. Lowering the industry’s cost of production and improving investment returns attract further investment.

**Increasing the area of sugarcane production**

Additional areas of sugarcane production may be gained either through return of previous sugarcane land, which may have been used for other purposes, or by growing sugarcane on new land not previously used for sugarcane production. It is important to also protect existing sugarcane land from going out of production, which would simply offset any new gains.

Increasing the area of sugarcane production will increase the viability of existing mills and will stimulate further investment in farming, transport and milling.

The target of an additional 110,000ha of land under sugarcane in the MIW region would deliver an additional 10.4 million tonnes of sugarcane, a doubling of production. The Queensland Government’s agricultural land audit (Queensland Government, 2013) indicates that adequate suitable land is available in the region for such an expansion. It would also require additional mills and infrastructure for irrigation, transport and storage. Access to affordable water would also be required.

To demonstrate the possibilities reference is given to a recent study in North Queensland (GHD, 2014) which examined the feasibility of a greenfield integrated irrigated agriculture and base load power station. The feasibility was undertaken based on two scenarios:

- 4 million tonnes per annum capacity sugar process plant, requiring around 50,000 hectares of contiguous land.
- 10 million tonnes per annum and approximately 125,000 hectares of land.

The study found that

> The irrigated agriculture project at 10 million tonnes per annum capacity can deliver sufficient returns to investors under a range of scenarios, except where sugar and ethanol prices are low and the project bears the entire $4.9b capital cost of which half related to the cost of water infrastructure. Economies of scale achieved by a 10 million tonnes per annum plant are critical to feasibility. The Agricultural Project at 4 million tonnes per annum does not deliver sufficient returns to investors except where high-prices for output commodities materialise and where the project does not make any contribution to the capital cost of water infrastructure.

This outcome indicates the need for economy of scale and that if the costs of water infrastructure are borne entirely by industry, this type of expansion is not currently financially feasible.
Increasing yields

Since in raw sugar terms the industry has negligible ability to affect the world sugar price, increasing sugar yield improves the financial sustainability of farms and mills since more raw sugar can be produced with the same amount of inputs.

Key to significant yield improvements (in the order of 20tc/ha) is the use of genetically modified (GM Cane). Box 1.1 explains important aspects of GM sugarcane. The Mackay Isaac Whitsunday sugar industry is a responsible industry and acknowledges the potential concerns of consumers and the broader community regarding the use of GM technology. As such, GM cane will only be introduced into the region when there is a sufficient level of community comfort and consumer confidence with its use.

Box: 1.1 Genetically Modified Sugarcane

| Genetically modified (GM) traits are usually used to overcome lack of or limited genetic variability for certain agronomic characters such as pest or disease resistance or herbicide tolerance. Inclusion of GM traits has had significant uptake in other crops worldwide (e.g. corn, cotton, soya bean, canola, beet sugar) however, world markets are divided on acceptance of GM products. |  |

GM traits are inserted directly to elite varieties and transferred into the breeding population via conventional breeding and selection. Future varieties will have "gene stacking" i.e. multiple traits in the one variety and multiple genes with different actions for one trait such as pest resistance in one variety.

Most intellectual property (IP) on trait constructs are owned by large corporations (Monsanto, Syngenta, DuPont). Owners of GM IP usually have protocols regulating use of GM traits to protect against cross contamination, e.g. build-up of resistance, transmission to native hosts and environmental harm.

Australia and other first world economies have extensive and evolving regulatory regimes for control/management of GM foodstuffs and other products. At this stage the Australian Government Office of the Gene Technology Regulator (OGTR) requires that each GM variety of sugarcane must pass a regulatory regime to deregulate the variety and particular trait.

BSES (now Sugar Research Australia) has invested over the last few decades in genetic transformation techniques/technology in sugarcane that has received world recognition within the sugar industry. BSES took the opportunity to partner with DuPont to accelerate technology in GM cane to assist penetration of the Brazilian market. The spin-off benefit to Australia was to gain access to GM traits which otherwise were not available or their availability would be significantly delayed, hence loss of any competitive advantage in productivity gains or cost efficiencies.

Once on the GM treadmill it becomes a continuous process, repeated insertion of old and new traits into newly available varieties, evaluation of new varieties, compliance with regulatory requirements, partnership negotiations with owners of GM IP of interest and ongoing funding of these processes.

Source: John Pollock, Sugar Research Australia Director and former Director of BSES

Improving investor confidence

The growing global demand for food provides opportunities for increasing sugar production, provided competitive advantages are maintained. An efficient supply chain, access to technology, innovation and providing a quality product are all important in maintaining competitiveness in the global sugar market. Free trade with international customers and long term supply contracts with food and beverage manufacturers are also important for a viable, vibrant industry. Optimising on the opportunities and continuing positive returns on investment will improve investor confidence in the industry.
Strategic Goals, Targets & Strategies

<table>
<thead>
<tr>
<th>Strategic Goal</th>
<th>Target</th>
<th>Strategy</th>
</tr>
</thead>
</table>
| 1.1 Increase area of sugar cane production | +120,000ha | 1.1.1 Restore previous sugar cane growing land  
1.1.2 Secure and develop new sugar cane growing land  
1.1.3 Prevent loss of sugar cane growing land |
| 1.2 Restore/increase sugar cane yield | +20tc/ha | 1.2.1 Improve soil health with fewer inputs  
1.2.2 Plant genetically modified sugar cane varieties  
1.2.3 Improve irrigation & chemical use  
1.2.4 Reduce harvesting losses |
| 1.3 Improve investor confidence | Increase % of growers utilising forward selling  
Increase % of sugar sold under a certification scheme | 1.3.2 Sell majority of raw sugar under an accreditation scheme  
1.3.2 Continue improving market access to sugar importing countries  
1.3.3 Sell direct to food and beverage manufacturers |

Case Study

**Mackay Sugar Cane Development**

Mackay Sugar has, since 2011, offered various grower support schemes to growers, aimed at encouraging and incentivising growers to bring land back into cane production or to increase production from low yielding cane land. The objective is to:

- Plant 5,000 ha of new cane land in 5 years; and
- Increase yields back to the area long term average of 85 tonnes cane per hectare.

The assistance schemes that have been offered include:

- Plant loans that provide an interest free loan of $2,500/ha, repayable over three seasons from cane proceeds;
- Forward pricing scheme that provides a fixed, four year sugar price; and
- Facilitation of leases amongst growers

These schemes have been available for the planting of new cane land (defined as land that has been out of cane for at least two years) and for land that has been yielding at least 20% below the area average and that is under new management.

Approximately 1,500 ha of new land has been developed with the aid of these support schemes over the past three seasons.

In order to increase productivity from the existing cane supply area Mackay Sugar supports the Mackay Agricultural Productivity Services (MAPS) research and extension services. Mackay Sugar, together with MAPS, has identified a number of specific research initiatives that are aimed at enhancing productivity. In 2014 Mackay Sugar initiated a harvesting productivity review with MAPS and Canegrowers.

