

# VANUATU NATIONAL WATER STRATEGY 2008 - 2018



Government of Vanuatu  
Department of Geology, Mines & Water Resources



New Zealand's International  
Aid & Development Agency

## From the Minister

I am very pleased to support the Department of Geology, Mines and Water Resources' *Water Strategic Plan 2008–2017*, which was developed through thorough consultation among its stakeholders, to guide the future management and development of water resources in Vanuatu.


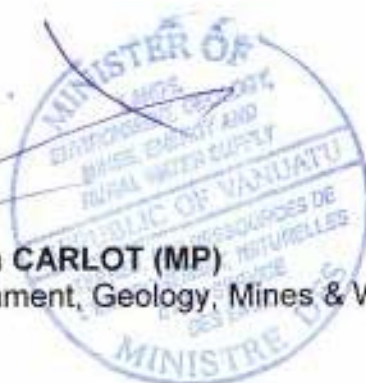
The Government through the Ministry of Lands, Energy, Environment, Geology, Mines and Water Resources has the legal mandate through the Water Resources Act of 2002 to protect our water resources but also about preserving our unique lifestyle and growing state economy.

The National Water *Strategic Plan 2008–2017*, introduced by the Honorable Minister of Lands, was approved by the Council of Ministers and outlines how we will work to achieve these aims.

We face challenges that are only now becoming clearer and more urgent—especially the related problems of an unprecedented flood, drought and rapid climate change. We will continue to work closely with our stakeholders to develop strategies, and deliver services to respond to these challenges.

The achievement of the objectives outlined in this plan will be reported in the department's annual report.

There is no doubt that we have a big job to do and the challenges are complex. However, we have expert, committed staff and the National Water *Strategic Plan 2008–2017* to help us achieve outcomes for the benefit of the people of Vanuatu.

  
  
**The Honourable Maxime Korman CARLOT (MP)**  
Minister for Lands, Energy, Environment, Geology, Mines & Water Resources

## From the Director-General

The Ministry of Lands, Energy, Environment, Geology, Mines and Water Resources has the overall responsibility to ensure the sustainable use of the nation's water resources, as mandated through the Water Resources Management Act of 2002. The Department of Geology, Mines and Water Resources (DGMWR) is administrating the Act on behalf of the Ministry. In undertaking this role, not only do we have water resources and water supply responsibilities, we also have a major role in facilitating economic development in Vanuatu. The department's resource registry, information management, policy formulation, implementation and monitoring functions underpin our roles and responsibilities.

Up until now the Ministry through the DGMWR has been operating under a short-term and ad hoc policy framework based largely on requests and respond approached.

However, with this Water Strategic Plan it does provide a long-term and more holistic management policy over water resources at the national level. The plan takes into consideration sustainable management of water sources and catchments, extraction techniques and delivery of quality water to the communities. Furthermore, the plan also takes into account new challenges such as population growth, development pressures, and climate change and sea-level rise actual and potential impacts on water resources into the future.

This ministry has a charter which provides the opportunity to make a significant impact on the nation's future, and the wellbeing of its communities. We intend to use a broad range of tools in increasingly smart ways to achieve our objectives and fulfill our roles. The challenges we face are significant and the outcomes are critical. The plan will guide us to combat water resource management challenges in Vanuatu in a sustainable way.

I look forward to working with staff, stakeholders and the community over the coming years to achieve significant outcomes for Vanuatu.

  
**Russell NARI**  
Director-General



## **Acknowledgement:**

The National Water Strategy for the Republic of Vanuatu was conceived to help steer and direct the efforts of the Department of Geology, Mines and Water Resources into the future. The Department appreciates the generous funding assistance provided, through NZAID, by the Government of New Zealand in developing this strategy and Oxfam-New Zealand for project support and mentoring. Many thanks to Greg Whiteside for his technical advice and work on the institutional arrangement, Mandy Fitchett for the writing up and editing of this document and to the Director, Chris Ioan, for his leadership in driving the strategy consultation process to the finalization of this document. The Department also wishes to register its gratitude to the following partners who have helped develop the plan and acknowledge the need for their continued cooperation to successfully achieve the objectives of the plan as intended:

