5.3 FRESHWATER SYSTEM ASSETS

5.3.1 OVERVIEW - DESCRIPTION AND VALUES

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

The risks to the region's existing water resources (both surface and groundwater) are related to an increase in demand due to population growth, the uncertain effect of climate variability on water demand, extreme fluxes in availability and reliability, impacts from land use and competing uses for potable supplies.

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. WRPs 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 WRPs are due for review in 2016 and 2021 respectively.

5.3.2 ASSET DELINEATION

The most logical and readily classifiable dataset that enabled meaningful asset delineation at the strategic level was to a combination of Wetland Mapping Classes (EHP), Riparian Mapping and Groundwater Management Areas. Further delineation by geographic area for most wetland classes was necessary to capture the discrete differences in asset sensitivity and adaptive capacity in the region.

Table 1 identifies the list of Wetland Classes that were taken through the Science Assessment undertakings for the Plan.

Table 1 : FRESHWATER SYSTEMS – WETLAND CLASSES OF THE BURNETT MARY

Asset Code	Asset Description
FE1a	Artificial/ highly modified wetlands (dams, ring tanks, irrigation channel - BAFFLE
FE1b	Artificial/ highly modified wetlands (dams, ring tanks, irrigation channel - KOLAN
FE1c	Artificial/ highly modified wetlands (dams, ring tanks, irrigation channel - BURNETT
FE1d	Artificial/ highly modified wetlands (dams, ring tanks, irrigation channel - BURRUM
FE1e	Artificial/ highly modified wetlands (dams, ring tanks, irrigation channel - MARY
FE1f	Artificial/ highly modified wetlands (dams, ring tanks, irrigation channel - COASTAL
FE2a	Coastal/ Sub-coastal floodplain grass, sedge and herb swamps - BAFFLE
FE2b	Coastal/ Sub-coastal floodplain grass, sedge and herb swamps - KOLAN
FE2c	Coastal/ Sub-coastal floodplain grass, sedge and herb swamps - BURNETT
FE2d	Coastal/ Sub-coastal floodplain grass, sedge and herb swamps - BURRUM
FE2e	Coastal/ Sub-coastal floodplain grass, sedge and herb swamps - MARY
FE2f	Coastal/ Sub-coastal floodplain grass, sedge and herb swamps - COASTAL
FE3a	Coastal/ Sub-coastal floodplain lakes - BAFFLE
FE3b	Coastal/ Sub-coastal floodplain lakes - KOLAN
FE3c	Coastal/ Sub-coastal floodplain lakes - BURNETT
FE3d	Coastal/ Sub-coastal floodplain lakes - BURRUM
FE3e	Coastal/ Sub-coastal floodplain lakes - MARY
FE3f	Coastal/ Sub-coastal floodplain lakes - COASTAL
FE4a	Coastal/ Sub-coastal floodplain tree swamps (Melaleuca and Eucalypt) - BAFFLE
FE4b	Coastal/ Sub-coastal floodplain tree swamps (Melaleuca and Eucalypt) - KOLAN
FE4c	Coastal/ Sub-coastal floodplain tree swamps (Melaleuca and Eucalypt) - BURNETT
FE4d	Coastal/ Sub-coastal floodplain tree swamps (Melaleuca and Eucalypt) - BURRUM
FE4e	Coastal/ Sub-coastal floodplain tree swamps (Melaleuca and Eucalypt) - MARY
FE4f	Coastal/ Sub-coastal floodplain tree swamps (Melaleuca and Eucalypt) - COASTAL
FE5a	Coastal/ Sub-Coastal floodplain wet heath swamps - BAFFLE
FE5b	Coastal/ Sub-Coastal floodplain wet heath swamps - KOLAN
FE5c	Coastal/ Sub-Coastal floodplain wet heath swamps - BURNETT
FE5d	Coastal/ Sub-Coastal floodplain wet heath swamps - BURRUM
FE5e	Coastal/ Sub-Coastal floodplain wet heath swamps - MARY
FE5f	Coastal/ Sub-Coastal floodplain wet heath swamps - COASTAL
FE6a	Coastal/ Sub-coastal non-floodplain grass, sedge and herb swamps - BAFFLE
FE6b	Coastal/ Sub-coastal non-floodplain grass, sedge and herb swamps - KOLAN
FE6c	Coastal/ Sub-coastal non-floodplain grass, sedge and herb swamps - BURNETT
FE6d	Coastal/ Sub-coastal non-floodplain grass, sedge and herb swamps - BURRUM
FE6e	Coastal/ Sub-coastal non-floodplain grass, sedge and herb swamps - MARY
FE6f	Coastal/ Sub-coastal non-floodplain grass, sedge and herb swamps - COASTAL
FE7a	Coastal/ Sub-coastal non-floodplain sand lakes (Perched) - BAFFLE
FE7b	Coastal/ Sub-coastal non-floodplain sand lakes (Perched) - KOLAN
FE7c	Coastal/ Sub-coastal non-floodplain sand lakes (Perched) - BURNETT
FE7d	Coastal/ Sub-coastal non-floodplain sand lakes (Perched) - BURRUM