Mackay Sugar has also partnered with a land investment fund to purchase land in the Mackay region that can be developed to cane. This partnership purchased a 740 ha cane farm in 2013. In 2014 a sale contract was entered into over a cattle property situated in the Blue Mountains area (inland of Mackay) that will allow for the development of 1,000 ha of cane land over the following two seasons.
Theme 2: Diversification

This theme concerns further diversifying the products derived from sugarcane.

Current Situation

The MIW sugar industry currently produces raw sugar, refined sugar, molasses, ethanol, electricity, mill mud, and Biodunder. In 2013 raw sugar contributed 70-80% to earnings, and other products contributed 20-30% to earnings.

Raw sugar for export makes up the majority of production and is exposed to global sugar prices and exchange rates, resulting in potentially high year to year variability in prices fluctuations (Figure 6.5). While this price risk can be partially managed through forward pricing, diversification is important for the financial sustainability of the industry. The MIW region already has a range of diversification products and has invested in innovation to further explore and develop other options and products from sugarcane.

Figure 6.5: World Sugar Price (USc/lb) and Exchange Rate (US$/A$)

![Figure 6.5: World Sugar Price (USc/lb) and Exchange Rate (US$/A$)](source: www.tradingeconomics.com/commodity/sugar)

Strategic Response

Diversification of products that can be derived from sugarcane is critical for the long term survival of the sugar industry. In the future, the MIW regional goal is to have 50% of the industry’s revenue from non-sugar products.

Developing alternative revenue streams

Whilst it is recognised that raw sugar will always be the major product produced from sugarcane, there is a need to expand the product range that can be produced from sugarcane to:

1. Reduce exposure to world sugar price and exchange rates.
2. Add value to previous waste or by-products of the sugarcane to raw sugar production process.

The most immediate and commercial opportunities are co-generation of steam and electricity. Further investment in co-generation requires the Australian Government and Opposition to continue their ongoing bi-partisan support for the Renewables Energy Target (RET).

Diversification is a critical feature of international sugar industries. Global competitors are increasingly managing their exposure to sugar price risks through a range of diversified products, typically capturing full value from the sugarcane plant. The Australian sugar
industry is one of the most competitive sugar industries in the world, despite competing against industries that are heavily subsidised by their governments. However, as the international focus on enhancing renewable electricity and biofuels security increases, international competitors are leveraging expansion of their industry through generous renewable energy and biofuel subsidies, aiding economic viability.

Cogeneration

Cogeneration is the first and critical step for diversification in the sugar industry. While sugar mills in the MIW region have been generating electricity for over 100 years, the scope and efficiency around this generation has changed significantly over the period. As ‘embedded’ generators, the sugar mills in this region currently generate over 180 GWh per year, contributing 53% of Queensland’s registered bagasse fuelled renewable energy². Mackay Sugar’s Racecourse Mill generates for 50 weeks of the year, providing the equivalent of one third of Mackay’s power demand. The remaining mills typically only generate electricity during the crushing season, although Plane Creek Mill provides steam for the co-located ethanol distillery in Sarina for most of the year. The potential to expand cogeneration capacity at these existing mills, generating additional electricity for the region out of the crushing season is significant. Based on the current crop of 7.2 million tonnes, and with further investment, cogeneration capacity at the existing mills could expand to around 280MW, generating over 1,400GWh per year.

Doubling production would create the need for two new sugar mills, providing an additional 140MW of potential electricity generation capacity, or total 700GWh of electricity per year. Since the introduction of the Renewable Energy Target (RET), Australian sugar mills have invested over $600 million in improving the capacity and efficiency of several mills and $120 million of this has been spent at the Racecourse mill over the last 3 years.

To realise the type of investment required to double production in the region, policies that support cogeneration, biofuels and agricultural development need to be delivered with bipartisan support, and allowed to run for the life of the policy. The scope, scale and sequencing of a mill’s investment in cogeneration is predicated by its future expansion plans in other areas of diversification. These plans are in turn affected by the regional development, and potential markets.

Biorefinery products

Biorefineries enable the maximisation of value from an agricultural crop, by converting biomass into a range of value added products, including chemicals, plastics and fuels. As countries seek to enhance their regional energy security, and therefore reduce their reliance on oil, international interest and investment in biorefinery technology and innovation is escalating. Approximately 144,000 different chemicals are manufactured around the world today, generating approximately US$4.1 trillion annually, and are anticipated to continue growing at 3% per year until 2050 (Deloitte Access Economics, 2014). To date the bulk of chemicals production has been from mineral oil, with biobased and renewable chemicals making up less than 0.1% of the total value of the market. However, chemicals derived from renewable feedstocks are clearly the next stage in advanced manufacturing, with significant evidence in both developed and transitioning economies that the broader international market is shifting towards biologically sourced replacements for chemicals, and the derivative plastics and fuels.

For example, The United States Government has invested extensively in the development of key chemicals from sugars in biomass to replace petroleum products, including access to tax credits, support for accessing feedstock, and financial assistance for biorefineries established in rural communities. There is a market expectation that North America will lead the world in industrial biotechnology by 2017 as a result of this investment; and is projected to generate approximately 700,000 jobs and US$88.5 billion in economic activity, focused in regional areas. (Deloitte Access Economics, 2014).

The European Union has invested US$5 billion in a Biobased and Renewable Industries for Development and Growth initiative, to run from 2014-2020, while numerous member

countries provide a range of direct tax incentives and policy platforms for transitioning of biochemical research companies into pilot ventures, and commercialisation platforms.

In Brazil, direct national government investment in renewable energy security has resulted in a well-established and highly competitive ethanol industry; creating a platform for further investment and growth around biorefineries and derivate biochemical industry. Government intervention has included a range of direct funding mechanisms and policy, such as: farmers to establish ethanol factories; closing the gap between research and commercial development (i.e. fast tracking commercialisation); and ambitious renewable energy targets that underpin market demand and domestic consumption (Deloitte Access Economics, 2014). Further, the national bank has reserved significant capital for investment in biobased chemical projects (including biofuels), which has stimulated extraordinary interest and investment by a range of international chemical companies and venture capitalists.

In terms of logistics, the Australian sugar industry is well placed to service this growth market. Products of a sugar mill, and by-products of the sugar milling process, are all potential feedstocks for a biorefinery (O’Hara et al., 2013), as demonstrated below.

**Figure 6.6: Potential Products from Sugarcane**

The MIW region has already commenced a step down the pathway to biorefinery products with the Sarina ethanol distillery. Producing up to 60ML of ethanol a year, this distillery services industrial, food and fuel industries, and has scope to expand to 90 ML of annual production. In addition, the region is strategically positioned to further research around biorefinery development, with the Queensland University of Technology’s co-located Renewable Biocommodities Pilot Plant at Racecourse Mill, Mackay, enabling the demonstration of a range of fuels and other products from bagasse.

