Wide Bay Burnett
Environment and Natural Resource Management Plan
2012-2031

Regional targets to support the environment and sustainability framework of the Wide Bay Burnett Regional Plan.
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1 Introduction

Managing growth sustainably

The Wide Bay Burnett region (Figure 1) continues to experience one of the fastest urban growth rates in Australia with rates in recent years matching or exceeding state and national population figures. By 2031 the population of the region is expected to increase by approximately 150,000 people making the forecasted population 425,000.

The region has also experienced a significant shift in its population centres, with coastal communities expanding through the ‘sea change’ phenomenon and a decline in many inland regional towns with young people leaving to follow further education, employment and lifestyle opportunities. The net growth in population places increasing demands on the regions natural resources which are fundamental to maintaining the regions economy and lifestyle.

This growth presents many challenges in sustainably managing resources to meet growing infrastructure, energy and water demands. These future challenges require good planning and balancing the trade-offs between expanding urban areas and public infrastructure needs with the sustainability of our environment and natural resources.

A significant threat to the region’s ability to produce food and fibre is the irreversible loss of agricultural land and with this loss the service provided by the region to Queensland and Australia. Additional pressures are also placed on remaining agricultural land to achieve a higher productivity capacity while ensuring sustainability into the future.

There are also significant threats to the region’s biodiversity from further fragmentation of landscapes, impacts of developmental pressures and predicted climate variability.

Our region, Wide Bay Burnett

The Wide Bay Burnett region is renowned for its diverse landscapes from coastal lowlands, sand masses and dunes, to inland sandstone hills. Our region has plateau remnants, scarps and weathered hillsides surrounded by undulating plains and range lands with a mosaic of soils including rich and fertile alluvial and volcanic soils.

The three main natural drainage systems the Mary, Burrum and Burnett have carved the shape of our region over thousands of years. These systems contain wetlands, billabongs and vegetated floodplains that are of particular importance due to their function of filtering out nutrients and sediments from the surrounding landscape, before they reach the rivers on their journey to the coast. Along the coastal belt the region boasts the southern extent of the Great Barrier Reef, the unique Great Sandy Strait, Fraser Island and the Coolola Coast.

Wide Bay Burnett has a wide variety of native vegetation communities extending from closed rainforest through to tall, open and woodland eucalypt forest, brigalow forests, banksia woodlands, heathlands, grasslands and mangrove forests. Some of the notable tree species that form part of the region’s identity are: hoop pine, bunya pine, red cedar, silky oak, brigalow, blood wood, spotted gum, iron bark, stringy bark, grey gum, poplar box, gum topped box, brush box, rosewood, forest red gum and moreton bay ash.

The region is home to many rare and threatened species of native wildlife. Some species that have been the focus of recovery efforts in recent times are: coxen’s fig parrot, grey goshawk, black-breasted button quail, lung fish, mary river cod, fresh and saltwater turtles, water mouse, spotted quoll, the giant barred frog and the wallum sedge frog. There are many other species classified as rare and threatened that belong to the region.
Figure 1 - Wide Bay Burnett Region Map

The Wide Bay Burnett Region indicatively or partially covers the affiliated areas of Traditional Owner Groups Balalai, Burnunggam, Butchulla, Djak-Undie, Gangulu, Gooreng Gooreng, Gurang, Kabi Kabi, Taribelang Bunda, Wakka Wakka, and Wulli Wulli. (It is noted that spelling variations between Traditional Owner Groups may exist).

Note: The WBB NRM Plan is based on local government boundaries (equivalent to the WBB Regional Plan boundary), and not the catchment boundaries of the NRM Regional Bodies.
Environment and Natural Resource Management Plan

The state government is committed to regional planning and the Wide Bay Burnett Regional Plan, 2011 (WBB Regional Plan) is the long-term statutory plan designed to shape and guide growth in the region over the next 20 years. The WBB Regional Plan contains a series of Desired Regional Outcomes (DROs) which articulate the preferred direction for the development and land use outcomes for our region.

The Wide Bay Burnett Environment and Natural Resource Management Plan, 2012-2031 (NRM Plan) is non-statutory and provides the implementation guide for the WBB Regional Plan to care for our environment and natural resources. The NRM Plan directly responds to the first three DROs of the WBB Regional Plan and also has direct links to others.

- Sustainability, climate variability and natural hazards
- Environment
- Natural resource management

Importantly, the NRM Plan sets up a negotiation framework to resolve land use matters at the regional scale. For example the emerging mining sector in the region will provide economic benefits along with challenges for tradeoffs between maintaining available agricultural land and ensuring that environmental harm such as habitat fragmentation and impacts on water quality are adequately reduced and potential offsets provide a net positive benefit for the region.

The NRM Plan is an aspirational plan that outlines the expected future for sustainable natural resource management in the Wide Bay Burnett region. It provides a series of targets to deliver an overall vision for the future viability and sustainability of our environmental and natural resource assets.

The NRM Plan aims to connect numerous existing strategies and plans and promotes the broad regional community working together and coordinating our efforts, actions and resources.

The NRM Plan acts as a guide, setting out an agreed direction and allows NRM partners the opportunity to develop strategies and key actions through their own planning processes to implement the vision.

The region faces many practical constraints and pressures - issues involved in environmental management are complex. The initial focus of the NRM Plan is to minimise any further decline and where possible improve on the existing condition and extent of our important natural assets.

Figure 2 - How Our Planning System Fits Together provides a simplified explanation of where the NRM Plan fits within regional planning for Wide Bay Burnett and the role of state and national legislation. The regional planning system is made up of the statutory regional plan that sets out what the region wants to achieve and the important work of Local Governments in developing local area planning. This work is supported by everyone working in a coordinated manner at catchment, sub-catchment and property level.

Within the Wide Bay Burnett Community - at both local and regional levels - many words have a shared value and importance.
Figure 2 - How Our Planning System Fits Together

- WBB Regional Plan
- WBB NRM Plan
- Local government plans
- Plans & strategies
- Regional, catchment, sub-catchment & property plans

Sets out what the region wants to have by 2031.
Coordinates everyone’s efforts and information to achieve what the region wants by interpreting the regional plan into targets and linking these to existing plans and strategies.
Interprets the Regional & NRM Plans into local planning — both statutory and non-statutory.
Interprets the Regional & NRM Plans into community, industry & government plans.

The region achieves what it wants when everyone works in a coordinated manner, either together or as individuals to achieve agreed targets.
Local Governments are the level of government closest to the community. The five Regional Councils and Cherbourg Aboriginal Shire Council have a successful history of working well together through the Wide Bay Burnett Regional Organisation of Councils. This effective collaboration is one of the major strengths of our region.

The Regional and Shire Councils have worked with their local communities to develop Community Plans. Community Plans reflect the uniqueness of different locations in our region and each plan sets out a desired vision for future and current values and priorities across a range of important community issues.

**Bundaberg - Our environment: sustainable, managed and healthy**

We believe we achieve a healthy environment by caring for our surroundings and have people sustaining the environment.

The city of Bundaberg is a major regional centre, supporting a chain of smaller coastal and hinterland townships and the wider region. The rich red volcanic soils sustain cane-growing and diverse horticultural industries while coastal waters and estuaries provide a base for commercial fishing and marinas. The region is at the southern end of the Great Barrier Reef, takes in parts of the Great Sandy Marine Park and includes the Mon Repos Conservation Park famous for its nesting marine turtles.

Bundaberg region places high value on maintaining a healthy natural environment supported by sustainable environmental planning and design. One priority issue for this council is planning for future infrastructure:

- Managing the environmental impacts of different land uses through development of a practical and meaningful land use plan.
- Balancing trade-offs - placement of public infrastructure while minimising harm to environmental assets such as biodiversity, natural habitats and water quality.
- Use of cutting-edge pollution control and waste management services and philosophies.
Cherbourg - Aspirations for our community

Cherbourg Aboriginal Shire Council comprises the town of Cherbourg and adjacent lands, approximately six kilometres south of Murgon. Residents have proud cultural connections to 40 tribal groups, including the Wakka Wakka who are Traditional Owners of Cherbourg lands and Gubbi Gubbi (Kabi Kabi) whose lands border Cherbourg to the east. Cherbourg has a permanent population of about 1300 and covers an area of about three thousand hectares.

Cherbourg Aboriginal Council members are drawn from respected Elders who live in the community. Council’s goal is to become the first completely self-sufficient Aboriginal community in Australia. The community has its own TAFE campus, community radio station, hospital, aged care facility and craft centre. Beautifully landscaped gardens, the Ration Shed Museum and picnic area overlooking Barambah Creek are the pride of the town.

Cherbourg’s economy is supported by agriculture, beef cattle, joinery and small businesses including a market garden which supplies the local store. Availability of education facilities, close proximity to Murgon and cultural links to other locations ensures residents are well-placed to influence natural and cultural resource management beyond their boundaries through traditional land management techniques.

Currently, Cherbourg Aboriginal Council is focused on:

- Documentation, expansion and implementation of traditional land management strategies.
- Training and educating younger community members in traditional knowledge and promoting environmental stewardship.
- Reducing fragmentation of natural habitat and loss of biodiversity.
Fraser Coast – Our environment, our natural areas

A diverse and healthy natural environment, with an abundance of native flora and fauna rich ecosystems which can thrive with our awareness, commitment and action in caring for the environment.

Important habitats for native animals and plants are preserved and developed to ensure that a healthy ecosystem is sustained by protecting, conserving, monitoring and improving the natural environment.

The Fraser Coast region is valued internationally for its unique natural environment and is home to the Great Sandy Biosphere Reserve (which includes Fraser Island World Heritage Area). The Great Sandy Straits and Fraser Island provide refuge for a diverse range of plants and animals, including many specialised and rare and threatened species. In addition to tourism around Fraser Coast and Hervey Bay, agriculture and native and plantation forestry are significant industries for the region.

The Fraser Coast region has a focus on protecting, restoring and enhancing the environment; maintaining unique biodiversity; valuing ecosystem services; mainstreaming environmentally sustainable choices and managing natural resources sustainably. Issues that are specific to the Fraser Coast include:

- Coastal processes and foreshore erosion threats which require regeneration programs
- Management of water quality from the headwaters to the receiving waters.
- Management of the impacts of urbanisation and coastal growth on the environment.
- Managing intensive recreational pursuits that are inconsistent with conservation values.
Gympie – Sustainable Environment

2031...The majority of residents would be using sustainable practices such as renewable energy. Land water and air would be managed sustainably, preserving biodiversity, whilst allowing business to remain economically viable.

The Gympie region includes significant portions of both coastal plains and adjacent hills and ranges. Major areas of ecosystem significance include extensive heathlands, wetlands, ancient dunes (some deposits being 800,000 years old) and diverse forests of the Cooloola Coast; forested ranges of Neerdie, Goomboorian, Wolvi and the Beenham Valley; and the rainforests and tall sclerophyll forests of Mothar Mountain and Traveston. Other major areas of ecosystem significance include the areas around Glen Echo and alongside Barambah Creek near Boobyyan on the boundary with South Burnett region. The Gympie region has large productive forestry areas located at Borumba, Imbil, Kandanga, Amamoor and Glastonbury.

Gympie is one of the rapidly developing areas in the Wide Bay Burnett. A priority issue is managing urban growth to ensure important natural features are protected from inappropriate development whilst maintaining and enhancing biodiversity values. Major threats to biodiversity for the region include habitat loss and fragmentation. Other issues of importance to the region include:

- Ongoing environmental threats from pests, weeds and feral animals.
- Sustainability of agricultural and forestry industries, including protection of quality agricultural land and adoption of good land management practices.
- Balancing management of natural resources with community safety.
- Sustainable use of government owned land in the former Traveston Crossing Dam area.
North Burnett – A sustainable environment

*Increasing the quality of water, land, air and the extent of biodiversity*...

North Burnett is a large geographic area with a strong connection to its rural background and has an abundance of natural resources that include: water, rural farmland, mineral deposits, forests, geographical landscapes and national parks. Points of significant environmental interest include: Auburn, Boyne, Burnett and Nogo Rivers; Cania, Paradise and Wuruma Dams; and Coalsloun Lakes and Mt Walsh National Parks.

The area’s economy is based on a diverse range of primary production industries from cattle grazing to citrus growing. The potential for coal and gas extraction and the development of mining provide both economic opportunities and community and resource management challenges.

North Burnett has a vision for environmental management that includes sustainable practices and enhancing biodiversity. Of specific interest to the region is:

- Management and control of parthenium, giant rat’s tail grass, African lovegrass, lantana, pest dogs and feral pigs. Noxious weeds and pests cause significant economic losses, cause degradation of natural resources, threaten biodiversity and interfere with human activities.
- Water management for both consumption and industry. Long-term reliable supply of high quality potable water and ongoing improvement of potable water quality. To ensure adequate water management and supply for both horticulture and agriculture and the ongoing management of irrigation water.
- Eco-tourism opportunities and enhancement of infrastructure, facilities and interpretive information at key environmental assets such as Cania Gorge, Auburn River and Mt Walsh National Park.
South Burnett – Enhancing our Environment

A sustainable environment, proactively and responsibly managed partnership with community for future generations

South Burnett is the most southerly part of the Wide Bay Burnett Region and is renowned for quality farming and agriculture and includes some of the state’s biggest vineyards. In 2009 over 43% percent of businesses in the South Burnett were in agriculture, forestry and fisheries. South Burnett is being further explored for mining potential and adjoins the Surat Basin mineral province.