Asset Code	Asset Description
FE7e	Coastal/ Sub-coastal non-floodplain sand lakes (Perched) - MARY
FE7f	Coastal/ Sub-coastal non-floodplain sand lakes (Perched) - COASTAL
FE8a	Coastal/ Sub-coastal non-floodplain sand lakes (Window) - BAFFLE
FE8b	Coastal/ Sub-coastal non-floodplain sand lakes (Window) - KOLAN
FE8c	Coastal/ Sub-coastal non-floodplain sand lakes (Window) - BURNETT
FE8d	Coastal/ Sub-coastal non-floodplain sand lakes (Window) - BURRUM
FE8e	Coastal/ Sub-coastal non-floodplain sand lakes (Window) - MARY
FE8f	Coastal/ Sub-coastal non-floodplain sand lakes (Window) - COASTAL
FE9a	Coastal/ Sub-coastal non-floodplain soil lakes - BAFFLE
FE9b	Coastal/ Sub-coastal non-floodplain soil lakes - KOLAN
FE9c	Coastal/ Sub-coastal non-floodplain soil lakes - BURNETT
FE9d	Coastal/ Sub-coastal non-floodplain soil lakes - BURRUM
FE9e	Coastal/ Sub-coastal non-floodplain soil lakes - MARY
FE9f	Coastal/ Sub-coastal non-floodplain soil lakes - COASTAL
FE10a	Coastal/ Sub-Coastal non-floodplain tree swamps (Melaleuca and Eucalypt) - BAFFLE
FE10b	Coastal/ Sub-Coastal non-floodplain tree swamps (Melaleuca and Eucalypt) - KOLAN
FE10c	Coastal/ Sub-Coastal non-floodplain tree swamps (Melaleuca and Eucalypt) - BURNETT
FE10d	Coastal/ Sub-Coastal non-floodplain tree swamps (Melaleuca and Eucalypt) - BURRUM
FE10e	Coastal/ Sub-Coastal non-floodplain tree swamps (Melaleuca and Eucalypt) - MARY
FE10f	Coastal/ Sub-Coastal non-floodplain tree swamps (Melaleuca and Eucalypt) - COASTAL
FE11a	Coastal/ Sub-Coastal non-floodplain wet heath -swamps - BAFFLE
FE11b	Coastal/ Sub-Coastal non-floodplain wet heath swamps - KOLAN
FE11c	Coastal/ Sub-Coastal non-floodplain wet heath swamps - BURNETT
FE11d	Coastal/ Sub-Coastal non-floodplain wet heath swamps - BURRUM
FE11e	Coastal/ Sub-Coastal non-floodplain wet heath swamps - MARY
FE11f	Coastal/ Sub-Coastal non-floodplain wet heath swamps - COASTAL
FE 12a	Riverine - BAFFLE
FE 12b	Riverine - KOLAN
FE 12c	Riverine - BURNETT
FE 12d	Riverine - BURRUM
FE 12e	Riverine - MARY
FE 12f	Riverine - COASTAL
FE 13	Groundwater – Ban Ban Springs groundwater management area
FE 14	Groundwater – Barambah Creek groundwater management area
FE 15	Groundwater – Barker Creek groundwater management area
FE 16	Groundwater – Central Burnett River groundwater management area
FE 17	Groundwater – Coastal Burnett groundwater management area
FE 18	Groundwater – Cooloola groundwater management area and sand mass
FE 19	Groundwater – Fraser Island groundwater management area
FE 20	Groundwater – Mulgildie management area (GAB)
FE 21	Groundwater – Upper Burnett groundwater management area (Cattle Creek, Splinter Creek, Monal Creek)
FE 22	Groundwater – Upper Burnett groundwater management area (Three Moon Creek)

