

26 Mitchell River catchment: *regional perspective*

Sarah Connor, Northern Gulf Resource Management Group partnerships@northerngulf.com.au

Bill Sokolich, Mitchell River Watershed Management Group bill@mitchell-river.com.au

Tim Hoogwerf, Northern Gulf Resource Management Group operations@northerngulf.com.au

John Mackenzie, Griffith University john.mackenzie@griffith.edu.au

James Butler, CSIRO Sustainable Ecosystems james.butler@csiro.au



Mitchell River, North Queensland

Photo: Mitchell River Watershed Management Group 2000

CONTENTS

1.	BACKGROUND	3
1.1.	Partners and process	3
1.2	Contributors	3
2.	MITCHELL CATCHMENT	4
2.1	CORE CONCERNS	5
2.1.1	Summary	5
2.1.2	Water and land availability and biophysical constraints.....	5
2.1.3	Economic, social and cultural constraints	6
2.1.4	Institutions and governance.....	8
3.	OPPORTUNITIES AND IMPLICATIONS	10
4.	THREATS TO WATER RESOURCES IN THE MITCHELL CATCHMENT	12
5.	REQUIREMENTS TO ACHIEVE OPPORTUNITIES	13
5.1	Infrastructure	13
5.2	Technology	13
5.3	Research	13
5.4	Institutional & Human Capacity	14
6.	CONCLUSIONS	14
7.	REFERENCES.....	15

1. BACKGROUND

1.1. Partners and process

Three case study assessments have been commissioned by the Taskforce: the Douglas-Daly River (NT), Fitzroy River (WA) and the Mitchell River (Qld) catchments. These case studies are intended to illustrate principles, geographic context and jurisdictional coverage. They are not intended to serve as regional plans.

For the Mitchell case study an initial meeting was held on 25 August 2009 between representatives from the Northern Gulf Resource Management Group (NGRMG), the Mitchell River Watershed Management Group (MRWMG) and CSIRO Sustainable Ecosystems. Given the limited amount of time available to develop the report, the partners determined that the most appropriate method was to collate information from existing reports and consultative planning initiatives to represent current views of stakeholders in the Mitchell Catchment.

Materials consulted to assemble this report included:

- Northern Gulf Natural Resource Management Plan (2008)
- Mitchell River Water Resource Plan (2007) and associated assessments
- Mitchell River Catchment Management Plan (2000)
- Gulf Regional Development Plan (2000)
- Gulf Savannah Investment Information (2008)
- Research compiled by TRaCK program
- Northern Gulf Natural Resource Management Plan (2005)
- Mitchell River Water Resource Plan (2007) and associated assessments.

In addition, the 210 members of the MRWMG plus previous members and station owners were emailed tables of the Opportunities and Implications (Section 4) to complete. Nine responses were received. Additionally, a special meeting was held after the Mitchell Rivers Ordinary Meeting at Chillagoe on 15 September 2009 to discuss Section 4. Fifteen members, including representatives of the Mitchell River Traditional Custodians Advisory Group provided views which have been incorporated.

1.2 Contributors

Mitchell River Watershed Management Group Inc The (MRWMG) is an independent, not-for-profit organisation responsible for grass roots community engagement, capacity building, and sustainable and integrated management of the Mitchell River catchment area.

Northern Gulf Resource Management Group, a not-for-profit community based company and the designated Regional NRM body for the Northern Gulf region is made up of skilled local people with energy, cooperating to make sure our region has a healthy environment, society, culture and economy.

CSIRO, the Commonwealth Scientific and Industrial Research Organisation is Australia's national science agency and one of the largest and most diverse research agencies in the world.

2. MITCHELL CATCHMENT

The Mitchell catchment area covers some 70 000 km² of Far North Queensland, from the western slopes of the Great Dividing Range, taking in the fringes of the Wet Tropics World Heritage Area, to the Gulf of Carpentaria.

On average 11.3 million ML of fresh water is discharged each year from the plan area into the Gulf of Carpentaria, one of the largest river systems in the state in terms of average annual discharge.