The South Burnett has diverse landscapes, ecological corridors and many reserves such as Mount Wooroolin, Lake Boondooma, Bjelke-Petersen Dam and the unique rainforests of the Bunya Mountains National Park.

South Burnett has a vision for environmental management focused on three key strategic areas: education and awareness; sustainable initiatives; and protect and enhance. Major future initiatives include the development of the Biodiversity and Climate Change Strategy and a Regional Waste Management Plan. Priority issues for the region include:

- Water management and improvements in the water quality of both rivers and water storage facilities which includes a focus on erosion control and grazing land management.
- Maintain and enhance the quality habitat for native fauna and flora particularly endangered, rare and vulnerable species.
- Supporting the community and private land owners in environmental stewardship.
- Management and control of weed and pest infestations particularly for African box thorn, broadleaf privet, parthenium weed and giant rat’s tail grass.

Across the Wide Bay Burnett there are a common set of values and issues for sustainable environmental management. Common themes for our Local Governments (Fig. 3) outlines the key issues for the region.
<table>
<thead>
<tr>
<th>Area of concern</th>
<th>Management action proposed by Wide Bay Burnett local governments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native Vegetation &amp; Biodiversity</td>
<td>Retain native vegetation and minimise fragmentation of habitat&lt;br&gt;Habitat enhancement through restoration, rehabilitation &amp; revegetation&lt;br&gt;Coordinated approach to establishing ecological corridors&lt;br&gt;High conservation land is managed to support native flora and fauna&lt;br&gt;Incentives for management of native forests and creation of corridors on private land</td>
</tr>
<tr>
<td>Water &amp; Waterways</td>
<td>Reduce threats to water quality with a focus on erosion control&lt;br&gt;Retain remnant vegetation on stream banks&lt;br&gt;Education on importance of riparian zones&lt;br&gt;Management and control of aquatic weeds&lt;br&gt;Catchment management plans implemented</td>
</tr>
<tr>
<td>Agriculture &amp; Land Management Practices</td>
<td>Protect good quality agricultural land and reduce its fragmentation&lt;br&gt;Education and incentives for landholders on sustainable land management practices&lt;br&gt;Maintain projects that demonstrate sustainable grazing management,&lt;br&gt;Carbon sensitive agricultural production systems&lt;br&gt;Access to locally produced food / localised food security</td>
</tr>
<tr>
<td>Pest plants &amp; animals</td>
<td>Maintain and expand existing control programs&lt;br&gt;Education for landowners on identification and control of pests &amp; weeds&lt;br&gt;Partnerships with landowners to control pests and weeds&lt;br&gt;Integrated pest management that reduces the need for use of insecticide and herbicide&lt;br&gt;Investigate development of biological controls&lt;br&gt;Advocate state funding for implementation of legislation for the control of declared pests and weeds</td>
</tr>
<tr>
<td>Strong Community Base</td>
<td>Education and awareness, and active community involvement and care in NRM&lt;br&gt;Support for local community groups seeking resources&lt;br&gt;Encourage appreciation of unique environmental assets through development of infrastructure for responsible public access and use of reserves and promote understanding through interpretative centres</td>
</tr>
<tr>
<td>Waste Management &amp; Ecological Footprint</td>
<td>Reduce ecological footprint / carbon footprint&lt;br&gt;Waste management through recycling and re-use&lt;br&gt;Efficient use of energy&lt;br&gt;Alternative energy options and use of green technology</td>
</tr>
</tbody>
</table>

Figure 3 – Common themes for our Local Governments
In the Wide Bay Burnett, regional planning in its current form began in the 1990’s with Wide Bay 2020’s non-statutory Regional Growth Management Framework 1998. Other locally focused, non-statutory catchment-based plans were also developed in the 1990’s by groups such as the Mary River Catchment Coordinating Committee and the Burnett Catchment Care Association.

In 2001, under Australian Government Natural Heritage Trust (NHT2), regional natural resource management bodies were established nationwide to maximise the strategic direction of NHT2 funding. Their priorities were to address salinity and water quality issues and coordinate natural resource management in regional areas.

The Burnett Mary Regional Group (BMRG) is one of 14 regional Natural Resource Management bodies in Queensland and one of 56 in Australia.

The BMRG has grown considerably since its inception in 2001 and assists facilitation of natural resource management over an area of 90,000 square kilometres. The organisation represents the combined interests of the community, industry and government. It has forged regional planning partnerships with community groups, Traditional Owners, industry organisations, not-for-profit organisations, private landholders, schools, universities and all levels of government within and adjacent to the Wide Bay Burnett Region.

In 2003 BMRG began a regional planning process integrating regional aspirations with high level strategies and policies being implemented by the Queensland and Australian governments. Our plan, Country to Coast – a healthy, sustainable future was non-statutory, but endorsed by both the Australian and Queensland governments in 2005.

In 2007, a separate non-statutory Queensland Government Wide Bay Burnett Regional Plan 2007-2026 was also released. This plan provided a principal regional strategy, guiding growth and sustainability in the region.

This non-statutory plan was the last of its type, with the Minister announcing that all future regional plans would be statutory documents. The region’s Mayors and others involved in developing the Wide Bay Burnett Regional Plan 2007-2026 lobbied the Queensland Government to support the evolution of this document to a statutory regional plan. This process led to the endorsement and release in September 2011 of the statutory Wide Bay Burnett Regional Plan.

The Wide Bay Burnett Environment and Natural Resource Management Plan 2012-2031 (NRM Plan) establishes a set of measurable targets for the condition and extent of the environment and natural resources to support the implementation of the Wide Bay Burnett Regional Plan. The NRM Plan uses many of the aforementioned plans as its foundation and was collaboratively developed by the Wide Bay Burnett Environment and Natural Resources Working Group (ENRWG). The ENRWG includes representatives from government, non-government, industry groups and Traditional Owners and assists in setting targets that our community will aim to achieve over the next two decades.
Volunteers – Working for the sustainability of our environment and natural resources

Wide Bay Burnett environment and natural resource management would not happen without the community volunteer sector. Volunteers breathe life into natural resource management for the benefit of the broader community. They are the glue that holds many NRM projects together throughout the region and without them, some projects simply would not occur, while others would not achieve their potential.

The Wide Bay Burnett boasts a large number of volunteer organisations and individuals involved in coastal management, conservation, catchment care and landcare. There are many individual volunteers who contribute to regional NRM activities but choose not to be affiliated with any group or organisation. This includes the many local landowners that make investment in time and money to maintain and improve the natural resources and environment on their properties for the benefit of the wider community. The NRM Plan seeks to build on existing strengths within our volunteer community, enhancing its resilience, connectedness, vitality and innovative qualities.

Figure 4 – A snapshot of our volunteers provides an overview of the diversity of Wide Bay Burnett volunteer organisations.

The community volunteer sector faces several major challenges. Many people want to help take care of the region but do not have the time, money or the administrative backup to be involved. Many challenges are presented by the need for regular attendance at project meetings and completion of administrative tasks - for public liability insurance and legal support; for materials to complete projects and for training, skills development and education. Balancing full-time work with volunteering and personal life is also a major issue for most volunteers.

These issues cause problems with membership strength, diversity and stability in many volunteer groups. Many groups throughout the region find that, not only has their membership diminished significantly, leaving the same few people to complete every project and hold the group together, but the average age of some groups has increased significantly. The potential of community volunteer groups may also be jeopardised by the fact that they often work in isolation from one another. These challenges make it very difficult for groups to come together and share resources and information.

Volunteers and community groups work on a wide range of on-ground projects, monitoring programs and community awareness activities, particularly on sustainable land management. Examples include: weed removal targeting species, broader environmental weed control, streambank fencing, revegetation and riparian management, river bank stabilisation, revegetation of gullies and water courses, salinity repair work, improved soil management practices, ground-cover management, off-stream watering points, GIS mapping, irrigation water quality monitoring, water use efficiency and remnant habitat studies.
Figure 4 – A snapshot of our volunteers.
The NRM Plan identifies what is important to the region, what we want to protect and where we need to head to ensure we have managed these important assets into the future.

Setting a vision or target may tell us where we would like to be in 20 years time, but it does not tell us how we are going to get there – what we need to do to produce the types of changes we hope to see along the way to reaching our goals.

These changes require a vision and understanding of what people and organisations will be doing differently and also about the small biophysical changes in the condition of the environment and natural resources that need to occur. The NRM Plan is based on the principle that changes in the condition of the environment and our natural resources takes place through people and communities.

### Important Assets to the region

The NRM Plan is structured around eight environmental and natural resource management assets that the region recognises as important to ensure both a resilient environment and community:

- Air and Climate
- Coastal, Estuarine and Marine Ecosystems
- Land Resources
- Water Resources
- Land and Freshwater Ecosystems
- Regional Landscapes
- Aboriginal Natural and Cultural Values
- Community

The asset groups are addressed in detail in Section 6 of the NRM Plan and build on the past and present efforts of the region.

### Asset Vision for 2031

Each of these assets has a 2031 vision that broadly describes where we would like to be in terms of the condition and health of that asset in 20 years time.

### Asset Themes

The asset groups are further broken down into individual themes which are important to the overall asset and provide an initial focus. For example the Coastal and Marine asset includes the themes: coastal ocean processes; coastal, estuarine and marine habitats; significant species and fisheries and coastal water quality.

### Asset Theme Targets 2018

In response to the broad long-term nature of the asset visions each asset theme has a specific target set for 2018. For the biophysical assets the majority of these targets are outcome targets – they are about the condition or state that we desire for a biophysical asset. However some are output targets – they are about doing an important activity such as the establishment of reliable baseline information for the Land Resources asset on soil health and availability of good agricultural land.

These targets are framed to be more specific - they are about a particular aspect such as a type of coastal habitat (e.g. seagrass meadows or coral reefs), a particular animal or fish species (e.g. Mary River Cod or Lungfish) or the extent of a certain type of vegetation community such as brigalow forests or littoral rainforest.

The selections of targets are distinguished by both available data and information and the potential for future data to be collected. This allows for the target to be measurable and comparable against a set baseline from which we want to improve, maintain or in some cases - such as soil salinity or invasive plants - decrease the level.

Of course there would be other targets that would be preferable but the NRM Plan initially selects a range of topics that are important to the region within the limit of current information and data. In the first instances these 2018 targets will help the region keep track towards the greater vision for an asset and contribute towards any future reporting on the state of the region.
4 Implementation of the Wide Bay Burnett NRM Plan

Implementation relies on the regional community working together. We need to focus on coordinating current and future efforts around our projects and activities, information and resources to achieve regional outcomes and ultimately provide certainty - certainty for agriculture, our environment and natural resource assets, mining and development.

To look after the region’s assets properly we need:

♦ Good relationships and a willingness to work together
♦ The best information and data
♦ A good understanding of our assets
♦ Best practice planning which helps everyone work together
♦ Agreement on how to resolve conflicts between land uses
♦ Technical support for good planning decisions
♦ Support for Industry based Best Management Practices approaches
♦ Incentive approaches for landowners and others
♦ Weed, feral and fire management
♦ Community education and awareness
♦ Trials and demonstrations of good practice
♦ Protected area, habitat and species management

Overall we need to ensure the region has:

♦ An understanding of cause and effect relationships and the capacity to make predictions about environmental changes whilst acknowledging these can only be guided by our knowledge base.
♦ Confidence that we are doing the right things in the right places in the landscape to achieve our outcomes.
♦ Clarity about the changes in the condition of the environment and in people, communities and institutions’ knowledge, behaviour and management practices that we are aiming to achieve.
♦ Certainty about what and where community, industry and government outcomes can be achieved.

The region has done some work to identify many different types of projects and activities for each assets theme undertaken by various groups and organisations. These projects range from on-ground works such as revegetation and rehabilitation projects, scientific research, monitoring projects, demonstration pilot trials for improved productivity and sustainability, through to education and incentive programs.

Starting with an understanding of ‘who is doing what’ within the Wide Bay Burnett not only helps in identifying any duplications or gaps in effort and investment, but also contributes to clarifying the various roles of regional partners and interested groups – who is interested in doing what type of activities around which assets and themes.

Efforts have begun on improving the coordination of information and data across all levels of government, industry and community groups to ensure we can have the best spatial understanding of the landscape and marine environments. This spatial understanding – which results in the production of detailed, targeted maps and associated information - will help to maximise outcomes and support decisions on managing conflicts between land uses.

Figure 5 - Options for Change provides a summary of the broad categories of specific changes that the majority of natural resource management activities fit within to deliver the overall outcome of a sustainable region. Each one of these options for change plays an important role in achieving that outcome.
We need to take action to reduce risks and threats and improve biophysical condition. However, we also need to improve policy and planning, awareness and behaviour, adoption of improved management practices and improve the region’s understanding and knowledge of natural systems and the interaction of human activities on those systems. All of these activities have one thing in common, which is the need for investment of resources - both people and funding.