**Box: 2.1 Investigating Succinic Acid Production**

In a report commissioned by the Queensland University of Technology in 2014, Deloitte Access Economics modelled the economic impact of developing a biorefinery industry in Queensland, including basing a biorefinery in the Whitsundays to produce succinic acid. Bio-based succinic acid is a starting material for numerous industrial applications, including biodegradable polymers, fuel additives, novel plasticisers, solvents, spandex fibres, thermoplastic polyurathanes and a range of speciality chemicals. However, this acid can also be used as a starting material for key platform chemicals, with a potential market size of up to 27 million tonnes per year.

If commenced in 2014-2015, this project would cost AUS$391 million, involve three years of capital expenditure, and require 600,000 tonnes of feedstock a year (bagasse). Approximately 110,000 tonnes of succinic acid would be expected to be produced annually, worth over AUS$260 million in today’s terms.

The challenge, however, remains the realisation of this potential. Attractive investment environments have clearly stimulated the biorefinery industry growth in developed and transitional economies. While it is incumbent on industry and the research sector to create the “push” for sugar industry participation in advanced manufacturing,
government intervention is critical to create the “pull” that ensures future industries are realised. As highlighted by the Deloitte Access Economics report (see Box 2.1 above), “government policy settings that are conducive to investment and ‘open for business’” are essential. Ensuring access to fundamental inputs, such as water and electricity, are affordable are critical to ensuring the feedstock for a range of potential derivate industries.

Most importantly, at a time when governments are committed to the development of agriculture in regional Australia, capturing the full potential of that investment relies on looking beyond the primary products that we enjoy today, and seeking an innovative future.

### Strategic Goals, Targets & Strategies

<table>
<thead>
<tr>
<th>Strategic Goal</th>
<th>Target</th>
<th>Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1 Develop alternative revenue streams to raw sugar</td>
<td>50% of revenue from non-sugar products</td>
<td>2.1.1 Advocate to retain RET and increase cogeneration from bagasse</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.1.2 Advocate for biofuel mandate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.1.3 Attract other industries that benefit from renewable steam/electricity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.1.4 Commercialise 1-3 other biochemical products</td>
</tr>
</tbody>
</table>

### Case Studies

#### Boosting bagasse across the business

Mackay Sugar’s $120 million 38-megawatt Racecourse Cogeneration Plant started construction in early 2010, with the commissioning phase and export of renewable energy to the national electricity grid starting respectively in September and November 2012.

Following on from its investment in significant cogeneration expansion at Racecourse Mill, the company had been seeking opportunities across the whole business to increase efficiency and lower its carbon footprint.

Mackay Sugar has invested in energy efficiency improvements across all three of its Central Queensland mills, including the upgrade of a boiler at Marian Mill, and the construction of bagasse-handling facilities at its Farleigh and Racecourse mills. Collectively, once fully implemented, these energy efficiency measures will reduce energy consumption by 14.9% per tonne of sugar, and reduce emissions intensity by 71% lowering its carbon footprint.

#### The Biodunder ® cycle

Molasses is fermented at Wilmar Australia Sugar’s distillery at Sarina, to produce ethanol for markets in fuel, food and industry. This fermentation process produces another valued stream – Biodunder ®. It is rich in potassium a host of other elements and is 10% organic carbon. Farmers value Biodunder® as more than just a complete fertiliser.

Biodunder® storage and distribution is resource intensive. Many millions of dollars have been spent in securing storage in large ponds with specialized covers, protecting the product from rainfall dilution. Using sophisticated technology, an almost limitless range of nitrogen, potassium, phosphorous and sulphur blends are produced.

A fleet of contractor applicators is available for applying Biodunder® to sugarcane fields. Employing cutting edge equipment, capable of variable application, and the production of detailed nutrient application maps, this application fleet enables growers to maximise productivity, responsibly.
Theme 3: Innovation

This strategic theme concerns the need for ongoing innovation in the industry to control costs and improve other outcomes.

Current Situation

Innovation occurs at all levels in the supply chain in response to a range of challenges, not least of which is the continual quest to improve productivity throughout the supply chain resulting in better financial and environmental sustainability.

Currently the formal research structure of the industry is Sugar Research Australia (SRA) formed in 2013 from BSES Limited, Sugar Research and Development Corporation (SRDC) and Sugar Research Institute. SRA is funded through a statutory levy of 70c per tonne of cane paid 50/50 by growers and millers. SRA has the following key focus areas:

1. Optimally-adapted varieties, plant breeding and release.
2. Soil health and nutrient management.
3. Pest, disease and weed management.
4. Farming systems and production management.
5. Milling efficiency and technology.
6. Product diversification and value addition.
7. Knowledge and technology transfer and adoption.
8. Capability development, attraction and retention.

Innovation is important to maintain and strengthen efficiency at all stages in the supply chain and improving return on investment for the industry.

Strategic Response

Innovation is about new ideas to do something better, new ideas applied to existing challenges or out-of-the-blue ideas for new products. Innovation requires inspiration and research. Innovation can occur anywhere at any time but from an industry point of view a structured research program designed to tackle known challenges is one way to innovate.

Ensuring R&D focuses on productivity improvement & commercial product development

There are two main avenues for innovation:

- **Productivity innovation**: Improving productivity along the supply chain.
- **Product innovation**: Improving existing products or developing new products that have commercialisation potential.

Adoption is critical to maximising the potential benefits from innovation to improve productivity. Promising new products require a market and commercial viability of products needs to be demonstrated before significant investment. Many innovations do not progress to adoption without substantial effort and financial or regulatory incentives may be required.
Strategic Goals, Targets & Strategies

<table>
<thead>
<tr>
<th>Strategic Goal</th>
<th>Target</th>
<th>Strategy</th>
</tr>
</thead>
</table>
| **3.1 Deliver productivity improvements** | Significantly improve productivity every 5 years | 3.1.1 Research most promising productivity improvements  
| | | 3.1.2 Ensure widespread adoption to productivity improvements |
| **3.2 Deliver new commercially viable products** | 1 new product every 10 years | 3.2.1 Research most promising new products  
| | | 3.2.2 Demonstrate commercial viability of new products |

Case Study

**Mackay Renewable Biocommodities Pilot Plant**

The QUT Mackay Renewable Biocommodities Pilot Plant ("Mackay Pilot Plant") is a unique pilot scale research and development infrastructure for the conversion of cellulosic biomass into renewable transport fuels (bioethanol) and high value biocommodities in an integrated biorefinery. The facility aims to link innovations in product and process development with the assessment of commercial viability to enhance the uptake of this technology in Australia.

The Mackay Pilot Plant has been funded by the Australian Government through National Collaborative Research Infrastructure Strategy (NCRIS) Capability 5.5 – Biotechnology Products, the Queensland Government and QUT. The facility is being hosted by Mackay Sugar Limited, on the site of the Racecourse Mill in Mackay. In addition to sugarcane bagasse and trash which is readily available from the sugar mill, the facility is also capable of processing a wide range of biomass feedstocks with many of these feedstocks able to be sourced from partners throughout Australia.