Rainfall is largely monsoonal with, on average, about 80 per cent falling in the four months from December to the end of March. Rainfall varies from an average of 1340 mm in the upper Mitchell River and tributary streams to 825 mm in the central plains of the area, rising again to about 1255 mm on the Gulf of Carpentaria coast. Evaporation is high at about 2225 mm per annum in the centre, which has consequences for potentially high crop water needs and water-harvesting storage losses.

Stream flows reflect rainfall variability and seasonality. The upper Mitchell River and its tributary streams flow year-round, primarily because of the high rainfall in the upper catchment and a small amount of subartesian water discharged from surrounding aquifers. Elsewhere, summer flooding and an absence of flow at other times is typical. Floodwaters can breach the boundaries of the Mitchell River catchment and spill into that of the adjacent Staaten River. During the 'big wets', the catchments of the Mitchell and Gulf plan area may be simultaneously inundated.

Consumptive water use supports a comparatively small-scale irrigation industry and small mines that vary in number from year to year. Communities, including Chillagoe and Mount Molloy, also contribute to the overall consumption of water in the plan area, while the town water supply for Kowanyama is sourced from groundwater that was dealt with under the *Water Resource (Great Artesian Basin) Plan 2006*. This water use has also been important for the grazing industry and will probably continue.

Water resource development and use is comparatively limited across the plan area. The most intense development in the upper Mitchell River includes the relatively large water storage, Southedge Dam, also known as Lake Mitchell. This can hold up to 129 000 ML of water, and has remained unused since its construction. Southedge is the only large dam in the plan area, though there are a number of small in-stream weirs that support stock watering, town water supply and small mines.

Pastoral production from native pastures is the most extensive land use within the region. Historically, there have been scattered, relatively small-scale mining activities. Most cropping and horticultural activity occurs in the headwaters of the Mitchell River in the Mareeba and Dimbulah areas. Approximately two-thirds of the Mareeba Dimbulah Water Supply Scheme (MDWSS) is in the Mitchell River catchment, but it is not clear what proportion of the Mitchell's flow is generated from this source.

\$119 million dollars of agricultural production was achieved by the Mareeba shire primarily due to the agricultural and horticultural crops grown from water supplied by the MDWSS. The predominant crops grown are sugar cane, coffee, stone fruit and a variety of tropical fruits.

2.1 CORE CONCERNS

2.1.1 Summary

Discussions about the further agricultural development of the region have occurred for many years. The area currently has the Mareeba Dimbulah Water Supply Scheme (MDWSS), following the construction of Lake Tinaroo in the 1950s, which produces crops such as sugar cane, mangoes, coffee, peanuts, vegetables and other tropical fruit. This construction is located in the eastern parts of the catchment closer to road and rail facilities. Another large-scale development would have to be located significantly west of this location in poorer soils, further distance to infrastructure and markets, and with poor access to water supplies, all of which would greatly inhibit commercial success. New and expensive water infrastructure would be required and the cost of this infrastructure versus the potential gains from the returns generated by agricultural commodities would drastically reduce its economic potential. Indeed the Department of Natural Resources and Water (now DERM) investigated the potential of installing a dam at the Pinnacles on the Mitchell River which could store up to 158 000 ML. Following a rigorous assessment based on criteria such as soil suitability, hydrology, other environmental and economic factors the proposed dam site was deemed unsuitable due to “potential cultural and environmental issues, remoteness of the site”.

Furthermore, a general lack of scientific information exists for many of these remoter regions and any decisions on major developments would require significant investment in a broad range of studies including environmental flows, overland flows and flood patterns, impacts on biodiversity, strategies to reduce land use degradation, soils surveys and Indigenous protected areas. Soil information in particular is lacking in the region but initial studies have demonstrated the overall unsuitability of the majority of soils in the Mitchell River catchment for agricultural or horticultural purposes.

The true value of the ecosystem services of the region are yet to be quantified. There is an excellent opportunity to develop a robust economic model for leveraging ecosystem services funds to the region from a variety of investors. Unlike many catchments in Australia, we have the chance to protect and properly manage vast areas of the Mitchell River catchment for economic growth as well as biodiversity values.