INSERT MAP OF REGION

5.3.3 Potential Climate Futures

The Freshwater Systems of the region were assessed by an External Expert Panel (Refer relevant Technical Report for Expert Panel membership), to determine the vulnerabilities to climate change of the various Wetland Classes. The detailed results of the Assessment are contained within the Freshwater Systems Technical Report (Volume x) however it was deemed that in general, Freshwater Systems of the region were sensitive to the following climate change exposure indicators:

- Temperature Increases;
- Increasing lengths of dry periods;
- Spring rainfall decrease;
- More frequent and intense fires (measured as an increase of very high fire weather conditions (FFDI),
- Increased frequency of intense rainfall events; and,
- Extreme Coastal Sea Levels.

Under a Potential Future Climate at **2030 and 2090**, the following Wetland classes and their associated values (Individual habitats and species) would likely be vulnerable:

Climate Scenario	Potential Climate Future 2030	Potential Climate Future 2090
RCP 4.5		
RCP 8.5		

5.3.4 Freshwater Systems Vision, Targets & Desired Outcomes

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, Central Queensland and South East Queensland Regional Plan's and other relevant State and Commonwealth Plans.

The Vision, 2020 Target and Desired Outcomes for the Freshwater Systems Assets are summarised below.

Asset	Vision 2035	2020 Targets	Desired Outcomes
Freshwater Systems	Freshwater ecosystems of the region are healthy; their protection and management is underpinned by an increased public appreciation of their value and vulnerability to changes in landscape features, climate and human activity.	Indicative Topic – <u>Function</u> The ecological function of water dependent ecosystems is improved from the 2015 baseline.	Wetland protection, restoration and maintenance activities will deliver improved "collective" function from the region's wetlands, even though there may be changes in wetland extent, diversity and type as a consequence of climate change.
		Indicative Topic – <u>Connectivity</u> The ecological connectivity within and between freshwater habitats (both aquatic and terrestrial) and the marine interface is improved from the 2015 baseline.	On-ground activities and land use decision-making improve all aspects of wetland connectivity, contributing to improved wetland functioning.

Asset	Vision 2035	2020 Targets	Desired Outcomes
		Indicative Topic – <u>Understanding</u> The ecological importance and sensitivities of the region's freshwater assets is better understood, more widely appreciated and more thoroughly considered in planning.	A wetland-savvy general community, informed landholders and wetland-considering suite of regional planning instruments.
		Indicative Topic – Water Quality The quality of riverine, coastal, estuarine and marine waters will improve in order to, at least, meet accepted water quality objectives.	Improved management of land-based activities so that sediment, nutrient and chemical entry to waterways is reduced.

INDICATIVE TARGET – ECOSYSTEM FUNCTION

2020 Target 1 - *The ecological function of water dependent ecosystems is improved from the 2015 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 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.

INDICATIVE TARGET – HABITAT CONNECTIVITY

2020 Target 2 - *The ecological connectivity within and between freshwater habitats (both aquatic and terrestrial) and the marine interface is improved from the 2015 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.

INDICATIVE TARGET – COMMUNITY KNOWLEDGE AND UNDERSTANDING

2020 Target 3 - The ecological importance and sensitivities of the region's freshwater assets is better understood, more widely appreciated and more thoroughly considered in planning.

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.

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.

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.

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 - sustainabilityconscious 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.

INDICATIVE TARGET – WATER QUALITY

2020 Target 4 - The quality of riverine, coastal, estuarine and marine waters will improve in order to, at least, meet accepted water quality objectives.

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.