Some initial work has begun on identifying what types of activities will be needed to deliver outcomes for the various asset themes.

Policy and Planning Improvements - Best practice planning which helps everyone work together

The need for improvements in policy and planning is critical to the region’s success. The state government needs to work with local council, industry and communities to understand and examine the regulatory environment of state regulation and legislation. The next step is to translate those regulations into what is relevant to what the Wide Bay Burnett region wants for its future.

State legislation is often developed in a generic ‘one size fits all’ manner suitable for state-wide application. While legislation is organised for what is often one or two components of the landscape, for example vegetation management or soil conservation, our landscapes do not work this way.

The cumulative effect and confusion caused by interpreting and applying these multiple and sometimes contradictory layers of regulation within a particular place are not considered when drafting legislation, nor are the complex relationships that exist within a landscape. Consequently, achieving the regulatory objectives when faced with the reality of application on the ground is often costly and less than optimal in achieving real outcomes.

Current legislation provides for a mechanism to resolve the competing and conflicting land use outcomes desired by industry, government and community – However a practical process for regional negotiation is absent. Through a focus
on strategic regional outcomes and negotiation rather than on the administrative burden of reacting to the numerous legislative triggers when an application is lodged, it is hoped that the region can obtain certainty and clarity for developers, industry and the environment.

Once agreement has been reached, including legislative triggers and these are built into planning and approvals for state and local governments, legislative triggers can be progressively “switched off” to save the region administrative time and resources. This is the intention of the Regional Plan and the NRM Plan.

Monitoring and Evaluation - Keeping Track of Progress

It is important that Wide Bay Burnett community is able to assess if we are undertaking the most appropriate activities to deliver the environment and natural resource outcomes sought by the region. Across the region people, groups and organisations are very busy doing lots of work and investing considerable energy, time and resources to ensure we have a sustainable region.

The NRM Plan provides an opportunity to coordinate the region’s effort towards monitoring the state of the environment and the health and condition of our natural resources. Again many different groups and agencies throughout the region collect monitoring data and information for a variety of reasons and at many different scales from region wide to specific catchment and sub catchment levels.

There are two parts to keeping track of the region’s progress: monitoring systems and an evaluation processes. Monitoring systems are about ‘measurements’ and aim to tell us something the state or condition of an asset. Monitoring is generally about data collection, analysis and interpretation and uses indicators that tell us something about the important asset. The indicators are a particular aspect of an environmental asset we can measure over time. When we combine these measurements with a good understanding of how an environmental systems works we are able to asses the condition and identify any trends associated with an asset. For example measuring the levels of sediment or nutrients in a waterway will tell us something about the water quality. Measuring the severity and extent of salinity outbreaks or the risk of sheet erosion will tell us something about the health of our soil.

Monitoring also helps us answer the questions about “how many...” or “how much...” For example how many kilometres of waterways have been stabilised? How many hectares of riparian habitat have been improved? Stabilising the riverbanks and ensuring we have vegetation around the riverbanks all contribute to improved water quality.

The second aspect of keeping track of progress is the evaluation process. Evaluation tells us about the effectiveness of what we have been doing and if we have achieved the results and outcomes we are looking for from our activities. Evaluation is based on having a good understanding of the ‘cause and effect’ relationship between the actions we undertake and the variety of outcomes and changes we hope to see along the way to achieving our targets.

Evaluation helps us answer the question “how effective are the programs or suite of management actions that we put in place?” For example how effective has the riverbank stabilisation program been in supporting landowner’s knowledge and adoption of improved land management practices, in reducing the risks and threats to waterways or in improving the water quality.

We need both monitoring systems and an evaluation process to get a true picture of how we are tracking. Generally speaking, the region has experience and success in being able to monitor the state and condition of natural resources but we have had less experience in evaluating the effectiveness of what we have been doing.
The visions and targets listed in the NRM Plan are non-statutory. They seek to achieve and align with long-term sustainability outcomes and principles referred to in the Wide Bay Burnett Regional Plan.

Key issues and regional targets for each asset identified in this plan are summarised below.

The *Wide Bay Burnett Regional Plan* states that, as the regional population and supporting industries grow, maintaining the region’s liveability and minimising our regional contribution to air pollution are priorities. Reducing greenhouse gas emissions and other air pollutants is required to stabilise their concentrations in the atmosphere and reduce the potential impacts of climate variability.

The region has a dynamic coastal zone that supports significant landscape and oceanic processes. Coastal, estuarine and marine ecosystems of the region provide important habitats for globally significant plants and animals, including fisheries important for our regional economy. Coastal and marine resources in this region are characterised by species from both tropical and temperate climates, as well as some that are unique to the region, including rare and endangered resident and migratory birds and marine animals. Coastal, estuarine and marine ecosystems are increasingly threatened by activities associated with rapid population growth and development.

**Air & Climate**

*By 2031, the region will make an equitable contribution to state and national air quality targets and mitigation planning for climate variability.*

**Coastal, Estuarine & Marine Ecosystems**

*By 2031 the condition and extent of coastal, estuarine and marine resources and habitat will be improved, or maintained at the best available baseline.*

**Land Resources**

*By 2031 Land Condition will be maintained at, or improved over the baseline.*

Land resources are the living soil, unconsolidated rock and bedrock that, together, comprise the landforms of the Wide Bay Burnett. Apart from narrow strips of alluvium and associated flood plains, small coastal deltas, and coastal sand-mass deposits, the majority of landscapes are comparatively old, often in highly complex distribution patterns. Land-use practices affect land condition and can cause soil salinity, acidity, reduced fertility and organic matter, acid sulphate soil, erosion and contamination. Improving the condition of land through soil management will enable continuing agricultural production, biodiversity conservation, urban development, resource extraction and ecosystem service function.

**Water Resources**

*By 2031, water resources will be managed on a sustainable and total water cycle basis to meet consumptive needs, whilst protecting water-dependent ecosystems (taking account of and seeking to improve resilience to the effects of climate change).*

Clean water and natural creek, river and groundwater flows are essential for healthy aquatic and marine ecosystems. Water quality affects the health of all living things. Healthy waterways and groundwater systems are
important for the region’s social, ecological, economic and cultural sustainability. Economic activities including dairy, grazing, irrigated agriculture, industry and tourism are completely dependent on good water quality.

The region has a wide variety of land and freshwater ecosystems spanning two distinct biological regions: the South East Queensland bioregion in the east, and the Brigalow Belt bioregion in the west. The Brigalow Belt is identified as a biodiversity hotspot. It has rare and threatened species in remnant habitat that is poorly represented in the protected area estate. The Wide Bay Burnett contains the state’s highest number of priority plant and animal species needing conservation action.

Regional landscapes can be defined as areas of the landscape (land, water and sea) where interactions between people and nature over time have produced a distinct landscape. These are usually areas with high biodiversity, notable aesthetic values, and significant ecological and cultural importance. They include both Indigenous and non-Indigenous connections with natural, rural, productive and scenic landscapes.

### Land & Freshwater Ecosystems

By 2031, the condition, extent and connectivity of terrestrial and freshwater ecosystems will be maintained at, or improved from the baseline.

### Regional Landscapes

By 2031 the condition, connectivity and compatibility of key regional landscape will be improved from the baseline.

### Aboriginal Natural & Cultural Values

By 2031 Aboriginal people will have improved opportunities to maintain their cultural connections to country.

The region is the traditional country of many Aboriginal peoples, including the Butchulla, Djaku-nde, Jangerie Jangerie, Gooreng Gooreng, Gurang, Jinibara, Gubbi Gubbi (Kabi Kabi), Taribelang Bunda, Wakka Wakka and Wulli Wulli. Aboriginal people have a strong and complex physical and spiritual connection to their traditional country. The physical and cultural values of land and sea country are cultural resources essential to the wellbeing of the Aboriginal custodians of the WBB region. The recognition and inclusion of traditional knowledge will lead to improved natural and cultural resource management outcomes for all of the WBB community.

### Community

By 2031, active community involvement in planning, delivery and assessment of environment and natural resource outcomes will be improved on the baseline.

Many community groups and individual landholders make a significant contribution to best-practice land management, building skills and awareness, reducing their impacts on the landscape, and protecting native vegetation and threatened species. To achieve the regional targets, it is important to maintain and enhance the capacity of the community to engage in planning, implementing and monitoring local actions.
6 Regional Assets

Air & Climate

By 2031, the region will make an equitable contribution to state and national air quality targets and mitigation planning for climate variability.

DRO 1 - Sustainability, climate change and natural hazards
1.2 Climate Change
Principle 1.2.1
The generation of greenhouse gases is reduced through land-use planning and development design.
(Focus - Carbon Storage)

DRO 2 - Environment
2.3 Air quality and noise
Principle 2.3.1
The environment is protected to maintain the health and well being of the community and the natural environment through effective management of air and noise.
(Focus - Air Quality)

The region’s air and climate combine to form a vital natural asset without which a healthy and safe life for our community, environment, and economic development cannot exist.

In 2012, there is currently limited ongoing air monitoring conducted in the Wide Bay Burnett Region. Instead, air quality assessments are estimated by using data from air monitoring stations in Brisbane to the south and Gladstone to the north.

Air quality monitoring requires long-term data to determine baselines, trends and standards because changes occur gradually and are hard to identify. Sometimes they are masked by climatic conditions.

Air quality in the region is associated with continued population growth - increases in the number of households and accompanying energy consumption, including increased motor vehicle use. Bushfires, industrial activities and other land management practices also contribute.

The Wide Bay Burnett’s air quality is currently considered to be generally good with only localised sources of pollutants from some industries and season specific activities. However, Queensland is the fastest growing and most energy intensive State in Australia and the effects of this growth will have an impact on the region’s air and climate in coming years.

A report in 2007 by the CSIRO and the Australian Bureau of Meteorology identified the following climate variability related impacts for the region:

- Challenges to the supply of water to meet demand
- Flooding, erosion and damage to infrastructure associated with sea level rise and increased storm surge
- Variable and declining rainfall, combined with rising temperatures and increased evaporation, could have a significant impact on primary production
- Increased risk of tropical cyclone impact
- Increased risks of heat-related illness
- Increased risk from the intensity of fires due to an increase in temperature, evaporation, number of dry days, wind speed and a slight decrease in humidity in the west of the region (i.e. higher grassland and forest-fire danger indices).

It is sometimes difficult for a local regional area to contemplate dealing with such large scale issues. However, there are measurable environment and natural resource actions that can be taken at a local level to contribute to national efforts to address this problem for future generations. An example of a regional
contribution that this region has the capacity to make is in the emerging area of carbon storage in soil matter, sea beds and forests.

**Carbon Storage**

AC1 - By 2018 the utilisation of carbon storage capacity in soils, vegetation and other bio-sequestration initiatives will be greater than 2013 baseline.

AC2 - By 2018 the net benefit to primary producers from participating in carbon farming initiatives will be greater than the 2013 baseline.

Carbon dioxide is the major greenhouse gas responsible for human-induced climate variability. Carbon in various forms circulates continuously between the atmosphere, oceans and land.

The oceans, soil and vegetation remove and store carbon from the atmosphere. For example, carbon absorbed by a tree may be stored as wood for hundreds of years.

Carbon releases to the atmosphere are accelerated by human activities such as burning fossil fuels and deforestation. In addition, the reduction of wetlands, salt marshes, mangroves and sea grass beds are also known to decrease the regions carbon storage capacity and contribute to the effects of climate variability.

Some direct indicators of the amount of carbon that is stored in the region can be attributed to the levels of organic carbon stored in our soils, the health and extent of our sea grass beds and the maturity and extent of our forests, grasslands and salt marshes. Measuring changes in the condition and extent of these indicators will allow actions to be taken to maintain or improve their carbon storage capacity.

“Net Benefit” means that at the end of the day was it worth the effort from a financial, improved knowledge, land productivity or an environmentally sustainable perspective.

Carbon farming has the potential to be a financially and environmentally rewarding initiative. There is a national focus on adopting and benefiting from new opportunities involving carbon farming and those opportunities should be fully explored by the region.

While setting targets for carbon storage efforts in the region is a worthwhile proposition, there needs to be a balance between such activities and the viability of regional agribusinesses. It is therefore essential to ensure that this emerging area fits within the regions economic, social and environmental values and capacity. Above all else, it must be an attractive and viable proposition to pursue for the region and its primary producers.

It is recognised that carbon farming ventures may suit some agribusinesses better than others therefore careful consideration needs to be exercised concerning how the region responds to this emerging issue.

**Air Quality**

AC3 - By 2018 air contaminant levels and their effect on the community will be maintained at, or reduced below the 2013 baseline.

Monitoring air quality in key localities is an effective way to establish our region’s air quality baselines and trends in condition. Common air pollutants include carbon monoxide from car exhausts, sulphur dioxide and nitrogen dioxide from burning fossil fuels, windblown dust and smoke from fires.

Air quality monitoring needs careful consideration to determine the objectives, location, frequency and targets of the activity.
Coastal, Estuarine & Marine Ecosystems

By 2031 the condition and extent of coastal, estuarine and marine resources and habitat will be improved, or maintained at the best available baseline.