The dynamic and often harsh climate makes few crops suitable to the area. There are long periods of irregular wet and dry weather, high humidity in summer, and very high evaporation rates. Pests and diseases also flourish in the tropical weather.

Finally, the potential for development in the North is wide and varied. Any development concepts should be developed with significant engagement with the local communities to identify risks, constraints and any potential environmental impacts. This input and engagement of the local people is already occurring via the designated Regional NRM Body for the area, the NGRMG. Their structure, partners and cooperative arrangements would ensure an integrated approach for maximum benefits for the economy, environment and the community.

2.1.2 Water and land availability and biophysical constraints

Task Force ToR 1: Identify, consistent with the provisions of the National Water Initiative, the sustainable capacity of the river systems and/or drainage basins to support increased consumptive water use

The mean annual discharge of the Mitchell River Catchment is 12 457 000 ML per annum. However, streamflow variability is very high due to the dynamic climate of the north and the distinct wet and dry seasons. Any proposed development would have to take into account this seasonality.

Overall there is a lack of information regarding soil types and their potential. The most relevant document, *An Assessment of Agricultural Potential of Soils in the Gulf Region North QLD (1999)* demonstrates that the potential of soils in the Mitchell Catchment to grow agricultural crops is limited. The most suitable soils are the red and yellow earths and the cracking brown clays that all occur a considerable distance from the main Mitchell River channel. The majority of soil in the catchment is poor quality, with limited drainage and potential for salinity and sodicity. Irrigation salinity risk is particularly high in the upper reaches of the catchment in the MDWSS, and potential for Acid Sulphate Soils has been identified in the floodplain area on the western side of the catchment. Hence any change in land-use would require significant investigation into mitigation strategies to combat these effects.

There is the potential to utilise groundwater from the Great Artesian Basin (the predominant groundwater source in North West QLD). However, further information needs to be obtained in relation to quality and quantity especially following recent work by the Queensland Department of Environment and Resource Management (DERM) to rehabilitate some facilities that have tapped this resource. It is apparent that any increase could not be large-scale.

Groundwater in the form of subartesian aquifers could be considered as a water source for irrigation. The Department of Natural Resources Mines and Water (now DERM) report on the subartesian water resources in the Gulf and Mitchell Water Resource plan areas (2006) identified the alluvium associated with the upper reaches of the Mitchell River as a potential source of subartesian water. It was also noted that more investigation into quality and quantity was required along with increased groundwater management if it is to be utilised.

Much of the land in the catchment is under grazing leases with mainly freehold in the upper reaches of the catchment. Land availability would require buying back of these leases as well as considering any native title claims over these areas. Six national parks are within the region or cross over its catchment boundaries along with three local councils and three state forests.

2.1.3 Economic, social and cultural constraints

Task Force ToR 2: Identify, consistent with sustainable resource use principles and practices, economic development and diversification opportunities (including non-consumptive or in-stream uses) which rely on access to locally or regionally significant water resources

The estimated worth of agricultural production in the former Mareeba Shire has been estimated at over \$100 million per year (Gulf and Mitchell Agricultural Land and Water Assessment Report 2004). Further expansion of this agricultural production would rely upon major improvements to infrastructure including transport networks, processing facilities, commodity storage options as well as general housing, educational and health requirements that the reliant population would require.

The Gulf and Mitchell Agricultural Land and Water Assessment Report 2004 examined 13 sites as potential for dam construction in the Gulf region and following economic, environmental, technical and cultural assessment of each, only two sites were deemed worthy of further investigation. None of 13 sites were in the Mitchell Catchment. The estimated cost to develop these dams ranged from

\$36 to \$80 million. Furthermore, these did not include costs associated with transporting the water to users, initial construction, operation and maintenance.

There are seven Indigenous language groups that exist in the Northern Gulf region. Results of the 2006 census indicate that at least 25 per cent of the population are of Aboriginal or Torres Strait Islander descent with over 70 per cent of the population within Kowanyama Aboriginal community being of Aboriginal heritage. The importance of cultural heritage and caring for country is part of everyday life for the Indigenous people of the Mitchell River catchment. Documenting places of significance has only been undertaken recently with an enormous amount of work still to be done. Many of these places are along watercourses, wetlands and waterholes. Protecting these places is paramount if development in the area is to be considered, with significant consultation with the Traditional Owners.