The Ministry of Lands

The National Water Advisory Committee

The Donor organizations

The Provincial Governments

The Provincial Planners

The Provincial Water Supply officers

The Luganville Public Works Department

The Gaua Namasarie communities

The Tanna Lounatom communities

The Non – Government Organizations

The Private Sectors

The Department's Water Resources & Rural Water Supply staff

# VANUATU NATIONAL WATER STRATEGY

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## ACRONYMS LIST

ADB	Asia Development Bank
CBO	Community Based Organisation
CEDAW	Convention for the Equality D A Women
CRP	Comprehensive Reform Program
DGMWR	Department of Geology Mines and Water Resources
DoW	Department of Water
GEF	Global Environment Facility
HYCOS	Hydrological Cycle Observing Systems
IWRM	Integrated Water Resource Management
MLNR	Ministry of Lands and Natural Resources
MTDF	Medium Term Directive
MoH	Ministry of Health
NGO	Non-governmental Organisation
NWAC	National Water Advisory Committee
NWRA	National Water Resources Act 2002
PAA	Priority Action Agenda
PWD	Public Works Department
PWAC	Provincial Water Advisory Committee
SOPAC	South Pacific Geoscience Commission
SWAp	Sector Wide Approach
USP	University of South Pacific
VANRIS	Vanuatu Resource Information Systems
WHO	World Health Organisation

## **Executive Summary**

Every Ni-Vanuatu citizen should have access to safe water sufficient to meet basic needs, including drinking, cooking and sanitation. The relatively abundant supply of fresh water in Vanuatu should further increase livelihoods' opportunities and be fully harnessed to improve the overall economic standing of the country, both now and in the future.

As Vanuatu's population grows so demands on existing water sources will increase. These demands when combined with the increasing risk of pollution and climate related changes could be expected to limit the future availability of potable water, constrain its productive use and impact negatively on Vanuatu's most precious resource, its pristine natural environment.

This National Water Strategy aims to address these issues by overcoming constraints that limit sustainable development of the water sector including factors related to finances, human resources, institutions and operations. In doing so, it gives effect to the NWRA, PPA and MTFD directive of the Government of Vanuatu requiring detailed strategies and plans for all the Government Departments.

At the institutional level, the strategy proposes a major change in the role of the Department of Geology, Mines and Water Resources from that of service provider to main proponent and facilitator of a new integrated water resource management approach. This will require taking a holistic, integrated, coordinated and decentralised approach, involving collaboration with communities, private sector and local government stakeholders.

Key operational elements of this Strategy are the progressive devolution of responsibility, authority and resources for water resources management down to provincial government level and community involvement in the planning, management and monitoring of water catchment use.

### **Vision**

**Sustainable and equitable access to safe water and sanitation for the people of Vanuatu to support improved public health and promote social and economic development.**

## **Strategy Objectives**

**Objective 1:** A clear regulatory framework and roles between Departments established to provide for transparent and accountable regulation and management of water resources.

**Objective 2:** DGMWR adequately structured and has sufficient capacity to deliver on the Strategy.

**Objective 3:** Infrastructure operated and maintained by the communities with technical and management support from the Provincial Office, private sector partners and the Department.

**Objective 4:** Available water resources and catchments known, managed and protected.

**Objective 5:** All water quality monitored and maintained to meet agreed standards.

**Objective 6:** Appropriate and sustainable water and wastewater infrastructure installed to meet domestic, customary use targets and needs for sustainable economic development.

**Objective 7:** Information and response mechanism in place that allows for mutual information sharing and accountability between government and stakeholders.

## 1.0 Background

### 1.1. Why Integrated Water Resource Management?

It is necessary for Vanuatu to apply an IWRM approach for managing its water to ensure the sustainable development of resources, while meeting aims for water supply coverage, equity and affordability. Water supply in Vanuatu is publicly financed, managed with no cost recovery and therefore beyond the financial capacity of the government. The highly sectoral approach imposes unsustainably high economic, social and ecological costs on the social and natural environments in Vanuatu. An IWRM approach is a more holistic and participatory approach to resource management. There is a need to recognise the interdependencies within natural eco-systems and the economical and social systems that affect demand for water. Stakeholder involvement in decisions assists in understanding these dynamics and ensures appropriate systems are in place.