DRO 2 - Environment

2.1 Biodiversity
Principle 2.1.1
The region’s natural assets, biodiversity values and ecological services are protected, managed and enhanced to improve their resilience to the anticipated effects of climate change and other threats.

2.2 Coastal environment
Principle 2.2.1
Coastal resources are managed while protecting human life and property from the hazards of natural fluctuations in coastal processes.

DRO 3 - Natural resource management

3.2 Ecosystem-dependent economic resources
Principle 3.2.1
Ecosystems are sustainably managed, ensuring their cultural, social, economic and environmental services and values are protected.

3.7 Water quality, waterway health and wetlands
Principle 3.7.1
The ecological health, environmental values and water quality of coastal surface and ground waters are protected.

The landscape and oceanic processes of Wide Bay Burnett region has produced a dynamic and diverse coastal and marine ecosystem.

The Wide Bay Burnett region lies within the Tweed-Moreton marine bioregion where the landmark Fraser Island (which traps warm waters in Hervey Bay and created the Great Sandy Strait) marks the southern boundary of the Great Barrier Reef lagoon (the largest and most diverse coral reef system in the world). The mix of tropical and subtropical zones characterises the Wide Bay Burnett region meaning it has some of Australia’s highest coastal and marine biodiversity. This biodiversity underpins environmental, commercial and recreational growth in the Wide Bay Burnett region.

Our diverse range of coastal, estuarine and marine habitats (some of which are protected or conserved under World Heritage or Ramsar listings) include: the deep continental shelf located just off Fraser Island (influenced by the East Australian Current), rocky shores, dunes, coastal and tidal wetlands - mangrove forests, salt marsh and samphire flats (backed by peat swamps), seagrass meadows, coral and other reefs (including GBR’s southernmost reef-forming reefs); and soft-bottom habitats. These habitats have critical connections that enable the movement of water, sediment, plants and animals that are essential for life processes.

The region’s plants and animals including significant iconic and migratory species such as shorebirds, grey nurse sharks, humpback whales, dugong, and Indo-Pacific humpback dolphins, rely on healthy and available habitat. Our region contains the east coast’s largest dugong population south of Torres Strait and six of the world’s seven species of endangered and vulnerable marine turtles. Of these, loggerhead, green and flat-back turtles regularly nest along the region’s foreshores. Other significant species have iconic or economic value and sustain our tourist and fishing industries.

Coastal, estuarine and marine habitats are often disturbed, to varying degrees, by natural events such as tides, floods and severe storms. This disturbance is normal, natural and essential for ecosystem health, whereas human-induced pressures can often tip the balance (reducing their resilience) and contribute to major loss of biodiversity. Pressures on coastal, estuarine and marine environments include: coastal development, recreational and commercial
Coastal and Ocean Processes

**CEME1** – By 2018 the extent of development within erosion prone areas and natural tidal waterways is not increased but preferably reduced from the 2013 baseline.

**CEME2** - By 2018 the extent of tidal wetlands and significant coastal dunes is retained or improved from the 2007 baseline, taking into consideration recent flood mapping.

The Wide Bay Burnett coast contains some of the most diverse shorelines in Australia. Some shorelines are exposed to oceanic swells whereas others are protected resulting in less sandy and muddier shores. The region contains stretches of exposed sandy beaches such as those on Fraser Island and at Cooloola, estuarine systems such as those contained within the Great Sandy Strait, and a diverse range of rivers and creeks such as the Mary, Burnett, Elliott and Burrum Rivers and Baffle Creek.

Coastal and ocean processes involve the movement of water, sediment, plants and animals caused by wind, wave and currents, between rivers, the shoreline and the open ocean. The Wide Bay Burnett region’s shoreline is constantly changing as a consequence of coastal ocean processes that occur naturally (through erosion or accretion). These are also accelerated through the combined effects of coastal hazards (storm and tide flooding), coastal development (removal of coastal and marine habitats) and climate variability.

Coastal development in erosion prone areas (areas that have been determined as vulnerable) can alter natural wave, current and sediment transport patterns, resulting in increased erosion or accretion. Inappropriate placement of new coastal development in erosion prone areas will have negative social, economic and environmental consequences and costs. These may result in the loss of shorelines and habitats, placing the development at risk of loss or damage.

Man-made protection structures such as seawalls and groynes, or activities such as excavation, extractive industries, dredging, constructing marine infrastructure or pumping sand onto beaches can also disrupt natural coastal processes and impact on coastal and marine habitats.

In addition, climate variability is expected to make the region’s dune systems, wetlands and low-lying estuarine systems more vulnerable to storms, floods and drought. Sea level rise is predicted to inundate low lying areas and alter wetland type, extent and condition.

Areas free of development within erosion prone areas or along tidal waterways, buffer development from our coastal and marine systems, allowing for natural coastal processes to occur, thereby negating the need to protect property and life with expensive engineered structures.

Coastal, Estuarine and Marine Habitats

**CEME3** - By 2018 the extent and diversity of seagrass meadows, tidal wetlands, reefs, sponge and gorgonian gardens will be equal to or greater than that of the 2002, 2012, 2008 and 2014 baselines respectively.

**CEME4** - By 2018 the extent of all estuarine and marine benthic habitats will be known and a baseline created.

Coastal, estuarine and marine habitats of the Wide Bay Burnett lie between the well known Moreton Bay and Great Barrier Reef. But in comparison, very little is known about the region’s habitats, diversity, health and connectivity. Gaining a base level of knowledge about all habitats in the region is the first step to take before ecological health and connectivity...
can be assessed. Several types of connectivity that are important for the natural function of marine habitats are a result of aquatic flows between catchments and reefs.

These flows transport chemicals, nutrients, sediments, plants and animals between aquatic habitats. These flows and their qualities or condition affect:

- Land and Sea (east-west) connections between estuarine and marine habitats. For example, the importance and ability of coastal dunes and wetlands to filter nutrients, sediments and chemicals from water – from urban, industrial and agricultural activities, before entering inshore marine habitats such as seagrass and coral reefs.
- North-south connections in the Wide Bay Burnett associated with ocean and nearshore currents, and between the seafloor and top of the water column. For example, the currents between the Great Barrier Reef and Great Sandy Strait Ramsar area.
- The reliance of species in different habitats for different parts of their lifecycle. For example, mullet rely on freshwater rivers and the open ocean at different stages of growth and development.

Ultimately, unhealthy and disconnected coastal estuarine and marine habitats in the region will result in a reduction in recreational enjoyment and economic productivity. Therefore, knowledge about these habitats in our region, how they are connected and what state they are in, is imperative to our community and our lifestyle and will assist in future management.

**Significant Species and Fisheries**

**CEME5 - By 2018, the known population and extent of Indo-pacific humpback dolphin, dugong, turtles, humpback whales, shorebirds, water mouse and grey nurse sharks will be equal to or greater than that of the 2006, 2010, 2006, 2013, 2012, 2002, 2006 baselines respectively.**

**CEME6 - By 2018, recreational and commercial wild fisheries stocks of mackerel, prawns and spanner crabs will be equal to or greater than that of the 2013 baselines.**

**CEME7 - By 2018, the population, extent and connectivity of coral reef fish (including herbivorous fish like rabbit fish and scribbled angelfish) has been estimated and a baseline will be created.**

The Wide Bay Burnett region has an international, national and state obligation to protect many of its plants and animals, their populations and habitats, and to maintain the ecosystems upon which they rely.

There are many species that are considered significant for a variety of reasons including those that are iconic or valued by the community, or in need of conservation because they are considered endangered, vulnerable or near-threatened. Other species are used to measure environmental health or economic importance and are considered significant indicators.

Dolphins and turtles in the region for example, are considered iconic and important both culturally and economically. Like humpback whales, they have become significant for tourism activities in some coastal areas, and have totemic value to traditional owners such as the Butchulla people. Dugong are also considered iconic, as well as being a conservation significant species classified as Vulnerable under Australian and Queensland Government legislation. Healthy dugong and green turtles require healthy seagrass meadows in which to forage. Many economically significant fishery species are also reliant on seagrass meadows, along with mangroves and near-shore reefs. Coral reef fish in particular are a keystone species and indicator of reef condition, playing an essential role in controlling the overgrowth of algae. These habitats play a vital role in ecosystem health and the presence and location of many plants and animals in the region.

Better information is needed in the region about significant species, their populations, habitat requirements and key lifecycles – that is, where they spawn, spend their adult life and their movement (or connectivity) between these.
Monitoring other species considered *indicators* (reflecting habitat health) or *keystone* (reflecting roles in an ecosystem, and ecosystem health or resilience) is also required. It is important to gain more knowledge about human interactions with significant species, such as fisheries, tourism, resource and coastal planning, and the implications this may have for the region’s coastal, estuarine and marine habitats. For example, marine pests are plants and animals that potentially impact on marine habitats and resources. This will allow the region to have a greater understanding about its significant species, their population numbers, extent and connectivity to the landscape and seascape into the future.

**Coastal Water Quality**

**CEME8** - By 2018, biological water quality indicators of chlorophyll A, seagrass meadows, corals, herbivorous fish, mud crabs and crab holes will be maintained or improved from the 2013, 2002, 2008, 2016, 2013 baselines respectively.

Valuing water quality services and having a healthy coastal, estuarine and marine ecosystem has been recognised as important to the Wide Bay Burnett community, especially for human health. What is regularly and traditionally measured for water quality are physio-chemical indicators such as dissolved oxygen, pH, temperature, salinity and nutrients (nitrogen and phosphorus). These water quality indicators provide information about what *is impacting* on the ecosystem (refer to Water Resource Asset).

Biological water quality indicators such as algae, fish species or crab holes measure the health of the plants and animals and the habitats on which they rely, providing an overall picture of the *condition* of the ecosystem.

Changing land management practices, rehabilitating or maintaining healthy vegetation along waterways, and addressing water use in urban and agricultural development can have positive outcomes for the quality of coastal and marine waters and for our sustained and enjoyment of the Wide Bay Burnett region.
DRO 3 - Natural resource management

3.1 Natural Resource Management Principle 3.1.2
Impacts on the region’s natural resources (eg. the Land Resource asset) through the appropriate location, design and management or development are avoided or minimised.

3.3 Mineral resources and extractive industry Principle 3.3.1
Minerals and extractive resources are managed for current and future use, and their extraction, processing, transport and downstream value-adding continue to contribute to the economy.

3.4 Planning and managing agricultural land Principle 3.4.1
The region’s primary production areas are protected and sustainably managed to ensure their continuing contribution to the economy, and to mitigate the anticipated effects of climate change.

Living soil, unconsolidated rock and bedrock, together comprise the landforms of the region. Apart from narrow strips of alluvium (ie. sediment deposited by streams) and associated flood plains, small coastal deltas, and coastal sand-mass deposits, the majority of landscapes are comparatively old, and often in highly complex distribution patterns.

In terms of hectares, agriculture production is the largest land use within the Wide Bay Burnett. Horticulture, cropping and grazing cover approximately seventy percent of the total land area. Land uses require careful balancing of multiple (dynamic) management considerations in order to avoid negative impacts on Land Condition.

Land use and land management practices affect Land Condition, which is intricately linked with other natural resource assets. Three major themes for Land Condition have been identified - Soil Health; Agriculture; and Mining and Extractive Industries – which all represent finite / non-renewable resources such as soil, minerals/gas and productive agricultural land.

Knowledge, education and awareness of landscape and soil processes is essential for responsible land use decision making (with regard to controls outlined in statutory planning documents and Development Assessment processes) and effective land management practices and adoption of Industry Best Management Practices (BMPs). Management aims to reduce fragmentation of agricultural land and avoid land use conflict through effective planning; and to maintain good Soil Health, biosecurity and Land Condition.

Of particular importance to the community is retention of agricultural land. Land use change can impact productivity of agricultural lands by fragmenting productive areas, reconfiguring lots to economically unviable sizes, or by introducing conflict with adjoining or competing land uses such as urban development, mining and forestry. Such pressures run the risk of decreasing the extent of agricultural land, while farm management practices influence Soil Health and Land Condition. Loss of agriculturally productive land also increases the existing pressure on remaining areas and associated risks to condition and future food production and security.

Biosecurity is also of concern for the region, particularly in agricultural production and post production in mining and extractive industries. Weeds have the potential to reduce primary industry productivity and profitability through: competition with pastures leading to reduced stocking capacity and erosion; toxicity to stock; competition with crops for water and nutrients; increased stock mustering costs; and irrigation management costs.
Forestry is another significant land use within the Wide Bay Burnett region comprising both Crown and freehold enterprises and includes softwood and hardwood plantations and native hardwood forests. It is estimated to cover approximately thirteen percent of the total land area of the Wide Bay Burnett region (constituting approximately sixty percent of the total State plantation estate). With respect to Land Condition, forestry poses a comparatively low risk to Land Condition (due to plantation longevity, low level management input requirements and infrequent disturbance). As such is not covered as a separate theme but is proposed to be monitored via the suite of Soil Health indicators.