There is potential to develop low-key tourism near waterholes and distinctive river features. There is a lack of even basic campgrounds in the catchment and the associated facilities they require.

Opportunity for 'niche' crops could be further investigated with few studies being conducted into the suitability of alternative crops to service potentially underutilised domestic and export markets. Any investigation would have to consider increased transport costs. Although not a niche crop, the CRC for Sustainable Cotton investigated the potential for growing cotton in North QLD, particularly around the Richmond area. Its recommendations included further investigating the salinity risks of some soils, ecological studies into the potential for pests and diseases and further economic analysis such as infrastructure studies.

The dynamic nature of the weather in the tropical savanna results in long periods of wet and dry weather, periods of extensive flooding and high humidity. Few crops or horticultural crops are suited to such an environment. There is also a very competitive international market for tropical produce. Investment into crop suitability would be needed. High evaporation rates and extreme temperatures also restrict agriculture and horticulture.

Task Force ToR 3: Identify the potential impact of such development opportunities on the natural environment and other users and the broader community

The Mitchell River catchment is a highly biodiverse region and contains four bioregions and their unique vegetation communities. These include the World Heritage listed Wet Tropics, Einasleigh Uplands, Gulf Plains and Cape York. The vegetation communities supported include Melaleuca dominated woodlands, tropical rainforest, Mitchell grass land, mangroves, mudflats and Wetlands of National Significance. Lack of baseline data makes it difficult to estimate exactly how many rare and endangered species exist in the catchment but studies to this date indicate that 18 species of animal are classified as rare, endangered or threatened, including the Golden Shouldered Parrot, Gouldian Finch and the Northern Bettong. A paucity of data exists for freshwater species except for the upper reaches of the catchment where a study completed by the MRWVG found the critically endangered Northern Sawfish. This report also demonstrated the risks posed by unsustainable agricultural production on the health of these ecosystems.

Further increase in erosion and sediment accumulation in the Mitchell's river systems would result in impacts on the estuarine and marine fisheries. Permanent waterholes in the catchment that create refuges during the dry season could be at risk of being filled in by sediment created by agricultural development. Research that has been undertaken by TRaCK researchers found that the Mitchell Catchment is already at risk of sediment accumulation from intensive land uses.

The Gulf fisheries are highly productive and also one of the least understood in Australia and include the northern prawn, crab and finfish industries. It is an important habitat for many rare, endangered and threatened species including several species of turtles and sharks and the Australian Snub Fin (Irrawaddy) Dolphin. An estimated 50,000 tourists visit the southern gulf with around 90 per cent of these being recreational fishers. Major development upstream of these habitats could potentially impact on these environs and the industries they support. Recent studies conclude that productivity of fisheries can directly be related to freshwater flows and their quality.

The distribution of weeds in the region is closely associated with human activity. Hence any proposed development would need to assess this threat. Parthenium in particular is spreading into the region. The NGRMG has constructed a washdown bay at Mount Surprise in response to concern shown by the community about weed seed spread.

Aquatic pests and weeds would have the potential to threaten biodiversity especially if new water storages cross catchment boundaries. Many introduced pests and weeds exist in the eastern draining catchments with few penetrating the western catchments so far. Species such as Tilapia, Salvinia, Cabomba and Hymenachne all exist in the eastern draining catchments and it is imperative that spread into the Gulf region is prevented.

The effects of climate change also need to be considered. It is not known what the impacts will be on the region and planning any major development needs to include relevant mitigation strategies.

2.1.4 Institutions and governance

Task Force ToR 4: Identify incentive, market, regulatory or planning instruments that could be used to facilitate, control or influence development, such that it proceeds in a manner consistent with the principles of the National Water Initiative

Several pieces of legislation are likely to impact on any major water development in the region:

- Integrated Planning Act 1997
- Vegetation Management Act 1999
- Environmental Protection Act 1994
- Fisheries Act 1994
- Queensland Heritage Act 1992
- Native Title (QLD) Act 1993
- Environmental Protection and Biodiversity Conservation Act 1999
- Water Act 2000
- The Delbessie Agreement (also known as the State Rural Leasehold Land Strategy)
- Cape York Peninsula Heritage Act 2007.