With Vanuatu's growing population base, rural-urban migration and shift from a predominantly subsistence economy to a cash-economy the quality and quantity of available water resources is increasingly threatened by competing uses for water. An IWRM approach uses participatory planning to ensure continued access to safe water supplies.

### 1.2. Who is this strategy for?

The National Water Resource Strategy and the IWRM approach will indirectly benefit all citizens of Vanuatu. It is considered the rural communities will benefit the most from greater access to safe drinking water supplies for domestic and customary use. The private sector will benefit from greater access to water purposes of economic development and environmental protection.

The strategy will provide the Government of Vanuatu with a rational basis for sector-wide planning which involves direct engagement with local government and communities, civil society groups, private sector organisations and donors for effective national water resource management. It will further provide MLNR and DGMWR with a clear regulatory framework under which to implement the strategy.

### What is IWRM?

Integrated water resources planning and management aims to take appropriate account of important physical, social, economic and cultural linkages within a water resources system, such as:

- physical linkages between land use, surface and groundwater quantity and quality,
- economic linkages between various, and sometimes competing, water uses,
- social linkages between water development schemes and potential beneficiaries or those adversely affected, ensuring benefits of projects accrue equitably and
- institutional linkages, both horizontally and vertically, among various formal and non-formal stakeholder institutions.

Planning for IWRM involves making provision for water demand for six main purposes - 1) domestic supplies; 2) irrigation; 3) hydro-electric power; 4) industrial production, 5) cultural importance and 6) the protection of ecosystems.

Further, this approach must also accommodate six key technical functions. These are:

1. The measurement of current water resource availability;
2. Land-use planning
3. Projection of future water resource availability;
4. Watershed based water use planning, including prioritised allocations;
5. Implementation of water projects;
6. Regulation including environmental protection;
7. Monitoring and evaluation.

From the institutional standpoint, the adoption of an IWRM approach normally requires fundamental shifts in the roles, structures and outlooks of respective Government Departments including moving from a service delivery focus or project approach to sector facilitation and regulation under a sector wide approach (SWAp).

The operationalisation of IWRM is commonly based on several key principles as follows:

1. Considering all water in the hydrological cycle using the watershed as the management and planning unit.
2. De-centralised planning and management.
3. Taking an holistic (frequently traditional) approach to planning and implementation.
4. Using local scale mapping, planning, implementation, monitoring and governance
5. Agreeing priorities for water allocations with domestic needs always satisfied first.
6. Mandatory provision for sanitation, waste water and EIA in all projects.
7. A pluralistic approach to implementation - public, private and community functions.
8. Accommodating equity issues, understanding gender roles in water management.
9. Coordination between stakeholders and water managers to provide input and commit to sustainable watershed management.



Implementation of the strategy will benefit the people of Vanuatu through:

- Improved national coverage of safe water and sanitation in line with national and internationally agreed targets;
- Community empowerment to protect and sustainably manage local water resources, particularly for women;
- Information and accountability mechanisms which provide “voice” to communities and civil society during the planning, implementation, management and monitoring of water projects;
- A regulatory and planning framework to ensure equitable, affordable and sustainable access to water supplies for all;
- Greater NGO and private sector involvement (out-sourcing of contracts) in the design and implementation of water projects;
- Improved clarity within the Government on water regulation in urban areas;
- More reliable and affordable water supplies for business and economic development; and
- The protection of eco-systems through sustainable water resource management.

### ***1.3. How was the Strategy Developed?***

This strategy, and its objectives to improve policy and working practices, is evidence of the Government's recognition of water as a critical resource for sustainable economic and social development. Strategy formulation has accordingly taken into account current national, regional and international policy commitments and the capabilities of both the DGMWR and other sector stakeholders including other Government Departments, elected and customary local government, NGOs, CBOs, the private sector, communities, women's only groups and external development partners. Operating procedures of the DGMWR including those related to feasibility, design, implementation and cost recovery have also been reviewed.