Ultimately improving Land Condition through effective planning and innovative/adaptive management (particularly with respect to climate variability) will enable continuing agricultural production, biodiversity conservation, functioning of ecosystem services, urban development, mineral and gas resource extraction, and improved surface, ground and marine water quality.

**Soil Health**

Five main aspects of Soil Health are: salinity, soil acidification, soil organic matter (SOM), erosion, and acid sulfate soil (ASS). Each is considered important to gauge how well the Land Resource is functioning across all land uses and provide an indication as to the state of other soil health factors like soil productivity, fertility, structure and biology.

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**LR1 - Salinity**

By 2018, salinity extent and severity Baselines will be established.

‘Secondary salinity’ (commonly termed ‘salinity’) is the accumulation of soluble salt in soil or water (surface and groundwater) due to human activities. It is the result of complex interactions between geophysical, climatic and land use factors; making cleared landscapes naturally high in salts and under irrigation at greatest risk.

Salinity becomes an issue when the concentration of salt affects plant growth (crops, pastures or native vegetation), degrades the soil or affects infrastructure – such as soil scalding and rusting. Salinity may also become a water issue when the potential use of water (including environmental needs) is limited by the water’s salt content. Saline areas are also prone to erosion and difficult to rehabilitate.

Salinity management aims to change the hydrologic equilibrium of sensitive areas by managing groundwater through improved plant growth (crops, pastures and trees), improved irrigation methods (water application, water quality and water table monitoring), soil and land management, and engineering solutions (such as soil/landscape drainage and resistant infrastructure). While understanding landscape processes is essential to improving management decisions, avoiding development in sensitive areas is the best solution.
‘Soil acidification’ refers to an increase in soil acidity (pH) resulting from long term fertiliser application and removal of nutrients (particularly calcium and magnesium) via cropping. Sandy, cropped, acid soils (pH < 6.5) are at greatest risk of acidification.

Increasing soil acidity affects the availability of nutrients to plants, which creates either nutrient deficiency or toxicity, subsequently affecting plant growth. Soil acidification is cumulative and as such is predicted to be an increasing issue within the region over the next decade, if left unchecked.

It is slow to develop, but relatively quick to rectify (providing the soil is not allowed to significantly acidify in both the surface and subsoil). Application of both ‘low’ acidifying fertilisers and soil conditioners such as lime or dolomite help to correct soil pH before problems occurs.

LR3 - Soil Organic Matter
By 2018, a SOM Baseline will be established.

Soil organic matter (SOM) – in particular soil carbon - is derived from decaying plants and animals and plays an essential role in soil health and condition such as: stable soil structure; pH buffering capacity; effective nutrient supply; improved water availability; surface infiltration and profile permeability; healthy microbial and faunal activity; and storage of carbon to buffer green house gases in the atmosphere. Cultivated soils are at most risk, with most cropped soil having around 50% of the soil carbon than prior to initial clearing.

Maintaining SOM levels is difficult as disruption of normal plant growth reduces the supply of organic matter to the soil; and loss of SOM can cause decreased productivity of agricultural land, which can lead to soil loss through decreased structure and condition and subsequent erosion.

Effective management actions aim to promote SOM, including: minimum tillage; retention of plant and crop residues; maintenance of soil fertility (chemically and physically); appropriately-timed low temperature burning; and rehabilitation of degraded areas.

LR4 - Erosion
By 2018, Baselines for sheet erosion risk, stream bank erosion risk and gully erosion extent and severity will be established.

Accelerated soil loss by water as a result of human activity can cause the following types of erosion: sheet (ie. uniform overland flows), gully (ie. channelled overland flows) and stream bank (ie. associated with natural drainage systems). The rate or likelihood of erosion is influenced by numerous factors (such as rainfall, slope, soil type, groundcover and disturbance) and is commonly triggered by other soil issues such as salinity, soil acidification, loss of SOM and disturbance of ASS. Unstable, cultivated or bare soil on sloping lands in the wet season is at highest risk of erosion.

Soil loss results in long term productivity decline of agricultural systems, sedimentation of streams (affecting water quality and aquatic/marine ecosystems, biodiversity and industries), damage to infrastructure and increased water treatment costs. Remediation can be resource intensive (money, time and labour) and in some instances may be irreversible. Soil erosion is regulated under the Soil Conservation Act 1986, the Vegetation Management Act 2000, the Environmental Protection Act 1994, the Environmental Protection (Water Management) Policy 1994; and State Planning Policy 4/10: Healthy Waters.
Well established land management practices aim to maintain groundcover and to minimise disturbance — especially during wetter months. Examples of effective management practices include: implementing engineering solutions such as surveyed contour banks and water ways; minimising soil exposure periods and disturbance; strategic retention/planting of vegetation buffers; and maintaining stable vegetation (including grasses, shrubs and trees) on stream banks.

**LR5 - Acid Sulfate Soils**

By 2018, a Baseline for ASS extent will be established.

Acid sulfate soils (ASS) are soils containing iron sulfides mainly formed under marine conditions in the last 10,000 years. When exposed to air, the sulfides oxidise to sulfuric acid, acidifying soil and water, releasing iron and aluminium and, possibly, heavy metal contaminants. ASS is generally located in low-lying areas (elevation <5m AHD), usually near the coast.

Exposure and disturbance of ASS reduces farm productivity, destroys infrastructure and impacts on aquatic and marine habitats. ASS is expensive to manage and its environmental effects irreversible.

Avoiding disturbance of ASS is the cheapest and most effective form of management. Where exposure/disturbance cannot be avoided, management aims to limit the amount of sulfides exposed to the air and to neutralise the acid in the soil and water before it (and any other contaminants) are released to the environment (for example via application of calculated liming rates or burial). Effective planning by identifying development constraints (e.g. location of infrastructure) in affected areas will contribute to the management of the negative impacts of ASS.

**Agriculture**

Good quality agricultural land is of regional significance and its protection requires regional coordination to avoid permanent loss of land or diminished productivity. Land management practices vary between different agricultural sectors but all practices share the goal of ensuring sustainability, the health of the soil, water quality and productivity.

To be economically viable, agricultural produce needs to be marketable locally, interstate, and internationally. Access to these markets relies on good biosecurity practices including appropriate chemical usage, maintenance of (plant and animal) pest and disease free areas, weed and pest management and high standards of animal care and welfare.

**LR6 - Horticulture & Cropping**

By 2018, Baselines for availability and condition of cropping lands will be established.

Agricultural cropping land is a finite resource, important to the long term economic needs of the Community, accounting for approximately 5% of the total land area of the region. For the purposes of the NRM Plan, ‘horticulture and cropping’ is deemed to include all irrigated and non-irrigated fruits, nuts, vegetables, tree crops, cane, grains, cereals, fodder crops, turf and flowers.

Strategic cropping land is important to the community and is protected under legislation.

**LR7 - Grazing**

By 2018, Baselines for the availability and condition of grazing lands will be established.

Agricultural grazing land is a finite resource, important to the long term economic needs of the Community, accounting for approximately 65% of the total land area of the region.
For the purposes of the NRM Plan, grazing land is deemed to include all irrigated, dryland, native and improved (i.e. sown) pastures. Grazing land condition takes into account the extent of groundcover, erosion, weeds, desirable pasture species and woody vegetation thickening.

Grazing is an important land use in the Wide Bay Burnett region. The NRM Plan aims to preserve the extent and condition of grazing land for future production and economic prosperity.

Mining & Extractive Industries

**LR8  - By 2018 net gain* baselines for permitted mining and extractive industries in Wide Bay Burnett will be established.**

*Where ‘net gain’ means having a net positive benefit to all other assets & targets within the NRM Plan.

‘Mining and extractive resources’ - refers to quarrying of sand, rock and gravel and all open-cut/underground mining or extraction of minerals, coal, petroleum and gas. Existing mineral production and identified resources in Wide Bay Burnett include: gold, silver, kaolin, limestone, coal, ilmenite, apatite, scandium, feldspar, siltstone, silica sand, clay, gravel, black granite, basalt, uranium and bauxite. Extractive resource sectors are regulated by four acts; and State Planning Policy 2/07: Protection of Extractive Resources. This policy aims to protect state or regionally significant extractive resources from other restrictive development (where extractive industry is deemed appropriate in principle).

Mining and extractive industries (which cover approximately one percent of the total land area of region) are an important component of the regional economy with increasing exploration for coal across the region; for minerals in Kingaroy, Gayndah and Murgon; and for petroleum from Bundaberg to Maryborough and from Monto to Mundubbera. Future investigation interests within the region are likely to include underground coal gasification, coal seam gas and geothermal energy.

The key issues relating to the industry are:

- Incompatibility with competing land uses (including loss of agricultural land);
- Impacts on natural resource assets (in particular Land Condition);
- Success/effectiveness of site rehabilitation (post extraction);
- Strategically offsetting environmental harm;
- Surfacewater, groundwater and wastewater management; and
- Gaining community and strategic outcomes from any environmental harm.

Little information/data exists in relation to the impact of mining and extractive industries on natural resource assets within the region to date, however monitoring and evaluation efforts are likely to focus on the asset themes/indicators.
Fresh water is a precious, fundamental and limited resource, vital for the region’s social, ecological, economic and cultural sustainability. It is also essential to the health of our wetlands.

The region comprises a diverse range of riverine, estuarine, coastal and marine habitats associated with the major systems of the Burnett, Baffle, Kolan, Burrum and Mary catchments. There are also a number of major groundwater aquifers including the Coastal Burnett, Cooloola Sandmass and the Mulgildie Management Area of the Great Artesian Basin (GAB) together with alluvial aquifers associated with the river systems.

The Burnett Basin is one of the largest in South East Queensland covering 3.7 million ha and includes both coastal and inland catchments. The Baffle Basin, located between Bundaberg and Gladstone, is relatively pristine with near natural flows throughout. It is recognised for its high ecological and nature conservation values.

Good water quality is crucial for the health of aquatic ecosystems and for the provision of consumptive supplies for urban, industrial and irrigation use. The region’s major catchments flow into receiving waters of Hervey Bay (and the southern Great Barrier Reef lagoon) and the Great Sandy Strait.

The Wide Bay Burnett community has a growing awareness of the importance of water resource quality and quantity, and the factors affecting water flows.

Climate variability has the potential to affect the frequency, magnitude and duration of stream flows and groundwater levels. This would have an impact on the health of current water dependent ecosystems and on availability of water supplies for the rural, urban and industrial sectors.

These risks can be mitigated by adopting a total water cycle management approach where current water supplies are sustainably managed and new alternative sources are sought. This increases supply reliability and sustainability while conserving and protecting wetlands and waterways to allow natural water ecosystem function and processes.

In Queensland, the Water Act 2000 provides for the development of legislative Water Resource Plans (WRP). Flow regimes, licensing and trading rules are all managed under these instruments. WRP s are reviewed every ten years and include monitoring of aquatic ecosystem health to ensure that water extraction and flow regimes are not detrimentally affecting these communities. The Mary Basin and Burnett Basin WRP s are due for review in 2016 and 2021 respectively.
Water Dependent Ecosystems

WR1 - By 2018 the extent and type of water dependent ecosystems (such as Palustrine, Lacustrine and Riverine wetlands) will be maintained or improved from the 2012 baseline.

Water dependent (or freshwater) ecosystems are wetlands and comprise all inland waters including surface flows, inland rivers, streams (rivers that flow continuously — perennial, or rivers that flow occasionally — ephemeral), lacustrine (deep, permanent freshwater lakes) and palustrine (shallow swamps and inundated areas); and aquifers (groundwater).

Wetlands are an essential part of the natural landscape and provide services to our community and the ecosystems that we are part of. Wetlands filter contaminants, sustain our food resources and provide reliable water supplies. Water quality, volume and the time water remains in or flows through wetlands are factors which determine wetland health.

Each type of wetland, and the plants and animals that depend on them, has evolved to suit the natural range of water quality, volume and flow it experiences under natural conditions. The distribution and abundance of living things, ecosystem processes and lifecycles of aquatic and land based plants and animals can be affected where flows are disrupted. Most waterways in our region are subjected to disrupted flows threatening the long-term survival of water and other dependent ecosystems.

If the water quality, volume or flow changes due to altered flows (such as obstructions or diversions – dams, weirs, water extraction) or from altered land use (such as urbanisation, invasion by aquatic pest plants and animals, and clearing of vegetation resulting in increased sedimentation) it can change the extent and condition of the wetland.

Generally modified flow regimes of the rivers and streams in the Wide Bay Burnett are the result of numerous water storages, such as dams, weirs and barrages. Several water supply schemes operate in our region including: Bundaberg, Upper Burnett, Barker/Barambah, Boyne River and Tarong, Three Moon Creek, the Lower Mary and the Mary Valley. In addition to this, large volumes of water are transferred between some rivers, which can or have affected water quality and ecosystems, for example, the transfers that have occurred from the Kolan River to the Burnett River.

To properly maintain water and ecological flows, it is important to understand the type of wetlands that are present in our region, and their extent. Understanding whether wetlands are changing in extent and condition informs us about the effect external influences have at both the catchment and property level.

Groundwater Quality

WR2 - By 2018, groundwater dependent ecosystems have been identified and mapped for the WBB region, and the extent and type will be maintained or improved from the 2012 baseline.