The Mackay Pilot Plant was completed in 2009. Prospective users of the facility can access both the NCRIS facility in Mackay and the considerable biomass harvesting, transportation, storage, processing and analytical expertise available through QUT. Two full-time employees are based at the Mackay Pilot Plant to assist users with the set–up and operation of the facility and analysis of samples generated.
Theme 4: Capability & Resilience

This theme concerns industry capability in terms of workforce and ability to recover from abnormal events.

Current Situation

Sugarcane Growing

Farming has traditionally been a family affair with farms being passed down to sons and daughters. However, with many other competing employment opportunities this is not occurring to the extent of the past, with some adverse outcomes, including high average ages of farmers, farms being divided or farms going out of sugarcane production. There is also significant income variation risk associated with an industry exposed to climatic variation, world sugar prices and exchange rates. Rising input costs, particularly of electricity, fertiliser and water are also resulting in lower industry profitability, making it less attractive to industry entrants. Prospective young farmers are assessing the economic potential of farms before committing to the industry. They are also accessing a greater level of technology and basing decisions less on traditional issues such as lifestyle or coming from a farming family.

Manufacturing

In 2013, mills in the MIW region employed, 80 apprentices & trainees at various stages of their training. Into the future there may be changes in the number of traditional trades, compared with traineeships that have a greater focus on professional skills base like engineering and the science fields.

Like many traditional industries, there has been a slow turn in gender balance, this combined with the science and technology growth would be expected to entice a greater number of women to non-traditional roles.

It is estimated that training costs within the industry in the MIW region (including trainee and apprentice wages) is expected to remain constant and would only change in either direction if there was a major downturn in production or a major advancement in technology. Even so, most processes within the sugar industry have moved away from labour intensive practices. The milling process itself is a very lean manufacturing process. However, maintenance remains a labour intensive practice with many opportunities to improve, and many ‘traditional’ tradespeople.

Disaster management and mitigation

The longevity of the MIW sugar industry demonstrates resilience to natural and man-made shocks. For example production in the region was very much below average in 2000 and 2010, related to disease and weather conditions. In 2000, well above average rainfall in the region during the crucial growing period, combined with orange rust resulted in low sugarcane yield (56.6 tonnes of cane per hectare, see Figure 6.2 and the discussion under Theme 1). In the following years, the high yielding variety, Q124, was gradually replaced with varieties resilient to orange rust. The sugar industry’s commitment to research and development meant that alternative varieties were available to replace Q124.

In 2010 and 2011, extremely wet conditions, flooding and cyclones resulted in lower yields and a significant amount of sugarcane left in the field in 2010 to be harvested in 2011. The ability to respond and bounce back from such significant events demonstrates the industry’s resilience and capacity to continually look forward. This is built on productivity and efficiency throughout the supply chain and a skilled and committed workforce.
Strategic Response

Delivering capability and resilience require a skilled and knowledgeable workforce that are versatile and flexible and are prepared to respond to a multitude of adverse situations.

A skilled & knowledgeable workforce

Industry capability is based on the skills and knowledge of the workforce in all sectors and across all ages. The industry needs to ensure that skills and knowledge are retained and improved over time including cross fertilisation with other similar industries.

There is a need to consider the training and more specialised skills that may be lost to the industry – that gap between the past and the future, still has some exposure to the industry as our community drive toward education in the university sector catches up with the need still within the industry. Traditional trades will still be fundamental to the industry in that transition from the present to the future. There is however a slowing to this effect with most employees now working into later years. The focus will be on ensuring the health and wellbeing of employees is maintained to allow them to be active and productive longer.

As there becomes a greater focus on the technological developments there will be a greater need for a diverse skill set, this would be supported by a more seamless and streamlined industrial relations framework, allowing for flexibility and productivity performance based outcomes. This model would ideally suit the next workforce generation, who are more mobile and less likely to be motivated to stay within an industry that did not offer them greater flexibility, greater advancement and learning opportunities and greater work/social connections.

The sugar industry has done, and continues to do much of the ‘heavy-lifting’ in regard to training in traditional trades, with the mining and construction industries historically contributing less effectively to the labour market. The sugar industry has typically lost some tradespeople it trained to these industries. However, many are returning in recent years.

Training in specialist skills such as steam systems is diminishing. However the need for these skills remains a constant for the sugar milling industry, and the availability of this training is becoming a concern for the industry. Accordingly, the solution lies within the industry, but in consultation with other, similar industries (such as other electricity generators) and workplace health and safety regulators.

Improving industry resilience

Resilience is the ability to overcome significant challenges that may occur on a regular basis. These include: pests & disease, natural disasters (drought, cyclones and floods), demand and supply shocks (low prices). Resilient support industries, such as foundries and transport providers, are also important. Being prepared for a variety of significant challenges is the basis of industry resilience and demonstrates robustness to internal and external stakeholders resulting in an industry that returns to full production quickly and an increased investor confidence.
Strategic Goals, Targets & Strategies

<table>
<thead>
<tr>
<th>Strategic Goal</th>
<th>Target</th>
<th>Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1 Engage a skilled and knowledgeable workforce</td>
<td>zero skill shortages</td>
<td>4.1.1 Develop and maintain a MIW Sugar Industry Workforce Development Plan</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.1.2 Develop career pathways in partnership with education providers</td>
</tr>
<tr>
<td>4.2 Enhanced capacity to respond to adverse events</td>
<td>Return to normal production within 2 seasons</td>
<td>4.2.1 Develop disaster management plan</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.2.2 Industry viability / profitability enables rapid disaster recovery</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.3.3 Manage risks of disasters on support industries</td>
</tr>
</tbody>
</table>

Case Studies

**Proserpine HR initiatives that make a difference**

- Multi-skilling project – Upskilling general mill workers with Common User Competency (CUC) skills, so workers are multi-skilled and able to be better utilised within the factory for minor maintenance and repairs.
- Passport to Safety – Proserpine site has been strongly involved with the local high school projects to assist with learnings such as:
  - Mock Interviews – giving students real life skills to take with them when they enter the workforce
  - Safety – Conducting training at the school, followed up with tour of areas within the factory to apply knowledge learnt in a practical application.
- WELL – Implementing a project on site to identify key areas of improvement, followed up by training and coaching to improve communications within our workforce. Better communication will ensure all areas know requirements, avoid misunderstandings and can ensure messages are correctly relayed.

**Plane Creek’s Take 5 improves safety**

A significant initiative implemented at Plane Creek Mill in 2013 was the Take 5 initiative. Site management was concerned with the number of near misses and first aid incidents being reported. Something needed to be done to ensure that people were focussed on their jobs and taking the necessary time to think about their job, their actions and the potential risks prior to starting an activity, even if it was a routine job.

The Take 5 initiative sought to ensure that everyone on site from site management to a general mill worker completed at least 2 Take 5’s per week. At the beginning of the following week 2 of the Take 5’s would be drawn out of a box and the owners would receive a gift voucher (only if it was filled in correctly).