In developing this strategy the DGMWR has applied a participatory approach. A series of central, provincial and community level consultations with key stakeholders was held. As a result a strong consensus on both a vision for the sector and key Departmental objectives for the coming ten year period has been reached. However, in order for these objectives to be met, continuing high levels of commitment for the strategy from both sector stakeholders and political parties will be required.

## **2. Context of Water Resources in Vanuatu**

### **2.1. Legislative Context**

Seven out of thirteen government ministries have a strategic interest in IWRM. These are: (1) Lands and Natural Resources; (2) Infrastructure and Public Utilities; (3) Agriculture, Livestock, Forestry and Fisheries; (4) Health; (5) Education; (6) Public Services; and (7) Internal Affairs. However water policy development must also be viewed in the context of the broader political agenda including reform initiatives such as the Priority Action Agenda (PAA) and Comprehensive Reform Programme (CRP).

The following documents have been considered on the development of this strategy:

1. Priority Action Agenda and Comprehensive Reform Programme
2. Water Resource Management Act
3. Water Supply Law
4. Land Reform Act
5. Public Health Act
6. Decentralisation Act
7. Environment Act
8. Draft Energy Master Plan
9. Public Utilities Act

A more detailed assessment of the legislation is attached in Annexure A.

### **2.2. International and Regional Commitments**

Under international commitments the Vanuatu Government is obliged to prioritise sustainable management of water resources. The strategy supports Millennium Development Goal 7, to reduce the number of people without access to safe drinking water by 2015, by strengthening the institutions at all levels to manage water resources. More relevant to the actual implementation of the strategy are the Regional Commitments to IWRM related initiatives that the Government of Vanuatu has made. These include:

- PIFS/SOPAC Pacific Cooperation Plan for Water, Sanitation and Hygiene including sustainable integrated water resource management
- ADB/SOPAC Regional Action Plan for Sustainable Water Resource Management
- GEF/SOPAC IWRM planning
- SOPAC/WHO Water Safety Planning
- SOPAC/HYCOS hydrological monitoring
- EU ESCAP/SOPAC Pacific Programme for Water Governance
- GPA/SOPAC Regional Wastewater Management Initiative
- Asia Pacific Water Forum
- SOPAC/WHO/USP Water Quality Monitoring Capacity Building Programme for Pacific Island Countries,

There is currently a lack of harmonisation of these inputs under current Government policy. With greater coordination additional resources to the sector could be committed, particularly for capacity building. This would also promote strategic, sector planning, which will allow for more effective management of the sector.

### **2.3. Geography**

Vanuatu is an archipelago of over 80 islands stretching 1,176 km from North to South in the Melanesian South West Pacific. The total land area is 12,281 km<sup>2</sup> with an expansive sea border comprising an Exclusive Economic Zone of 680,000 km<sup>2</sup>.

There are six main island groups in the Republic comprising the country's six provinces – MALAMPA, PENAMA, SANMA, SHEFA, TAFEA, TORBA. Twelve islands are considered significant in terms of their economy and population. The largest is Espirito Santo (4010 km<sup>2</sup>), Malakeula (2069 km<sup>2</sup>), Efate (980 km<sup>2</sup>), and Erromango (900 km<sup>2</sup>).

The larger mountainous islands have good ground and surface water resources whilst the low lying islands have limited fresh ground water in shallow aquifers and rely heavily on rainwater. The mountainous terrain also creates challenges for traditional water carriers, the women and children, especially where sources are far from villages.

There is generally abundant rainfall (from <100mm per month in July to >400mm per month in January) although this varies from north to south of the country and high mountainous islands create rain shadows on their leeward side. In 2006 the Northern Islands received 20 to 30 percent more than average rain whilst the Southern Islands received 20 to 40 percent less rain than average. A complete and accurate water resource database of the quality, quantity and location of water resources does not yet exist.