WR3 - By 2018, the groundwater levels will be maintained or improved from the 2014 baseline.

Groundwater dependent ecosystems include terrestrial, estuarine and marine plants and animals that depend on groundwater for at least some part of their life processes.

Groundwater ecosystems throughout the Wide Bay Burnett are a significant resource, fundamental to the region's social, ecological, economic and cultural sustainability. Groundwater quality varies throughout the region, with Burnett groundwater generally good and suitable for both domestic and irrigation supplies; however groundwater quality in the Lower Mary area is generally poor, with saltwater intrusions, an on-going management issue for coastal aquifers.

Rapid population growth which results in urban, residential and industrial development can lead to corresponding increases in septic, sullage and waste water discharge that can seep into groundwater systems.

Urban areas present a wide variety of potential groundwater pollution sources, including fuel stations, industrial sites, contaminated sites and
landfill. Agriculture, mining and intensive industries are other potential sources of increased pollution that can pose a risk to groundwater quality.

Groundwater levels represent the best parameter to indicate the status of the groundwater resource unit (a hydrologically connected groundwater system). Changes to groundwater levels can affect sea or salt water intrusion into freshwater aquifers, base flows in watercourses, surface water and groundwater connectivity, as well as provision of water for groundwater dependent ecosystems. Water levels must always be considered in the context of rainfall or predicted levels from groundwater models.

A lowering of groundwater levels impacts on extraction costs whilst rising levels can contribute to loss of production as a result of waterlogging and dry-land salinity. In severe cases rising groundwater can damage building foundations and flood basements (and other below ground structures). With effective management, strategies at-risk groundwater resource units will have groundwater levels within identified and acceptable annual ranges.

**Surface Water Quality**

WR4 - By 2018 the water quality entering the coastal, estuarine and marine environments will have a reduction in the levels of chemical, sediment, nitrogen and phosphorus from that of the 2016 baselines.

Only a small portion (one one-thousandth of one percent) of the world’s water resources are found within surface water systems (such as rivers and creeks), yet these systems are the ones on which we most depend. Surface water quality is heavily dependent upon volume so when evaluating and monitoring surface water quality, like must always be compared with like, for example flood must be compared with flood.

Surface waters receive input from rainfall, groundwater recharge and overland flow, all of which have implications for the quality of water found within these systems.

Surface water quality of the Wide Bay Burnett region is affected by point source discharge (from an identifiable location), surface water runoff and the quality of connected groundwater systems. Sediments, nutrients and chemicals are suspended in the surface water column and enter the estuarine and marine environment (the receiving waters of catchments) from coastal streams and rivers. Our coastal habitats including sea grass meadows, coral reefs, and mangroves (encompassed within the southern portion of the Great Barrier Reef lagoon, receives surface run off from our region). These habitats all depend on good water quality to be healthy, and supply essential habitat and food to many plants and animals and us.

Risks to water quality in the region include consequences from natural processes like climate variability and from human activities (like discharges of wastewater, changes in land use, land clearing and poor land management practices). These activities can mobilise nutrients, chemical pollutants and sediment to enter wetlands and the marine environment impacting the plants and animals that depend on good water quality for life. They also impact on residential, primary and industrial production and recreational uses of surface water.

Measuring water quality is important for understanding the changes in the catchment and the overall health of the Wide Bay Burnett system.

**Water Security & Water Use Efficiency**

WR5 - By 2018, the adoption of total water cycle management (such as water sensitive urban design, water recycling and water allocation) will be maintained or improved from the 2012 baseline.

Water resource management is about seeking a balance between consumptive use and water for the environment. There are key knowledge gaps regarding environmental water requirements of aquatic ecosystems in the Wide Bay Burnett region. The sustainable management of water resources will depend on bridging those gaps.
Regional economic growth, social well-being and healthy aquatic ecosystems are dependent on the provision of secure and sustainable water supplies. Water resources are highly variable and need to be used efficiently and allocated to their highest value use in order to improve both economic and environmental outcomes.

Projected climate variability scenarios indicate our region will experience reduced water availability. A total water cycle approach will address all aspects of supply and demand within the system, and build resilience to change through adaptive management.

It includes reducing demand through efficiency measures as well as developing a range of sustainable supply options, including greater use of recycled water and consideration of alternative water sources such as stormwater harvesting and desalination.

A ‘Level of Service’ approach can improve understanding and mitigation of the regions water supply security issues. Level of Service is a measure of the security afforded to an urban water supply and incorporates assessment of supply failure risk, and the maximum frequency, duration and severity of supply restrictions likely to be imposed on water users.

There is a shift in new agricultural developments to install water efficient systems such as localised irrigation, low pressure sprinklers and using drip/trickle irrigation instead of furrow irrigation.

Closer attention to scheduling of irrigation is also occurring.

Given the potentially significant delay between identifying a supply risk and commissioning new water supply infrastructure, planning for supply security needs to consider the forecast demand for water into the future, ensuring that demand does not exceed the available supply.

Urban demand management and rural water use efficiency play important roles in reducing the demand on scarce water resources. Total water cycle management recognises the finite nature of water resources in the landscape, and the interrelationships between the extraction and use of water and its role in the natural environment.

The challenge for our region is to strike the correct balance between effective and efficient management of water resources and the needs of the ecosystems upon which plants, animals and we depend. Limiting risk to aquatic ecosystem health and water dependent ecosystems and processes will ensure the security of Wide Bay Burnett’s water for the future.

Through water resource and operation planning, adopting water sensitive urban design, water recycling, maintaining environmental flow and, conserving wetlands and waterways, total water cycle management can be achieved.
Land & Freshwater Ecosystems

By 2031, the condition, extent and connectivity of terrestrial and freshwater ecosystems will be maintained at, or improved from the baseline.

DRO 2 - Environment
2.1 Biodiversity
Principle 2.1.1
The region’s natural assets, biodiversity values and ecological services are protected, managed and enhanced to improve their resilience to the anticipated effects of climate change and other threats.

2.5 Green space network
Principle 2.5.1
An integrated green space network caters for a range of community and environmental needs

DRO 3 - Natural resource management
3.2 Ecosystem-dependent economic resources
Principle 3.2.1
Ecosystems are sustainably managed, ensuring their cultural, social, economic and environmental services and values are protected.

3.7 Water quality, water way health and wetlands
Principle 3.7.1
The ecological health, environmental values and water quality of coastal, surface and ground waters are protected.

The Wide Bay Burnett region is located in overlapping climatic zones with tropical influences to the north, subtropical lowlands in the south, and temperate conditions in the Bunya Mountains to the south west of the region. The area spans two biogeographic regions: the Southeast Queensland Bioregion in the east, and the Brigalow Belt Bioregion in the west. It is one of the most ecologically diverse regions in the state due to the climate, variety of soils, vegetation, land types (mountains, lowlands, coastal), and influences of historical including traditional peoples’ management. The Brigalow Belt Bioregion has been identified by the Federal Government as a biodiversity target, as it is an area significantly modified for agriculture and contains fragmented habitat for many rare and threatened species.

The Wide Bay Burnett contains a diversity of freshwater habitats, and some areas of relatively pristine riverine habitat. However, many freshwater habitats have been cleared or heavily modified for agricultural, industrial and residential development, particularly in coastal areas.

Remnant vegetation covers about 45% of the region, with most of this existing in public estate lands and a large proportion in State Forest. Areas with known high biodiversity values include the Fraser Island/ Cooloola Coast, Cania Gorge, Bunya Mountains, Kinkuna/Woodgate and the Burrum-Cherwell catchments. These areas have large tracts of relatively intact remnant vegetation and diverse ecosystems, providing habitat for numerous threatened species and serving as major bastions for biodiversity.

The Wide Bay Burnett region contains the State’s highest number of priority species requiring urgent attention through improved conservation practices. Communities under threat include semi-evergreen vine thicket, brigalow, and littoral rainforest.

Key threatening processes to biodiversity in the region are a result of previous and continuing reduction in the extent and condition of native habitat through fragmentation, degradation by adjoining land uses and alteration of aquatic flow regimes. The biggest cause of habitat loss in Queensland has been through clearing for agriculture and in-stream barriers (dams, weirs and barrages). Increases in human population and continuing demand for urban growth, particularly along the coast, continue to place pressure on an already fragmented natural environment.
One of the greatest threats to the condition and extent of terrestrial and freshwater ecosystems is the intrusion of weeds and pest animals with significant economic, environmental and social impact – making bio-security a priority. Altered fire regimes have also been identified as the greatest collective threat to priority native plants and animals in our region.

The healthier the condition and relative connectivity of our native vegetation and freshwater ecosystems, the more resilient they will be to long and short term environmental changes.

Native Fauna Health and Viability

LFE1 - By 2018, the known populations and extent of threatened and priority species such as the Mary River Cod, Lungfish, Giant Barred Frog, Black breasted Button Quail, Coxen’s Fig Parrot, Illidge’s Ant Blue Butterfly, will be equal to, or greater than the 2012 baseline.

The presence of healthy populations of native animals in an area is generally a good indication they are living in a healthy environment or that there is adequate and suitable habitat available. Functional and connected habitats aid successful breeding, which in turn results in healthy, viable populations.

There are a number of species and populations that are under considerable threat in the Wide Bay Burnett region. Our region has an international, national and state obligation to protect many of its plants and animals, their populations and habitats, and to maintain the ecosystems upon which they rely.

As stated previously, our region contains the State’s highest number of priority species requiring urgent attention. Among other species requiring particular attention include the Water mouse, Mary River turtle and Mary River cod, Queensland lungfish, Giant barred frog, Oxleyan pygmy perch, Black-breasted button quail, Coxen’s fig parrot and Illidge’s ant-blue butterfly.

Some of these species are threatened because there are obstructions or diversions modifying river flows, others from changed land use patterns or practices. Alterations to habitat can negatively impact on a species, lead to change in lifecycles, distribution and abundance, and ultimately a species existence within an ecosystem.

Better information is needed in the region about a number of species – their habitat requirements and key lifecycles – that is, the breeding sites where they start their life, the areas where they spend their adult life and their movement between these critical sites. This knowledge will allow a greater understanding about the health and viability of our animal populations, and the connectivity of the landscapes and seascapes of the region.

Native Vegetation Fragmentation and Connectivity

LFE2 - By 2018 the extent and connectivity of threatened native vegetation communities semi evergreen vine forests, Brigalow forests and littoral rainforest will be equal to, or greater than, the 2006 baseline.

The region’s native vegetation provides the backbone of our ecosystems and wide variety of habitats. Wide Bay Burnett has near pristine tracts of vegetation and, contrasting with this, areas that are severely degraded. Minimising fragmentation of existing larger tracts of native vegetation, building connectivity between smaller tracts and rehabilitating degraded areas underpin many nature conservation outcomes.

An important indicator of the status of the Wide Bay Burnett’s natural resource base and the health of the landscape is the comparison between current remaining vegetation types
(including their extent) and pre-1850 vegetation types and their extent. This comparison also assists in interpreting the impacts of landscape change since European settlement.

The extent and connectivity of some of the regions native vegetation is under threat, in particular semi evergreen vine forest, Brigalow forests and littoral forests. Vegetation is not only important for the air we breathe but for the health of ecosystem which we depend upon for clan water and other services as well as habitat for wildlife.

Large tracts of vegetation provide significant habitat for wildlife. Small, isolated remnants are less likely to provide suitable habitat and are more susceptible to the impacts of surrounding land uses such as urbanisation, agriculture and fire as well as impacts from invasive weeds and pests.

Without connectivity, populations become isolated and genetic diversity diminishes over time. As resources diminish, the ability of wildlife to migrate and colonise new areas is impeded, especially when vegetation is cleared and incompatible adjacent uses are established. Likewise the ability of seeds and pollen to be transported, extending the scope for genetic diversity, is inhibited.

Understanding the extent and connectivity of vegetation within the Wide Bay Burnett region will help indicate the ability for our ecosystems to maintain genetic diversity and species resilience to environmental change across the landscape.

Native Vegetation Condition

LFE3 - By 2018, the negative impacts of invasive pests, weeds and inappropriate fire management which directly affect the condition of native vegetation (diversity and representativeness) will be improved from the 2012 baseline.

A healthy environment is essential to providing ecosystem services such as clean water, nutrient cycling, ameliorating local climate and providing wildlife habitat. Ecosystem status can be measured by looking at its overall extent in the landscape, relative patchiness (edge), ecological productivity and regeneration capacity. However, vegetation condition including types of threatening processes (adjacent land uses such as grazing and agriculture, altered fire regimes, close proximity to urbanisation, presence of pest plants and animals), floristic diversity and structure, and other important habitat features for wildlife - are not presently measured on a regional scale.

Understanding the current condition of ecosystems within the landscape and their susceptibility to threatening processes will contribute to better future planning decisions and key actions in the future to achieve the stated target.

Fire management regimes are undertaken for many reasons such as hazard reduction associated with the protection of communities, people and property, agricultural practices and for improving environmental outcomes such as biodiversity, watershed protection and pest management. Incorporation of traditional and contemporary knowledge relating to fire frequency, intensity and timing and the ecological implications for seed release, germination, flowering and lifecycles of cohabiting species is a part of a sustainable management practice for the region.