This enabled supervisors to look at the Take 5’s being completed and provide feedback as necessary and also ensured that employees had an extrinsic reward (apart from their personal safety) to strive for.
Theme 5: Community & Environment

This theme concerns the interaction of the industry with the community and the environment.

Current Situation

Community

The community in the MIW region has a long history with the sugar industry. Whilst many other industries have arisen over the years the sugar industry remains a significant employer and generator of income and training as well as the most visual in the landscape with sugarcane blocks, railways and mills.

Community standards in regards to wage growth, workplace health and safety, health and nutrition and environmental sustainability have and will continue to exert pressure on all industries. Examples include:

- Wage growth expectations in line with inflation and interest rates.
- Harmonisation of workplace health and safety standards across Australia.
- Perceptions that certain foodstuffs, e.g. sugar, have a negative impact on nutrition and health.
- Chemical runoff from farms is damaging the Great Barrier Reef.

Now and in the future, businesses and industries will need to display greater standards of corporate and social responsibility reflecting responses to community standards.

Environment

In 2013 Canegrowers launched the Smartcane Best Management Practice (BMP) program. The industry’s published BMP techniques (and current technology) are a guideline for growing sugarcane in Australia. BMPs are continually changing as research discovers better ways, and growers continually evolve their farming practices to keep pace. Recognising sugarcane farmers have different soils, weather, and geography, BMPs are intended to be used as a guide, together with local advice, to build and improve growers’ own farm management systems. There are already a number of programs developed over the past 30 years and the Sugarcane BMP project will consolidate and build on this and emerging work. It will also build on the successful Reef Rescue program, and integrate with any future Reef Rescue-type initiatives.

On the manufacturing side, sugar mills in the MIW region have responded to concerns about perceived high rates of mill mud applications and the impacts of excess nutrient levels entering the reef. The mill companies have developed an ever-increasingly sophisticated system for distribution and monitoring, including changes to truck design, GPS tracking, and a system for distributing further afield from the mill.

The cogeneration of electricity and production of ethanol both displace the use of fossil fuels, reducing the region’s greenhouse gas emissions. With the right policy tools in place, this ability to provide clean energy can be further enhanced. MSL’s enhanced management and storage of bagasse and the efficiency of the mill enable the mill to effectively produce base-load electricity for 50 weeks of the year. Wilmar’s ethanol distillery at Sarina uses molasses to produce ethanol of various grades for different uses, including biofuel and base chemicals for a range of cleaning and pharmaceutical uses.

Strategic Response

Speaking with one voice & meeting the communities environmental expectations

Community standards and opinion are often based on a wide variety of perceptions. Continuous improvements in community and government relations and environmental performance communicated in a consistent and regular fashion are an important strategy to balance views in the community and government.
Demonstrating that the industry is a good corporate citizen at all levels in the supply chain will improve relations with the community and customers and reduce adverse interaction with regulators.

To deliver this strategic response requires the MIW sugar industry to speak with one consistent voice as well as execute proactive and structured campaigns in regard to community relations, information, education and government advocacy as well as responding to ad hoc issues as required. Liaison and cooperation with other peak sugar industry bodies will be vital.

### Strategic Goals, Targets & Strategies

<table>
<thead>
<tr>
<th>Strategic Goal</th>
<th>Target</th>
<th>Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>5.1 Present a single community interface</strong></td>
<td>High community satisfaction with sugar industry</td>
<td>5.1.1 Deliver an regional PR strategy</td>
</tr>
<tr>
<td><strong>5.2 Effectively manage our natural resources and adopt sustainable solutions</strong></td>
<td>Greater sugar production with less cost to the environment Carbon neutral industry</td>
<td>5.2.1 Regularly measure and report greenhouse gas emissions. Further improve efficiencies and reduce greenhouse gas emissions 5.2.2 Encourage growers to engage in government programs to improve water quality 5.2.3 Commitment to continuous improvement in sugar production, e.g. Best Management Practice, Bonsucro</td>
</tr>
<tr>
<td><strong>5.3 Promote positive health message about sugar</strong></td>
<td>Positive public attitude towards the role of sugar as a natural part of diet</td>
<td>5.3.1 Continue to engage in the national sugar nutrient strategy</td>
</tr>
</tbody>
</table>

### Case Studies

**Mackay Sugar’s ‘season of giving’**

Since 2011, Mackay Sugar has provided an annual donation to local charities to assist them with the costs of the various community services they each provide over the Christmas/New Year period. Donations of $1,500 are provided to Mackay’s St Vincent De Paul Society, The Salvation Army, Anglicare, Red Cross and Lifeline and, since Mackay Sugar’s acquisition of Mossman Mill in early 2012, a donation of $2,000 is also provided to the Mossman Community Centre.

**Mackay Sugar provides $50,000 to Mackay Hospital Foundation**

In early 2012, Mackay Sugar entered into a long term partnership with Mackay Hospital Foundation, which sees $10,000 provided to the Foundation annually over a period of five years. The partnership, provides significant support to the Mackay Hospital Foundation’s mission to enhance local health services and initiatives in the Mackay community. Already, Mackay Sugar’s funding has assisted with the provision of a ‘Cancer Awareness Day’ community event, a sunscreen trolley at Mackay Harbour Beach, theatre equipment for prostate surgery and a new ultrasound machine for the Hospital’s Renal Unit.

**Canegrowers partner with the Australian Government to improve water quality**

The Australian Government Reef Programme is an ongoing and key component of the Australian Government’s natural resource management programmes.

The Reef Programme represents a coordinated approach to environmental management in Australia and is the single largest commitment ever made to address the threats of declining water quality and climate change to the Great Barrier Reef World Heritage Area.

In the first phase of the Caring for our Country Reef Rescue program, the Australian Government committed $200 million over five years (2008-09 to 2012-13) to improve the quality of water entering the Great Barrier Reef lagoon.

Over the course of the program more than 3,200 individual land managers received water quality grants for on-farm projects.

The Australian Government has committed to continue efforts to protect the Great Barrier Reef through existing contracted Reef Programme projects from 2013-2018. These projects are designed to improve the quality of water flowing into the Great Barrier Reef lagoon and will enhance the reef’s resilience to the threats posed by climate change and nutrient, pesticide and sediment runoff through a number of complimentary approaches.
**Theme 6: Economics & Infrastructure**

This theme concerns the economics of the industry and its associated supporting owned and shared infrastructure required for growth and diversification.

**Current Situation**

In 2012-13 the MIW Region’s sugar industry was estimated to support a total of $822.5 million in gross value-added activity in the region (including direct and flow-on activities) whilst also supporting a total of 8,091 jobs. This level of activity is equivalent to 4.4% of the region’s Gross Regional Product (GRP) in 2012-13 and 8.1% of total employment in 2013.