### **2.4. Socio-economic Situation**

The 1999 census had the population of Vanuatu at approximately 188,000, but growing at 2.7% per annum, suggesting a doubling of the population every 25 years. The population is mostly rural with only 21% of the population based in the two major towns of Port Vila and Luganville. The rest of the population is spread over 69 islands living in villages varying in size from fifty people to several thousand. Rapid population growth and urbanisation are widely cited as key drivers of change in Vanuatu, with potentially serious implications for social cohesion and environmental protection.

While the majority of the population still live in rural settings the growth of peri-urban areas is evidence of the rural-urban migration, as young Ni-Vanuatu move to urban centres for economic opportunities. It is estimated that 30-40 percent of Port Vila's population lives in temporary dwellings in squatter settlements which are more likely to be supplied with inadequate and substandard services.

### **2.5. Island Vulnerability**

Vanuatu, as in other small island developing states, faces many environmental and economic challenges to sustainable development as a result of small land masses, remote locations and small but rapidly growing populations making them particularly vulnerable. The country's capital and human resources are limited and better coordination and cooperation would encourage greater efficiency.

Vanuatu is situated on the Ring of Fire and is in the centre of the South Pacific's Cyclone Alley. Between 1950 and 2004 Vanuatu reported the highest number of disasters in the Pacific Islands Region<sup>1</sup>. Vanuatu's population is concentrated along the coastal environment that plays a vital role in the subsistence and commercial life of Ni-Vanuatu. Increased human activity in this coastal environment is placing greater pressure on sensitive areas such as beaches, coral reefs and mangroves. Atolls, low-lying islands, and low-lying coastal areas of Vanuatu are particularly

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<sup>1</sup> Bettencourt S. et al, Not if, But When Adapting to natural hazards in the Pacific Region. A Policy Note 2006 World Bank

susceptible to erosion, flooding and inundation during storm surges, high seas, sea level rise and periods of intense rainfall.

Floods and droughts are also common in Vanuatu and are predicted to become more extreme with weather pattern changes. Flooding and poor farming practices have resulted in erosion, threatening land stability and the health of rivers and marine life in or around river mouths. In general, the islands with active volcanoes have all suffered negative effects on water quality due to contamination from a mixture of fluoride, hydrochloric acid, and sulphuric acid. This has created problems for rainwater collection systems and some surface water quality.

Inundation of water resources caused by land subsidence, sea level rise and water extraction is becoming more common. The opinion of the National Disaster Management Office is that *“if a village doesn't have a problem with the quantity of drinkable water it has it will have a problem with the quality of drinking water it has. This is an issue for almost every person living in a rural area.”*

### **2.6. Drinking Water Supplies**

Port Vila water supply is provided by UNELCO, a private company under contract with the Government. The water supply for Luganville, Isangel and Lakatoro are managed by the PWD. Water quality is generally good with chlorine used for water treatment in Port Vila and Luganville. There are at least 6 known private water suppliers around Port Vila operating outside the UNELCO concession area. These suppliers are not regulated and no monitoring activity is known.

Outside these areas water supply is either taken from groundwater via open wells and bores, from surface water sources, or rainwater collection with storage in ferro-cement or polyethylene tanks. Demand for irrigated water is extremely low and limited to a few small horticultural sites. In these rural areas there is a range of different problems with the delivery of safe drinking water including intermittent supply caused by drought or damaged infrastructure, contaminated water and competing uses for drinking water causing conflict in communities.

Water reuse has not yet been considered and desalination has only been considered for disaster management. Bottled water is commonly available in supermarkets in urban centres.

### **2.7. Wastewater Management**

As the urban areas continue to develop they will increasingly impact on the quality of adjacent waterways and ecosystems. Most of Port Vila and Luganville currently lack sewage and wastewater treatment systems and waste is generally disposed of via illegal stormwater connections, direct discharge, or into poorly designed and maintained septic systems, which leach contaminants into adjacent coastal and fresh water systems.

There are currently no regulations for wastewater management or monitoring of receiving environments. The lack of water quality data means there is a limited ability to develop solutions to this problem. Though the quality of coastal waters outside Port Vila are not currently threatened, population growth, urban runoff and illegal waste disposal from future industrial activities could become a problem if not managed properly.