Invasive pest animals and weeds are a common and major problem in the Wide Bay Burnett region. Weeds and pest animals have the potential to adversely alter ecosystem function, reduce primary industry productivity and profitability, and seriously limit the long-term sustainability of natural systems. They increase
the risk of fire, change the structure of vegetation, increase costs to infrastructure maintenance, and reduce the amenity of recreation areas.

Pest animals further compound the threat fragmentation causes to our native wildlife. The impacts of pest animals include direct predation, competition for food and other resources, introduction of disease and destruction of habitat causing soil erosion and altered water quality.

Without management, weeds and pest animals can cause major issues for the region including its economic prosperity.

**Freshwater Ecosystem Distribution and Connectivity**

**LFE4** - By 2018, the connectivity of freshwater ecosystems (such as Palustrine, Lacustrine and Riverine wetlands) will be maintained or improved from the 2012 baseline.

**LFE5** - By 2018 the area of rehabilitation of freshwater riparian zones is greater than or equal to the 2006 baseline.

Freshwater ecosystem (wetland) connectivity is the degree to which waterways and water bodies are linked across a landscape. Many plants and animals rely on freshwater habitats for food and water, breeding, migration, and in-stream shelter. Some species rely on connectivity between fresh and estuarine waters for survival. Many native fish for example, use inland waterways to migrate to different habitat at key stages in their life cycle, such as to breed, disperse, avoid predators and competitors, and to forage. It is vital to ensure fish and other aquatic species have access to these different habitat areas, including both estuarine and marine areas for diadromous fish species (requiring both fresh and marine waters at different lifecycle stages).

Management practices that degrade land and water resources, water resource developments, rainfall variability and in-stream infrastructure all impact on the connectivity and functionality of wetlands. Understanding the extent and type of wetlands, and improving the overall connectivity of wetlands in our region will improve the aquatic habitat network. It will also help to improve water quality within catchments (refer to Water Dependent Ecosystems in the Water Resource Asset).

Rehabilitating land and riparian areas to connect tracts of vegetation throughout the landscape will also provide a stronger, more resilient network of habitats for the region’s native wildlife.

Connected, vegetated landscapes allow for the colonisation of new areas, access to seasonal food sources and shelter, as well as allowing for gene flow. A connected landscape builds resilience to the effects of climate variability and short term disturbances such as fire and flood.

Rehabilitation efforts will focus on mending critical gaps in state and regional connectivity, which have already been identified. Identification of local connectivity in both urban and rural areas will strengthen habitat networks throughout the region and facilitate wildlife movement across landscapes. This will assist in achieving our target of increasing both connectivity and native vegetation extent.

It is important to consider the system of the broader region as a whole, whereby improvement in the connectivity of our freshwater and terrestrial ecosystems, from catchment headwaters through to estuarine and marine environments, is imperative to healthy and functional river catchments and connectivity between catchments.

It is important to maintain the extent of natural wetlands and see an increase in the number of wetlands being restored by effective management practices.
Regional landscapes within a region contribute significantly to the region’s economy and liveability. Regional landscapes can be defined as areas of land, water, and sea where the interaction between people and nature has produced a distinct character over time. They are entrenched in our culture and linked to our values, beliefs and our history. They include both Indigenous and non-Indigenous connections with our natural and modified landscapes.

Regional landscapes are areas of open space located outside the urban and industrial precincts of our community. They may be forested corridors or expansive aquatic systems that support and connect the regions wildlife and biodiversity. They may be landscapes of significant aesthetic and outdoor recreation values; areas of rural agricultural production; or landscapes that contain traditional cultural values for aboriginal people and their connection to country.

Regional landscapes normally contain one or more of these values and they may stretch across many tenures of land and many types of land use. Because of this, Key Regional Landscapes need to be recognised as a regional asset in their own right so that broader community values regarding landscapes are considered when land management decisions are being made rather than solely the wishes of individual property owners.

The Wide Bay Burnett region contains many unique landscapes that are regionally, nationally and internationally important. They extend from the iconic coastal sand formations of Fraser Island, Cooloola and the Great Sandy Strait to the rivers and streams that flow from the forested hills, plains and mountain ranges. They include natural landscapes such as the Woongarra coastline and turtle nesting sites at Mon Repos, to those resulting from rural settlement such as the coastal sugar cane belt, the red soil cropping lands of Kingaroy, the citrus hubs of Gayndah and Mundubbera and pastoral grazing lands of the North Burnett.

Some key regional landscapes in the Wide Bay Burnett include:

- the Indigenous and non-Indigenous cultural heritage values of the Bunya Mountains;
- the geological/geomorphologic values of the volcanic Coalstoun Crater Lakes;
- the Mt Walsh complex near Biggenden;
- Ban Ban Springs and Wongi Waterholes;
- the natural attributes of the Mary River and associated marine waterways;
- the scenic rural views from Boat Mountain near Murgon;
- the sport and recreation values of freshwater fishing in Lake Monduran near Gin Gin; and
- riding along Australian Bicentennial National Trail.

Population growth and increased urban development are major threats to the regions landscape values. Identification and management of key regional landscapes is necessary to ensure that the regions natural and cultural values are
preserved. This contributes to the quality of life enjoyed by the regions people by providing access to, and connection with, the region’s unique landscapes.

**RL1 - By 2018, the condition, connectivity, and compatibility of key regional landscapes will improve from the 2013 baseline.**

Many key regional landscapes within the Wide Bay Burnett are generally known and valued by the broader regional community and its visitors. However, the extent connectivity and compatibility of these places in the “patchwork” of the landscape are often inadequately identified, defined or protected when property scale planning decisions are made.

Therefore, effort to identify, connect and improve the quality of key regional landscapes is a priority of this plan.

Healthy and connected key regional landscapes will also contribute to improving each of the other environment and natural resource assets that are being addressed in the NRM Plan.
Aboriginal Natural & Cultural Values

By 2031 Aboriginal people will have improved opportunities to maintain their cultural connections to country.

DRO 6 - Engaging Aboriginal and Torres Strait Islander people

6.1 Traditional Owner and Elder engagement

Principle 6.1.1

Traditional Owners are actively engaged in planning and development processes and their connectivity with Country is understood, considered and respected.

The Wide Bay Burnett is the traditional country of many Indigenous peoples: the Butchulla, Djakunde, Jangerie Jangerie, Gooreng Gooreng, Gurang, Jinibara, Gubbi Gubbi (Kabi Kabi), Taribelang Bunda, Wakka Wakka, and Wulli Wulli.

Aboriginal people have strong and complex physical and spiritual connection to their traditional country. The physical and cultural values of land and sea country are cultural resources essential to the wellbeing of Aboriginal custodians of our region. Cultural resources include land, water, plants, animals, coastal and marine resources, totemic relationships and community relationships. Traditional Owner knowledge, values and processes are culturally defined, extensive and can significantly contribute to the sustainable management of our region’s natural resources.

Indigenous cultural landscapes include natural features and human modified sites of significance. To Aboriginal people these cultural landscapes convey a sense of place, cultural identity and tradition indicative of a long and complex relationship with the landscape. Activities to protect and conserve cultural landscapes allow Traditional Owners to reaffirm their obligations to look after country.

ANCV1 - By 2018 Traditional Owner groups will have governance structures providing opportunities for involvement in projects on country.

ANCV2 - By 2018 protocols will be established at appropriate Traditional Owner decision making level to develop and support working on country partnerships.

An understanding of and respect for natural and cultural landscapes are key elements of traditional cultural knowledge. When natural resource management projects are structured to allow for culturally appropriate participation by Traditional Owners, cultural obligations to care for country can be satisfied.

Through the acknowledgement and support of traditional governance structures and the establishment of cross-cultural protocols with all NRM stakeholders, partnerships achieving sustainable natural and cultural resource management outcomes will benefit all of the Wide Bay Burnett community.
Communities are at the heart of sustainable use of environment and natural resources. Understanding and feelings of stewardship — support, governance and care — toward the region in which they live influence a community’s behaviour toward these resources. Therefore, community involvement is critical to achieving regional environment and natural resource management targets.

The Wide Bay Burnett has a proud history of voluntary community action, supported by industry and government investment. In addition, most of the region is managed by private landholders, many of whom make considerable effort to conserve native vegetation and threatened species, implement best-management practices, and reduce their impact on the landscape.

It makes sense to invest in engaging with the community and building its capacity to actively participate in planning, implementing and monitoring local and regional NRM projects. Such action will be well rewarded — strong partnerships will be forged between all stakeholders, from investors and businesses to educational institutions and community groups to individuals. The evolved regional community will be better equipped to work collaboratively toward achieving regional NRM targets.

C1 – By 2018, a charter for Best Management Practice on recognising, valuing and sharing each other’s knowledge and values will be acknowledged and accepted by NRM groups and organisations in the Wide Bay Burnett.

Wide Bay Burnett NRM stakeholders come from many different backgrounds and work across diverse businesses and industries, which often value different aspects of our region’s natural resources. Accepting and respecting each other’s knowledge and values is essential to forming genuine partnerships and working together toward achieving common goals.

By sharing knowledge, skills and values we increase our ability to solve problems. We expand our world view and are more open to new ideas and different ways of doing things. Innovative thinking and creative problem solving are enhanced.

Collaboration of this nature between NRM and environmental groups and organisations is likely to enhance a strategic approach to resource management, attracting positive consideration from funding bodies and increased involvement from the community. This will strengthen effective and equitable NRM outcomes across the region.
C2 – By 2018, a baseline of level, type and distribution of community involvement in NRM will be established.

C3 – By 2018, the governance structure for community NRM groups will be streamlined and clearly defined to encourage and enable maximum community involvement in NRM throughout the Wide Bay Burnett

Long-term care of our region’s natural resources hinges on effective and comprehensive regional community involvement in NRM.

Community involvement in NRM often falls on the shoulders of the same few community members in each regional area, who often receive little recognition or support for their activities. By recognising, discussing and promoting quality NRM practices, and by demonstrating the economic, social and environmental rewards that follow, other community members may develop feelings of stewardship for environmental resources and be encouraged to become actively involved in NRM.

When all levels of government facilitate community involvement by devising, accepting and implementing systems to ensure comprehensive involvement - from planning to implementation and evaluation - strong partnerships may be forged and maintained over the longer term. Communities become more resilient to change.

C4 – By 2018, a baseline of the application of NRM Best Management Practices by the broader Wide Bay Burnett community (including government and industry landholders) will be determined.

Improved recognition and promotion of the economic rewards for primary producers engaged in Best Management Practices (BMP) in NRM will encourage others to follow suit. Providing funding for community innovations in NRM practices will also contribute to enhanced regional application of BMP.

When industry demonstrates stewardship by actively promoting and revising BMP with the support of government, community uptake of these practices is encouraged along with increased research and innovation and enhanced adaptive management practices.

Similarly, when all levels of government and industry demonstrate leadership by responding to community concerns about NRM on lands for which they bear responsibility, a positive community response is inevitable. This strong leadership will validate the authenticity of planning targets and recommendations for NRM, thereby promoting strong community support in the form of incorporating recommended NRM practices in their own day-to-day land management.

Encouraging community focus on the connectedness of environmental and NRM assets will result in greater understanding, appreciation and adoption of all-encompassing management approaches such as Total Water Cycle Management, Integrated Catchment Management, Landscape Processes and Sustainable Production (ecological, environmental, economic and agricultural).

By encouraging our community’s pursuit of and support for sustainable alternatives, choices and practices will increase consumer demand for these options, driving investment, industry processes and market availability, so broadly improving NRM practices throughout our region. Sustainable alternatives, choices and practices include, but are not limited to - sustainability-conscious consumer product choices; increased product biodegradability; reduced use of synthetic chemicals; increased waste reduction, recycling and energy efficiency, and the increased use of renewable resources, green energy and locally sourced (grown, produced, manufactured, funded, employed) commodities and services.