Other than the published financial results from Mackay Sugar Limited there is little information available on the return on equity (ROE) of other sectors and participants in the MIW sugar industry. Mackay Sugar Limited has delivered an average ROE of 4.2% over the last 5 years. This has varied from -5.6% to 17.1%.

Table 6.1: Mackay Sugar Limited Financial Performance Indicators ($000s), year ending 31 May

<table>
<thead>
<tr>
<th>Financial Indicator</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Profit After Tax</td>
<td>$6,251</td>
<td>$44,279</td>
<td>$502</td>
<td>-$12,520</td>
<td>$16,311</td>
<td>$5,164</td>
</tr>
<tr>
<td>Total Assets</td>
<td>$360,508</td>
<td>$402,592</td>
<td>$414,299</td>
<td>$434,767</td>
<td>$562,683</td>
<td>$554,175</td>
</tr>
<tr>
<td>Total Liabilities</td>
<td>$179,165</td>
<td>$143,642</td>
<td>$183,379</td>
<td>$210,954</td>
<td>$283,702</td>
<td>$280,594</td>
</tr>
<tr>
<td>Net Assets / Total Equity</td>
<td>$181,343</td>
<td>$258,950</td>
<td>$230,920</td>
<td>$223,813</td>
<td>$278,981</td>
<td>$273,581</td>
</tr>
<tr>
<td>Return on Equity</td>
<td>3.4%</td>
<td>17.1%</td>
<td>0.2%</td>
<td>-5.6%</td>
<td>5.8%</td>
<td>1.9%</td>
</tr>
</tbody>
</table>

Source: Mackay Sugar Limited (2013, 2014)

Industry owned fixed infrastructure consists of cane railways and sidings, five mills (with cogeneration capacity), a sugar refinery, an ethanol distillery, a biocommodities research plant and sugar, molasses, biodunder, ethanol and bagasse storage including at Mackay Port. These significant infrastructure investments by the sugar industry have long payback periods.

Aside from industry owned infrastructure, the industry has invested heavily in irrigation infrastructure, including dams and weirs, and port facilities, including:

- Water storage, pump stations and pipelines including Eungella Dam, Kinchant Dam, Peter Faust Dam, Teemburra Dam (all operated by Sunwater).
- Port of Mackay – sugar loading wharf (operated by Ports North).

This investment enables the industry to remain cost-effective in the global sugar market.

**Strategic Response**

Knowing the industry’s economics & attracting investment

Expansion of the sugar industry will mean that it can retain, or grow, its contribution to the regional economy even in the face of economic diversification. Being able to consistently and robustly measure the economic impact and significance of an industry or sector is an important tool in interfacing with stakeholders, especially when faced by regulatory or competitive challenges.

However, to achieve expansion aspirations requires demonstrating to investors that they can generate a return commensurate with the levels of risk involved. The risk and return at each stage in the supply chain need to be measured and improved in order to market the opportunity to investors.

Furthermore, once known, strategies can be developed to reduce risks and increase returns in each sector. This may include the installation of on farm self-sufficiency solutions for inputs such as electricity and water reuse. The rapidly rising costs of electricity and water are currently threatening the productivity of the industry. Irrigation is one of the first inputs sacrificed by farmers facing financial pressure. Water for
irrigation is an essential component of a globally competitive sugarcane production system, and lower production is not only bad for the grower, but has a multiplied impact for the local mill.

**Delivering supporting infrastructure**

The growth strategy outlined in Theme 1 will also require development of water, electricity and transport infrastructure, but this infrastructure can also be used by other industries. The development of shared economic infrastructure to improve efficiency and effectiveness and reduce costs is important for all industries. The sugar industry must liaise with government and other infrastructure users to develop and present united business cases to infrastructure providers.

A container handling facility at Mackay Port would be required for exporting high value biochemical and for directly importing equipment and other inputs.

### Strategic Goals, Targets & Strategies

<table>
<thead>
<tr>
<th>Strategic Goal</th>
<th>Target</th>
<th>Strategy</th>
</tr>
</thead>
</table>
| **6.1 Determine and improve the economics of the sugar industry** | 5-10% ROE | 6.1.1 Measure the economic contribution of the sugar industry annually, including flow on impacts  
6.1.2 Measure ROE for each stage of the supply chain  
6.1.3 Develop programs to improve ROE at each stage of the supply chain  
6.1.4 Develop alternative financing approaches for new entrants involved in expansion/diversification |
| **6.2 Attract investment for growth and diversification infrastructure** | Investments made | 6.2.1 Identify required growth and diversification infrastructure  
6.2.2 Develop alternative financing approaches for growth and diversification infrastructure  
6.2.3 Attract required growth and diversification infrastructure investment |
| **6.3 Secure supporting infrastructure for growth and diversification** | Infrastructure delivered | 6.3.1 Identify required supporting infrastructure  
6.3.2 Develop alternative financing approaches for supporting infrastructure  
6.3.3 Partner with government and other industries to facilitate common infrastructure delivery, including a container handling facility at Mackay Port |
Case Studies

Industry investment in water and electricity

The sugar industry has an extensive history in direct financial contribution to water assets, primarily through levies. In the MIW region, these levies contributed a significant component of the capital costs of the dams, channels and pipes used in Eton, Pioneer River and Proserpine River Water Supply Schemes managed by SunWater. In addition, the Marian and Mirani Weirs were built (funded) by the sugar industry to provide irrigation water for the surrounding sugarcane growing areas and the sugar mills. These resources are increasingly being used for other purposes as well as sugarcane, particularly as urban and industrial needs grow in the Mackay area.

Electricity generation by mills, embedded in regional areas of Queensland, particularly in the booming area of MIW, increases electricity security for users in the region, and defers expensive network upgrades associated with centralised power generation. Sugarcane growers who irrigate in the off-peak periods of the day for electricity use are also benefitting other regional electricity consumers.

The contribution of industry to infrastructure has not been well defined in the past, leading to concerns about the level and type of benefit back to industry. However, the sugar industry understands the long term benefits and supports public private partnerships in the future, and will contribute to developing improved models to recognise each industry’s contribution. In addition, the region may benefit from energy and water solutions that are more independent from other industries and have greater self-determination.

Changing ownership in mills shows confidence in the industry

Significant investment interest in the sugar industry, both national and international, occurred over the period 2010-12. Key movements in the industry included:

- Commencing with a name change from CSR Sugar to Sucrogen in March 2010, the largest raw sugar producer in Australia changed ownership, joining the Singaporean company, Wilmar International Limited, Asia’s leading agribusiness group.
- COFCO Corporation from China took over Tully Sugar Limited in 2011.
- The acquisition of MSF Sugar Limited (4 mills) was completed by Thailand and Asia’s largest producer of sugar and bioenergy Mitr Phol in February 2012.
- Proserpine Cooperative Milling Association was purchased by Sucrogen in December 2011
- Mossman Mill was acquired by Mackay Sugar Ltd in May 2012.