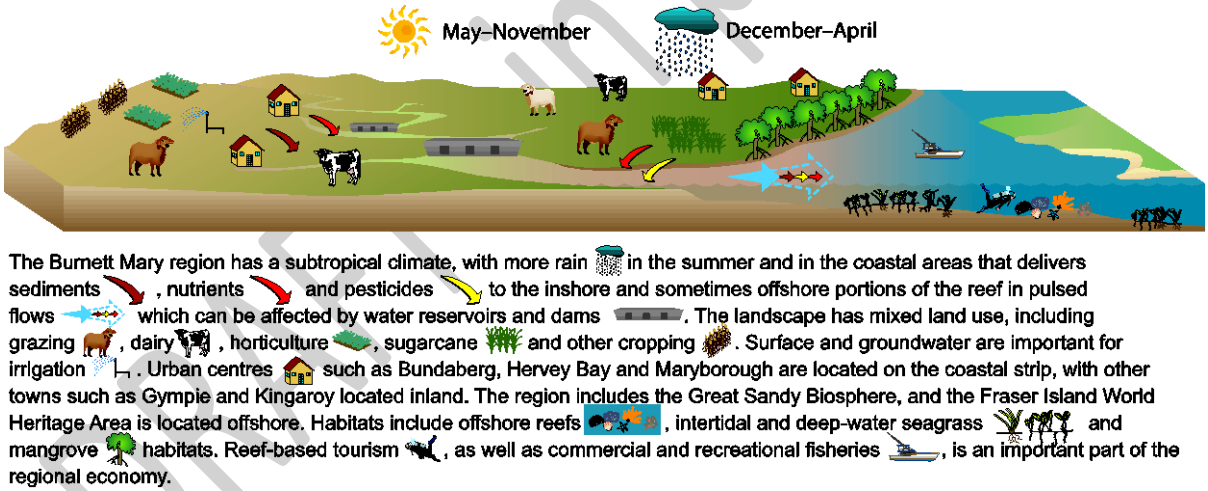

Figure 1 : Burnett - Mary region water quality conceptual model

5.3.5 Priority Assets and Areas

The Burnett Mary has a significant number of Natural Assets yet unfortunately has finite resources to dedicate to undertake protection and management actions.

An assessment of the Freshwater Systems Asset Group was undertaken to identify the specific assets that require enhanced attention and investment. These assets were identified using a tool developed to assist decision makers undertake in a transparent and repeatable method, the assessment of the highest priority assets according to the following major considerations:

- Asset Value – including the intrinsic, habitat and human use values of each asset.

- Asset Vulnerability to Climate Change – using results identified through the Expert Panel 1 Vulnerability Assessment Process.
- Feasibility – An assessment on the ability to undertake works to protect and manage the subject asset, including the consideration of existing impacts and management potential.
- Social Acceptability – An assessment of the likelihood of the various applicable land management sector's capacity and interest in the undertaking protection and management activities of the subject asset.

The results of the Asset Prioritisation Assessment for the Freshwater System Asset Group are shown to follow.

Asset	Value Score	Vulnerability Score	Feasibility Score	Social Acceptability Score	Overall Prioritisation Score

5.3.6 INVESTMENT STRATEGY

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.

To follow are the specific activities identified for the delivery of outcomes for the Freshwater Assets as identified through Community Consultation and Scientific Expert Panels. The activities were identified for addressing key issues for the Priority Assets of the Freshwater System Asset Group and were subject to a prioritisation process examining:

- Cost
- Benefit
- Risk
- Barriers to Adoption
- Social Acceptability
- Carbon Sequestration Potential
- Maladaptation

2020 Targets	Desired Outcomes	Activity Category	Activity	Priority Ranking	Carbon Sequestration /Mitigation Co-Benefit
Indicative Topic - tbd		Planning & Governance			
		On-Ground			
		Community Capacity Building			

		Science			
Indicative Topic - tbd		Planning & Governance			
		On-Ground			
		Community Capacity Building			
		Science			
Indicative Topic - tbd		Planning & Governance			
		On-Ground			
		Community Capacity Building			
		Science			

5.3.7 Monitoring & Evaluation of the Freshwater System Assets

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. We need both monitoring systems and an evaluation process to get a true picture of how we are tracking.

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 assess the condition and identify any trends associated with an asset.

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.

The following information details the Monitoring and Evaluation Framework for this Asset Group.

Monitoring Framework

The following Table outlines the methods proposed to monitor our progress towards the achievement of our targets. In many cases Baseline data does not exist and is the first action necessary to complete to establish an operable monitoring program.

Theme	Indicator	Data Availability (Y / N)	Comments	Comments
Indicative Topic - tbd	-			
Indicative Topic - tbd				

Indicative Topic - tbd				

EVALUATION FRAMEWORK

The following Table outlines the methods proposed to evaluate the effectiveness of our programs and activities and to determine if we have achieved out desired objectives within each target area.

Freshwater Systems				
Theme	Evaluation Questions	Why this Question	Available information	Results 2005-2014
Indicative Topic - tbd		.	To be completed during the Second Round of Expert Panels to be held in October 2014.	To be completed during the Second Round of Expert Panels to be held in October 2014.
Indicative Topic – tbd		.		
Indicative Topic - tbd				