Most notable of these would be the Water Act (2000) and the associated Mitchell River Water Resource Plan (2007). Decisions under this Act include restrictions to the development of instream storages.

There are several Native Title claims over various parts of the Mitchell River catchment. Any proposed development that covers such an area would have to consider such claims, which can often result in protracted negotiations.

The current moratorium on clearing high value vegetation that expires on 7 October 2009 includes a ban on clearing native vegetation within 50 metres of a watercourse. Four new regional vegetation management codes have been created to replace the original 24 codes and include detailed

guidelines for vegetation clearing. The vast majority of the Mitchell catchment is within the western bioregion and the code details restrictions on clearing land along watercourses which may cause land degradation and cause the loss of biodiversity.

The northern sections of the catchment are part of the Cape York area as defined under the Cape York Peninsula Heritage Act (2007), managed by DERM. The act aims to ensure the sustainable development of the land (including leasehold) as well as recognizing the economic, social and cultural needs to its residents. The main implication of the act is the provision allowing the designation of Indigenous community-use areas in Aboriginal land which is suitable for aquaculture, agriculture or pastoral production, and the Minister is required to consider the impact that any development may have on the Cape York grazing industry.

Task Force ToR 5: Recommend governance arrangements for the effective management of surface and groundwater resources that cross jurisdictional boundaries

DERM's current water resource planning processes are ongoing in the Mitchell River Water Resource Plan area and DERM are also the primary managers of water resources in Queensland. The possible utilisation of land that crosses several jurisdictions, whether it be leasehold land intercepting state forest, national park or a nationally listed wetland containing federally listed flora and fauna, will require planning input from all levels of government. At a minimum a steering committee should be formed which would include members from all levels of government. Advisory committees should also be formed to provide advice and support to the steering committee and members should include:

- Science/research
- Local community, in particular the relevant Landcare and designated Regional NRM body
- Indigenous groups
- Industry groups.

3. OPPORTUNITIES AND IMPLICATIONS

Opportunities	Potential benefits	Constraints to realising benefits
Encourage existing groups and agencies to foster sustainable development in all industries, e.g. plant nurseries, high value tree crops and horticultural products (e.g. organic), and aquaculture based on local species.	Income generated by exploiting underutilised markets. High value return per unit of water use. Significant local employment.	Volatile and distance to markets, poor labour supply, high start-up costs. Lack of expertise in agricultural production. Re-cycling and technology for aquaculture is lacking.
Encourage nature-based, Indigenous cultural or environmental industries (e.g. eco-tourism, recreational fishing and hunting).	Income generated by exploiting underutilised markets.	Lack of infrastructure and ad hoc usage/camping, poor management regimes, lease tenures, long regulation approval process, public liability. Lack of capacity for Indigenous tourism.
Grazing best management practices (e.g. stocking densities, record-keeping, rotational grazing, wet season spelling of riparian zones, off-stream watering points).	Protection of riparian vegetation and erosion control, improved land condition promoting resilience to climate change.	Limited incentives to initiate expensive practices. Perverse banking policies which link loans to stock numbers rather than land condition.
Irrigated pasture/fodder production	Value-adding, replace imported hay, reduced weed spread, increased self-sufficiency, and reduced transport costs by fattening cattle on-property.	Present freeze on new water allocations in the Mitchell as well as start-up costs.
Improved irrigated agricultural - best management practices (e.g. nutrient management, water use efficiency, organic farming).	Reduced nutrient loss, improved water quality and reduced water wastage	Farming culture and existing practices. Limited capacity to change.
Support Indigenous people to have a greater involvement in natural resource management and to support arrangements for better access to country.	More cooperative management of land and sea including improved weed management on indigenous lands, as a result of all stakeholders being part of the process.	Decentralised representatives having to travel long distances to attend meetings.
Encourage further studies to collect more baseline data (e.g. soils, biodiversity, ground water, geomorphology) and monitoring (e.g. rainfall, stream gauges, land condition, biodiversity,	Better management decisions, more strategic and focussed planing for the future, community involvement and improved capacity.	Funding, coordination between multi-agencies, government and stakeholders. Community investment in management and monitoring is insufficient, requiring improved capacity and skills.