The level of activity demonstrates the confidence national and international investors have in the future of the Australian sugar industry.
7. **Strategy Implementation**

The implementation of the *MIW 30 Year Sugar Industry Strategy* and demonstrated progress towards the strategic goals is important to demonstrate industry commitment and credibility towards achieving the MIW sugar industry’s vision.

The next stage will be for the Central Region Sugar Group to develop an action plan (short, medium and long term) and business case for projects to deliver on the strategies and meet the targets.

### 7.1 Implementation Partners

All those directly involved in the MIW sugar industry are implementation partners in one form or another. There are also those outside the industry whose engagement and support are necessary to ensure strategic goals can be met. These include, but are not limited to:

- **Downstream suppliers:**
  - Equipment manufacturers
  - Chemical suppliers
  - GM patent holders

- **Government:**
  - Queensland and Australian government departments for agriculture, water, transport and planning
  - Local government

- **Research organisations:**
  - SRA
  - CSIRO
  - Universities

- **Educational/training organisations:**
  - Universities
  - TAFEs

- **Upstream customers:**
  - Electricity retailers
  - Biofuel companies
  - Other product companies

### 7.2 Strategy Reporting & Review

Achievements against the *MIW 30 Year Sugar Industry Strategy* should be reported by the CRSG annually.

The *MIW 30 Year Sugar Industry Strategy* should be subject to a minor review and adjustment every 2-3 years and a major review every 5 years to ensure it remains relevant to changing circumstances.
8. Policy & Planning Integration

The MIW 30 Year Sugar Industry Strategy currently aligns with the 30 year strategic horizon of government plans and where possible the strategies fit with the long term goals of government. The following maps strategies in the MIW 30 Year Sugar Industry Strategy against various government policies and strategies.

Note: The CRSG recognises that governments and policies change and that policy and planning integration will need to be reintegrated whenever government policy changes. This chapter only contains a broad mapping of strategies in the MIW 30 Year Sugar Industry Strategy to those of government. More detail is contained in Part C.

8.1 Australian Government

The Australian Government has a number of white papers and policy reviews at different stages which will affect the implementation of the MIW 30 Year Sugar Industry Strategy.

<table>
<thead>
<tr>
<th>Australian Government Policy</th>
<th>MIW 30 Year Sugar Industry Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Agriculture - Agricultural Competitiveness Green Paper</strong></td>
<td>The strategies in MIW 30 Year Sugar Industry Strategy address nearly all these issues in some form.</td>
</tr>
<tr>
<td>Ensuring food security in Australia and globally</td>
<td></td>
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<tr>
<td>Farmer decisions for improving farm gate returns</td>
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<tr>
<td>Enhancing access to finance</td>
<td></td>
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<tr>
<td>Increasing the competitiveness of the agricultural sector and its supply chains</td>
<td></td>
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<tr>
<td>Enhancing agriculture’s contribution to regional communities</td>
<td></td>
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<tr>
<td>Improving the competitiveness of inputs to the supply chains</td>
<td></td>
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<tr>
<td>Reducing ineffective regulations</td>
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<tr>
<td>Enhancing agricultural exports</td>
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<td>Assessing the effectiveness of incentives for investment and job creation</td>
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<table>
<thead>
<tr>
<th>Energy - Review of the Renewable Energy Target, Energy White Paper</th>
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<tbody>
<tr>
<td>Encouraging continued investment in exploration, production, distribution to support economic growth; transitioning the significant growth of the resources sector to capture new growth opportunities and maintaining international competitiveness.</td>
<td>GROWTH &amp; DIVERSIFICATION strategy will place downward pressure on electricity prices and improve energy efficiency and reduce carbon emissions as well as provide steam for industrial processes.</td>
</tr>
<tr>
<td>Enhancing international trade in energy resources.</td>
<td></td>
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<tr>
<td>Options to put downward pressure on electricity prices while ensuring a reliable and secure supply.</td>
<td></td>
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<tr>
<td>Reducing regulations while maintaining transparency and reforming energy markets to improve efficiency and increase user choice.</td>
<td></td>
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<tr>
<td>Enhancing energy efficiency.</td>
<td></td>
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<tr>
<td>Encouraging renewable energy and low emission technology.</td>
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<table>
<thead>
<tr>
<th>Economic Development - Green Paper on Developing Northern Australia</th>
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<tbody>
<tr>
<td><strong>Infrastructure</strong></td>
<td>GROWTH, ECONOMIC &amp; INFRASTRUCTURE strategies will require new infrastructure (dams, roads) and better use of existing infrastructure (road, rail, port).</td>
</tr>
<tr>
<td>Productive new infrastructure</td>
<td></td>
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<td>Better use of existing infrastructure</td>
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<tr>
<td>Better planning and understanding of infrastructure opportunities and benefits</td>
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<tr>
<td><strong>Land</strong></td>
<td>GROWTH strategy will make better use of agricultural land.</td>
</tr>
<tr>
<td>Diverse and longer pastoral leases</td>
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<tr>
<td>Flexible leases for Indigenous landholders</td>
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<tr>
<td>Efficient native title processes</td>
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<tr>
<td>More accessible information</td>
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<tr>
<td><strong>Water</strong></td>
<td>GROWTH, ECONOMIC &amp; INFRASTRUCTURE strategies will require more water resources the cost of which can be shared with other industries and communities.</td>
</tr>
<tr>
<td>New infrastructure to support industries and communities</td>
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<tr>
<td>Comprehensive water resource assessments</td>
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<td>Best practice planning and management</td>
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<tr>
<td>Water markets</td>
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<tr>
<td><strong>Business, trade and investment</strong></td>
<td>GROWTH &amp; DIVERSIFICATION strategy will increase trade, investment and open new markets.</td>
</tr>
<tr>
<td>Deregulation agenda for the north</td>
<td></td>
</tr>
<tr>
<td>Workforce availability and skills that meet business needs</td>
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</tbody>
</table>
The Queensland Government has commenced an ambitious series of 30 year strategies to ensure government policy reflects the expectations of the people of Queensland, and critically, enables the State to develop with clear priorities and strategic direction. Many of the central elements of these plans have a strategic fit with the sugar industry and in particular the MIW 30 Year Sugar Industry Strategy.