Through acknowledgement and acceptance of shared community knowledge and values, improved community involvement and increased application of best natural resource management practices, the sustainable natural resource management outcomes that result will benefit the whole Wide Bay Burnett community.
<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accretion</td>
<td>Build-up of sediment</td>
</tr>
<tr>
<td>Acid sulfate soils (ASS)</td>
<td>Soils containing iron sulphides, commonly found in low-lying coastal areas. When these soils are exposed to oxygen (air) through drainage or disturbance, parts of the soil (pyrite) undergo chemical reactions to produce sulphuric acid, which is then washed into waterways and causes land degradation.</td>
</tr>
<tr>
<td>Acidified soils</td>
<td>Soils with a lower pH than naturally occurring levels.</td>
</tr>
<tr>
<td>Baseline</td>
<td>Measurements taken at a particular time that can be used as a reference for comparison at a later time.</td>
</tr>
<tr>
<td>Biodiversity</td>
<td>Biological diversity: the variety of life in all its forms – different plants, animals and microorganisms, the genes they contain and the ecosystems they form.</td>
</tr>
<tr>
<td>Biodiversity significance</td>
<td>Coastal, estuarine and marine biological significance can include open coastlines, salt marsh, mangroves, wetlands, coral habitat, sea grass beds, rocky reef and other distinct habitats.</td>
</tr>
<tr>
<td>Catchment</td>
<td>The total area of land that drains into a river, reservoir, or other body of water.</td>
</tr>
<tr>
<td>Community</td>
<td>All-inclusive, incorporating everyone who lives and works within the region; all functional groups including but not limited to government, industry and community groups, individuals and organisations.</td>
</tr>
<tr>
<td>Community (‘traditional’ sense)</td>
<td>In a ‘traditional’ sense meaning, in reference to community groups or the general public.</td>
</tr>
<tr>
<td>Community wellbeing</td>
<td>The collective health, contentment, and satisfaction of a human community. There are several building blocks that generate wellbeing, including physical, mental, social and spiritual matters. Wellbeing can be used to describe how well a society satisfies people’s wants and needs.</td>
</tr>
<tr>
<td>Desired Regional Outcome (DRO)</td>
<td>Desired Regional Outcomes originate in the statutory Wide Bay Burnett Regional Plan. They articulate the preferred direction for the development and land-use outcomes for the region, and include specific policies and programs to manage the growth of the region over the next two decades.</td>
</tr>
<tr>
<td>Ecological character</td>
<td>The combination of ecosystem parts, activities and benefits or functions that set a habitat (eg. wetland) apart at a given point in time.</td>
</tr>
<tr>
<td>Ecosystem</td>
<td>A community of plants, animals and other life-forms (fungi etc.) that interact with one another and the place they live. Ecosystems can be observed on a number of scales, so a number of communities (including human communities) and their non-living environments interacting as a functional unit is also an ecosystem.</td>
</tr>
<tr>
<td>Ecosystem benefits</td>
<td>Ecosystem benefits are defined in line with the ways they provide advantages to people (Ecosystem Services).</td>
</tr>
<tr>
<td>Ecosystem components</td>
<td>The non-living environment parts of an ecosystem</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Ecosystem processes</td>
<td>The dynamic forces and activities within an ecosystem, including those that occur between individual living things and within and those that occur between whole populations and communities. This also includes interactions with the non-living environment that create ecosystems and cause them to change over time. Ecosystem processes may be physical, chemical or biological.</td>
</tr>
<tr>
<td>Ecosystem services</td>
<td>The benefits that people receive from ecosystems that are essential to survival (e.g. provision of clean air and water). There are four components of ecosystem services: provisioning (food and water), regulating (flood control), cultural (spiritual, recreational), and supporting (nutrient cycling, ecological value).</td>
</tr>
<tr>
<td>Environmental flow</td>
<td>The water flows required to sustain a healthy environment. Water provided for the environment to sustain and restore ecological processes and the biodiversity of water dependent ecosystems.</td>
</tr>
<tr>
<td>Environmental values</td>
<td>Particular values or uses of the environment that are important for a healthy ecosystem – or for public benefit, welfare, safety or health – and which require protection from the effects of development and human activities.</td>
</tr>
<tr>
<td>Fragmentation</td>
<td>Habitats or natural landscapes that have been broken up into distinct areas separated by clearing, development and other land uses.</td>
</tr>
<tr>
<td>‘Good’ land condition</td>
<td>Land that is robust and can recover quickly from stresses such as grazing, fire or drought.</td>
</tr>
<tr>
<td>Groundwater dependent ecosystem (GDE)</td>
<td>Ecosystem that is dependent on groundwater for its existence and health.</td>
</tr>
<tr>
<td>Groundwater</td>
<td>Water below the ground surface found in the cracks, voids or pores, spaces or other places between particles of clay, silt, sand, gravel or rock.</td>
</tr>
<tr>
<td>Groundwater resource unit</td>
<td>A groundwater system that is connected defined and recognised by state and territory agencies.</td>
</tr>
<tr>
<td>High Ecological Value (HEV) waterways</td>
<td>Natural or other highly valued waterways, typically but not always occurring in national parks, conservation reserves, or in remote and/or inaccessible locations. HEV waterways in SEQ are identified in <em>Schedule 1 of the Environment Protection (Water) Policy 1997</em>.</td>
</tr>
<tr>
<td>Key Regional Landscape</td>
<td>Include values such as natural biodiversity, rural production, watershed protection, scenic amenity, green space and cultural significance.</td>
</tr>
<tr>
<td>Landholder</td>
<td>Holistic term relating to owner and/or manager of an area of land independent of public or private interests or tenure.</td>
</tr>
<tr>
<td>Offsets</td>
<td>The action of making compensatory, counterbalance and restitution for alienation or loss of asset values.</td>
</tr>
<tr>
<td>Pollutant</td>
<td>Something that may occur naturally in the environment, but is present at harmful levels (e.g. sediment or nutrients in a water body), or which may be unnatural in the environment and capable of producing environmental harm (e.g. chlorinated pesticides).</td>
</tr>
<tr>
<td>Priority species</td>
<td>This is a particular term that relates specifically to species with habitat suitability models in the <em>Environment Protection Agency SEQ Biodiversity Planning Assessment</em>.</td>
</tr>
<tr>
<td>Regional ecosystems (RE)</td>
<td>This is a particular term that relates specifically to plant communities that are reliably connected with a specific combination of geology, landform and soil.</td>
</tr>
<tr>
<td>Regional landscapes</td>
<td>This is a particular term that relates specifically to areas with important natural characteristics, geological/geomorphological features, cultural heritage values (Indigenous and non-Indigenous), recreational values, and accessibility values.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Remnant vegetation</td>
<td>This is a particular term that relates specifically to areas of relatively mature native vegetation remaining in the landscape. It also has a specific legal definition under the <em>Vegetation Management Act 1999</em> for the purposes of that Act.</td>
</tr>
<tr>
<td>Riparian</td>
<td>Something associated with the banks of a freshwater watercourse (creeks, rivers, pond or lake). For example, the term ‘riparian vegetation’ means plant life or plant communities growing along a freshwater watercourse.</td>
</tr>
<tr>
<td>Riparian zone</td>
<td>This is a particular term that relates specifically to the area of land immediately alongside both sides of a waterway that directly influences waterway form and function, supports a varying range of ecological and amenity values, and acts to buffer the waterway from the effects of development and human activities.</td>
</tr>
<tr>
<td>Salinity</td>
<td>The increased accumulation of salts in land and water at above normal levels, which impacts on humans and natural resources (plants, animals, aquatic ecosystems, water supplies, agriculture or infrastructure).</td>
</tr>
<tr>
<td>Significant species</td>
<td>This is a particular term that relates specifically to species listed in various legislation and agreements as well as economically important, iconic or culturally important species. It includes species referred to as threatened endangered and vulnerable in the <em>Nature Conservation Act 1992</em> and <em>Australian Environment Protection and Biodiversity Conservation Act 1999</em>.</td>
</tr>
<tr>
<td>Soil acidification</td>
<td>The lowering of soil pH resulting from a build-up of hydrogen cat-ions or protons in soil. This can be caused by chemical reactions in the soil following the addition of nitrogen fertiliser. Acidification also results from the loss of base cat-ions (calcium, magnesium, potassium and sodium) by leaching, or from the removal of harvested products such as grain, hay and timber.</td>
</tr>
<tr>
<td>Sponge and gorgonian gardens</td>
<td>Is a combination of sponges, gorgonians (sea fans) and soft corals, together with isolated hard coral colonies, that occur in dense or sparse ‘gardens’ in Hervey Bay and the Great Sandy Strait. They usually grow on soft bottom coarse sands, muds, gravels or substrates composed of shell fragments.</td>
</tr>
<tr>
<td>Thermal pollution</td>
<td>Rises in the temperature of water bodies (rivers, lakes, streams, etc.), air or soil from the disposal of heated industrial waste. Thermal pollution may injure water- and land-based ecosystems and may affect local weather patterns.</td>
</tr>
<tr>
<td>Threatened species</td>
<td>This is a particular term that includes threatened, endangered and vulnerable defined under the <em>Nature Conservation Act 1992</em> as well as species identified as critically endangered or vulnerable (IUCN categories <em>International Union for the Conservation of Nature and Natural Resources</em>) in the Environmental Protection Agency’s <em>Back on Track</em> species prioritisation framework.</td>
</tr>
<tr>
<td>Total water cycle management</td>
<td>A way of managing all aspects of water use including its environmental values, that is, recognising the whole natural water cycle. The key principles of total water-cycle management include: identifying all potential sources of water, including wastewater and stormwater; using all water sources sustainably; allocating and using water fairly and equitably; and integrating water use and natural water processes, including environmental flows and water quality.</td>
</tr>
<tr>
<td>Vulnerable regional ecosystems</td>
<td>This is a particular term that refers to endangered and of-concern regional ecosystems listed under the <em>Vegetation Management Act 1999</em>:</td>
</tr>
<tr>
<td></td>
<td>• Endangered – those ecosystems at serious risk of disappearing from the wild within 10–20 years if present land use and other causal factors continue. Regional ecosystems are listed as “endangered” when less than 10% of their pre-clearing extent remains intact in Queensland.</td>
</tr>
<tr>
<td></td>
<td>• Of Concern – where a significant reduction in the distribution or condition of a regional ecosystem has occurred and a particular management response is needed to ensure that it does not become endangered. Regional ecosystems are listed “of concern” when between 10% and 30% of their pre-clearing extent remains intact in Queensland.</td>
</tr>
</tbody>
</table>
## 8 Appendix – Jobs to move forward

### What the region is currently doing

<table>
<thead>
<tr>
<th>Activity</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collate the wide range of activities being undertaken across the region.</td>
<td>📊</td>
</tr>
<tr>
<td>Sort and catalogue those activities for each Asset Theme (e.g. on-ground works, education &amp; awareness, research trials, incentive programs, demonstration pilots, monitoring, science research).</td>
<td>📊</td>
</tr>
<tr>
<td>Identify gaps or duplications in our current efforts.</td>
<td>📊</td>
</tr>
<tr>
<td>Understand the current level of investment across the region.</td>
<td>📊</td>
</tr>
<tr>
<td>Help local government ensure their planning manages growth and looks after the region.</td>
<td>📊</td>
</tr>
</tbody>
</table>

### Asset Implementation Approach – Asset Themes

<table>
<thead>
<tr>
<th>Activity</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Know what key initiatives and major actions are needed to support Asset Themes (what we need to do).</td>
<td>📊</td>
</tr>
<tr>
<td>Understand what results we are looking for from these initiatives and actions (why we are doing something).</td>
<td>📊</td>
</tr>
<tr>
<td>Know who is already doing some of the work and who needs to be involved (coordination of efforts).</td>
<td>📊</td>
</tr>
<tr>
<td>Identify the areas in the landscape that we need to immediately start work on and those areas that can wait a bit longer (where to start)</td>
<td>📊</td>
</tr>
<tr>
<td>Work out the major areas of overlap between Assets, land uses and regional needs (e.g. Good Quality Agricultural Land and Mining or Strategic Cropping Lands and Biodiversity).</td>
<td>📊</td>
</tr>
</tbody>
</table>

### Information and Data Management

<table>
<thead>
<tr>
<th>Activity</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify and collate vast amount of existing data sets and spatial information.</td>
<td>📊</td>
</tr>
<tr>
<td>Agreement on the sharing of data and information.</td>
<td>📊</td>
</tr>
<tr>
<td>Identify what existing data contributes to establishing a Baseline on current extent and condition.</td>
<td>📊</td>
</tr>
<tr>
<td>Identify the critical gaps in data and spatial information.</td>
<td>📊</td>
</tr>
<tr>
<td>Systems in place to store and access information.</td>
<td>📊</td>
</tr>
</tbody>
</table>

### Regional Mapping

<table>
<thead>
<tr>
<th>Activity</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spatially represent the current state and condition of Assets across the region.</td>
<td>📊</td>
</tr>
<tr>
<td>Clearly detail where we need to resolve land use overlaps.</td>
<td>📊</td>
</tr>
<tr>
<td>Develop a series of maps that helps the region to share an understanding of key landscape values, where in the landscape we need undertake activities and potential investment areas for on-ground works or future offsets.</td>
<td>📊</td>
</tr>
<tr>
<td>Local government, industry, state agencies, NRM groups and community working together to share skills and resources.</td>
<td>📊</td>
</tr>
</tbody>
</table>

### Monitoring and Evaluation – Keeping track of our progress

<table>
<thead>
<tr>
<th>Activity</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop targets that set out the desired outcomes for Asset Themes.</td>
<td>📊</td>
</tr>
<tr>
<td>Understand the ‘cause and effect’ relationship between the actions we undertake and the outcomes we hope to see along the way to achieving Targets.</td>
<td>📊</td>
</tr>
<tr>
<td>Establish indicators for each Asset Theme to monitor the state, condition and trends.</td>
<td>📊</td>
</tr>
<tr>
<td>Identify baselines for Asset Themes so we can make comparisons over time.</td>
<td>📊</td>
</tr>
<tr>
<td>Establish set of Evaluation Questions for each Asset Theme so we can evaluate the effectiveness of the strategic activities and actions.</td>
<td>📊</td>
</tr>
</tbody>
</table>