fisheries) to support and inform decision-making.		
Private conservation park initiatives (e.g. Brooklyn Station) establishing commercial entities to preserve species.	Local ownership and preservation of endangered species and habitats, natural refuges.	Change of lease, funding for management, lack of stakeholder agreements, loss of grazing.
Significant investment into the Port of Karumba to create an updated export hub for the Mitchell catchment cattle industry.	Significant local and state employment. Income generated from export markets.	Potential to export directly from a Port on Karumba may significantly benefit the pastoral industry but it would require quarantine support which could potentially support the border security effort. Impacts and costs of channel dredging.
Low impact alluvial and hard rock mining	Reduced impacts on downstream interests.	Lack of enforcement by government agencies. Clarification of mining prospecting legislation.
Establish a baseline for ecosystem services and the dollar value they represent.	Diversification options for land managers and potential for nature based industries. Possible payments for land managers.	A more strategic utilisation of resources which doesn't pose any threat to the natural environment. Also creates incentives for land managers to practice best management techniques.
Promote and develop opportunities for conservation covenants or similar land protection measures.	Diversification options for land managers and potential for nature based industries. Greater awareness of NRM. Better protection and management of high conservation areas.	Better utilise the natural landscape for potential income.
Support Chillagoe as a hub to foster research and tourism activities.	Diversify local economy, create jobs, improve local expertise and communication of NRM.	Utilise existing village infrastructure and attractions. Start-up funding, integration with mining company and community needs.
Timber for structural and carbon trading purposes.	Employment and carbon tied up for long periods. Regrowth sequesters even more	May need to examine ways to reduce termite piping of growing trees through selective breeding.
Market gardens in communities. Supply fresh fruit and vegetables at affordable prices.	Employment and income. Range of potential plants and fruits for wet and dry seasons.	Need to examine wet season potential due to long periods of high humidity and fungal risk. Potential for other animal damage (birds, flying foxes, etc.).

4. THREATS TO WATER RESOURCES IN THE MITCHELL CATCHMENT

A range of current major threats to water resources exists, including

- Weeds and pest animals (e.g. pigs, brumbies)
- Poor burning regimes
- Unregulated tourism
- Poorly managed alluvial mining
- Aquaculture discharges in upper catchment
- Grazing pressure on riparian zones.

Future major threats to water resources include:

- Tilapia and other invasive fish
- Water weeds and ponded pasture species (e.g. *Hymenachne*)
- Over allocation and insufficient enforcement of water resources, including boreholes
- Future government initiatives poorly conceived, consulted and implemented (e.g. Wild Rivers legislation)
- Re-directing catchment water for urban use
- Impoundments blocking fish passage and modifying flows, threatening fisheries
- Climate change impacts
- Future increased effluent discharge from agriculture and aquaculture.

5. REQUIREMENTS TO ACHIEVE OPPORTUNITIES

Any major development in the region requires significant infrastructure to ensure its success. As mentioned above, previous cost estimates of dam construction or similar water storages have not included the supply of the water to users, the operation of these facilities and their maintenance. Similarly, appropriate transport services need to be in place along with more specific requirements for agricultural produce such as processing facilities and storage. Many of the roads in the Gulf are unsealed and in bad condition making them unreliable and not suitable for major transportation.

Development also requires the support of the communities themselves. Due to the remoteness of much of the country, formal information sources are lacking making the heuristic knowledge of local people critical for integration in planning and delivery in this area. Fostering cooperative arrangements between all levels of Government and the community is vital.