<table>
<thead>
<tr>
<th>Australian Government Policy</th>
<th>MIW 30 Year Sugar Industry Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>New markets and greater trade links</td>
<td>GROWTH, CAPABILITY &amp; RESILIENCE strategies require a Workforce Development Plan that will build capabilities and skills in partnership with education providers and attract foreign students.</td>
</tr>
<tr>
<td>Innovative business-friendly policies</td>
<td></td>
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<tr>
<td>Education, research and innovation</td>
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<tr>
<td>Building capabilities and skills</td>
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<tr>
<td>Partnerships with world leading institutions</td>
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<tr>
<td>More international students</td>
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<td>Effective engagement with international development</td>
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<tr>
<td>Governance</td>
<td></td>
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<tr>
<td>Collaboration across governments</td>
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<tr>
<td>Effective engagement with, and presence in, Northern Australia</td>
<td></td>
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<tr>
<td>Effective service delivery</td>
<td></td>
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<tr>
<td>Capable and stable local institutions</td>
<td></td>
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</tbody>
</table>

### Queensland Government Strategy

#### Community - Queensland Plan

- Education - Building life skills and inspiring bright minds
- Community - Making connections
- Regions - Building thriving communities
- Economy - Forging diversity and prosperity
- Health & Wellbeing - Being healthy and active
- Environment - Achieving balance
- People - Creating opportunities for everyone
- Infrastructure - Being connected
- Governance - Balancing all our interests

#### Agriculture - Queensland’s Agriculture Strategy

The Queensland Government has set a clear, ambitious target to double Queensland’s agricultural production by 2040

- Resource availability
- Productivity
- Markets
- Production costs

#### Moving Freight: A 10 year Strategy

- Expand the use of rail freight
- Increase road freight network access
- Facilitate greater freight infrastructure investment.
- Support future freight growth.
- Better freight policy and information
- Engage industry for better and safer freight outcomes

#### Water - WaterQ: A 30 year Strategy for Queensland’s Water Sector

- Customer empowerment and community education
- Equity and affordability
- Efficient and productive use of water
- Responsible and productive water management
- Skilled and sustainable water sector
- Smart regulation and attracting private sector investment
- Innovative technology and infrastructure

#### Energy - PowerQ: A 30 year Strategy for Queensland’s Electricity Sector

- Ensure the Queensland electricity market is cost-competitive nationally
- Champion informed decision-making so consumer behaviour creates a responsive electricity market
- Encourage a competitive and diverse market that attracts more innovation and investment
- Maximise opportunities from Queensland’s natural resources to create cost-effective, sustainable electricity
- Use open data to drive market development, competition

#### Governance

- Collaboration across governments
- Effective engagement with, and presence in, Northern Australia
- Effective service delivery
- Capable and stable local institutions

#### Queensland Government

8.2 Queensland Government

The Queensland Government has set a clear, ambitious target to double Queensland’s agricultural production by 2040.

The Queensland Government has commenced an ambitious series of 30 year strategies to ensure government policy reflects the expectations of the people of Queensland, and critically, enables the State to develop with clear priorities and strategic direction. Many of the central elements of these plans have a strategic fit with the sugar industry and in particular the MIW 30 Year Sugar Industry Strategy.

#### Queensland Government Strategy

<table>
<thead>
<tr>
<th>Queensland Government Strategy</th>
<th>MIW 30 Year Sugar Industry Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community - Queensland Plan</td>
<td>CAPABILITY &amp; RESILIENCE, COMMUNITY &amp; ENVIRONMENT, ECONOMICS &amp; INFRASTRUCTURE strategies align with these foundation areas.</td>
</tr>
<tr>
<td>Agriculture - Queensland’s Agriculture Strategy</td>
<td>GROWTH strategy aims to double production by 2045. GROWTH strategy will require land, water, labour &amp; capital. GROWTH &amp; INNOVATION strategies target productivity. GROWTH, DIVERSIFICATION, INNOVATION, ECONOMIC &amp; INFRASTRUCTURE strategies seek to lower production costs.</td>
</tr>
<tr>
<td>Moving Freight: A 10 year Strategy</td>
<td>GROWTH, ECONOMIC &amp; INFRASTRUCTURE strategies will provide some challenges for freight, but an opportunity to develop world class, innovative solutions to meet the growing freight task.</td>
</tr>
<tr>
<td>Water - WaterQ: A 30 year Strategy for Queensland’s Water Sector</td>
<td>GROWTH, ECONOMIC &amp; INFRASTRUCTURE strategies require investment in water resources whilst also seeking to encourage water reuse on farms. At the same time the INNOVATION strategy seeks to enhance productivity and the COMMUNITY &amp; ENVIRONMENT seeks to enhance efficiency of resource use.</td>
</tr>
<tr>
<td>Energy - PowerQ: A 30 year Strategy for Queensland’s Electricity Sector</td>
<td>The DIVERSIFICATION strategy includes distributed, renewable electricity production and export which will generate investment and competition in the sector and meet many of the aims of PowerQ, including equitable access to electricity, Queensland leading energy reform, and maximising opportunities from Queensland’s natural resources.</td>
</tr>
</tbody>
</table>
**Part A: Strategy**

### Queensland Government Strategy

- and innovation
- Provide policy certainty to encourage strong competition and benefit consumers
- Position Queensland as a leader in innovative, consumer-driven reform
- Enable equitable access to electricity

### MIW 30 Year Sugar Industry Strategy

- GROWTH, DIVERIFICATION, CAPABILITY & RESILIENCE, ECONOMIC & INFRASTRUCTURE strategies all aim to lend support to this policy provided the policy settings and programs are beneficial.

### Economic Development - Governing for growth economic strategy and action plan

- Simplifying business regulation
- Minimising impediments to business growth
- Fostering economic growth and resilience
- Enabling infrastructure for economic growth
- Driving productivity growth in the public sector
- Communicating the importance of economic development

**8.3 Regional Plans**

The region’s first statutory regional plan, *Mackay, Isaac and Whitsunday Regional Plan 2009-2031*, came into effect on 6 February 2012.

### Desired Regional Outcomes

- Sustainability, climate change and natural hazards
- Regional landscapes
- Environment
- Natural resource management
- Strong communities
- Strong economy
- Managing growth
- Urban form
- Infrastructure
- Transport

### MIW 30 Year Sugar Industry Strategy

- All strategies lend support to the desired regional outcomes.

New generation regional plans are progressively being prepared for regions across Queensland. These plans have an increased focus on economic development and are shaped by the government’s policy and planning reform agenda.

**8.4 Local Government**

Local Government is the level of government closest to the MIW sugar industry and is more representative of local communities than other levels of government. Each local government has completed a community planning exercise that represents the community’s aspirations and priorities into the future.

### Planning Theme & Strategies

#### Mackay Regional Council Community Plan 2011-2031

- Strong Communities
- Natural Environment & Landscapes
- Natural Resources
- Economic Development
- Settlement Patterns
- Infrastructure
- Transport & Mobility
- Sustainability & Climate Change
- Regional Leadership

**MIW 30 Year Sugar Industry Strategy**

- All strategies lend support to the community’s aspirations. There are sensitivities around environment and land demand for urban growth.

#### Isaac Regional Council Community Plan 2020

- Our Diverse Lifestyle
- Our Natural Environment
- Our Economy
- Our Essential Services

**MIW 30 Year Sugar Industry Strategy**

- All strategies lend support to the community’s aspirations. GROWTH strategy will provide agricultural diversification.

#### Whitsundays Regional Council Community Plan 2011-2021

- Our Economy
- Our Infrastructure
- Planning our Community
- Our Natural Environment
- Our Community

**MIW 30 Year Sugar Industry Strategy**

- All strategies lend support to the community’s aspirations. There are sensitivities around environment and land demand for urban growth.
References