In the context of sustainable development, a range of issues need to be addressed in the Mitchell Catchment including:

5.1 Infrastructure

- Roads, including considerable upgrades of existing roads depending on development location
- Commodity storage and processing facilities where applicable
- Sufficient community services such as health, specialist care, housing and education facilities
- Sporting and recreational facilities for burgeoning population
- Considerable upgrade of air transportation facilities depending on the location of any development

5.2 Technology

- Technical support and expertise will be required to service any major development in the region. Extension services have been lacking in the region for some time with a lot of the slack having to be picked up by Regional NRM Bodies and Landcare groups. Support would be required to provide the technical and specialist advice needed for any large-scale development.
- Upgrade in internet and mobile phone coverage
- There will be a much greater need for electricity, hence upgrades in power supply may be required.

5.3 Research

There is a paucity of scientific information for the whole of the Gulf Region. Decisions need to be based on good science and there is still a need to collect a vast amount of baseline data. More soil information is needed particularly soil types, location and capacity for agricultural production. Further consideration of research programs such as TRaCK should be considered.

Other research needs include:

- Biodiversity information, identification of rare, threatened and endangered ecosystems and specific flora and fauna to ensure their protection
- Sediment transport and accumulation
- Water quality and quantity information, especially the quality of water derived from the MDWSS, and identification of environmental flows
- Ecosystem services and the payments they could potentially generate.

5.4 Institutional & Human Capacity

- An institutional structure needs to be in place to make informed decisions about any proposed development. This structure needs to be inclusive of all stakeholders and levels of Government
- The general human capacity for a large scale development needs to include a significant labour force and willingness for much of this labour force to move into the area. Given the current economic climate this may not pose a problem
- Increased capacity building (e.g. extension services) to improve skills and knowledge of stakeholders to initiate and be achieve opportunities
- Banking policy and government regulation changes to enable land managers to take advantage of new opportunities

6. CONCLUSIONS

In summary, it is apparent that much more information needs to be gathered in order to progress any plans for large-scale development in the Mitchell River catchment. However, it also must be noted that initial studies generally indicate the unsuitability of the construction of large water storages and the irrigation of large areas of land due to poor soils, climatic conditions, lack of infrastructure and distance to markets, to name just a few. The Mitchell River catchment is also one of the most biologically diverse in Northern Australia and like much of remote Australia there is an opportunity to protect and manage its natural resources, which could potentially create new economic markets thereby creating opportunities for diversification.

The very limited time frame that was given to complete this task also needs to be considered. The members involved believe that better stakeholder consultation was required to provide a fully balanced view. The Mitchell catchment is one of the largest in Australia and hence communication is difficult.

Fostering cooperative arrangements between all levels of government and the community is required for any successful major development in the catchment. The regional body for the area, the NGRMG, has a successful track record of delivery and a wide demonstrable support of the public for government and ethical investment to achieve outcomes in the region. Any policy development or further investigation should include the bodies with the experience, knowledge and community representation to provide this input, such as the NGRMG and MRWMG.

7. REFERENCES

Salinity risk in the Cattle Creek sub-catchment of the Mitchell River, Queensland Authors: Webb I, Hateley L, Nelson P and Dwyer D (2005)

Graham TL and Larsen RM (2000), 'Coastal Geomorphology: Progressing the Understanding of Acid Sulfate Soil Distribution', In *Acid Sulfate Soils: Environmental Issues, Assessment and Management, Technical Papers*. Ahern CR, Hey KM, Watling KM and Eldershaw VJ (eds), Brisbane, 20–22 June, 2000, Department of Natural Resources, Indooroopilly, Queensland.

An Assessment of Agricultural Potential of Soils in the Gulf Region North QLD by Wilson and Philip (1999)

Environmental Condition of the Upper Mitchell System 2002 Ryan, Aland & Cogle.

Gulf and Mitchell report on the subartesian water resources in the Gulf and Mitchell water resources plan areas June 2006

Guidelines for the Financial and Economic Evaluation of New Water Infrastructure in Queensland 2000

Gulf Regional Development Plan 2000

Land and Water Assessment Report – Gulf and Mitchell water resource planning 2004

Mitchell River Watershed Management Plan 2000

Northern Gulf Resource Management Plan 2008

Northern Gulf Resource Management Group Annual Report 2007-2008