### **2.8. Water Users**

There is no formal record of water use in Vanuatu. UNELCO and the PWD record the water delivered and used through the reticulated supplies as a means for pricing and cost recovery.

Vanuatu is still an agriculture based economy with copra, cocoa, kava and cattle continuing to dominate the sector and contributing about 80% of total exports in 2002. Water for livestock is

generally drawn from unmonitored private bores. Horticulture development is most advanced in Port Vila, which has easier access to markets.

Since 2003 agriculture has grown at an annual rate of 3.3% compared to 2.8% growth of the economy. Agriculture, forestry and fishing sectors now account for around 15 percent of GDP and almost all of merchandise exports. Industry is not significantly developed in Vanuatu. Tourism is a fast growing sector, with resort development occurring across Vanuatu with particular concentration in and around Port Vila. As relatively high water consumers and producers of wastewater more consideration of the effects of resorts will need to be addressed in the future.

## **2.9. Gender**

Indicators show that women in Vanuatu society are rarely involved in family and community decision making, despite women traditionally managing water, sanitation, family health and childcare. Vanuatu is committed to a number of international and regional conventions for the advancement of women and gender equality. The CEDAW, Article 14 obliges Vanuatu to accord rural women equal rights with men to enjoy adequate living conditions including water supply, housing and sanitation. Implementation of the strategy will contribute to the realisation of these commitments by promoting improved representation of women in decision making forums and empowering women through education in water decisions.

The strategy promotes community management of water resources and proposes women's representation on local water committees with a role in planning and managing the resource. Women should be encouraged and empowered to take a leadership role in water and sanitation programmes in their community.

The positive contribution of women to development and change in the water sector must be recognised and acknowledged if the sector is going to have an integrated approach with sustainable water management as a result. Community education opportunities will promote the confidence women need to make demands for their own health and sanitation needs. Whereas men are traditionally responsible for the construction and maintenance of supply systems and latrines, women can if given the tools to plan and implement new water supply and sanitation systems will be in a better position to promote ongoing maintenance of the household sanitation and supply infrastructure. Women need to be involved in Water Safety Planning, Local Water Committee training and represented on the NWRAC and each PWRAC to ensure appropriate and sustainable infrastructure is installed. Women's only consultation in the planning phases for implementation will also be beneficial in gaining their perspectives and to promote sustainable projects.

## **2.10. Current Water Resource Management Structure**

The current management of water supply systems is fragmented with the DGMWR and communities managing rural water supplies, the PWD managing three Provincial towns, UNELCO managing Port Vila water supply and other small private suppliers providing water without regulation.

The management of rural water supplies is the responsibility of the Water Section within the DGMWR. The Water Section delivers rural water supplies that are mostly donor-funded and community operated and managed. The supply systems provided are hand pumps, wells, direct gravity fed or indirect gravity fed systems, and rainwater catchment. However, due to limited human resources and an absence of a clear guidance on integrated planning the Department mostly responds to specific isolated requests from communities rather than taking a more coordinated planning approach.

In recent years improved sector-wide planning approaches have been introduced - particularly in the MLNR and Ministry of Education by adopting Sector Wide Approaches (SWAp). The adoption of an integrated approach as proposed under this strategy will mark a similar transition towards a SWAp. The CRP and the PAA include national goals for financial reform to strengthen the public institutions and improve public service effectiveness and efficiency. The SWAp supports these goals by promoting more efficient use of Government resources to manage water resource. The cross-sector NWRAC will assist in advocating the adoption of a more integrated approach.

Progress in service delivery is generally restricted by inefficiencies in government operations, population increases and migration into un-serviced peri-urban areas, water systems falling into disrepair due to poor maintenance, and low investments by donors and government in capital and recurrent costs respectively.

Sanitation was previously managed by the MoH with trained Sanitation Officers working at Provincial level trained to construct pit latrines. These Sanitation Officers are no longer operational, with some becoming the Village Plumbers. There is currently no formal sanitation management in Port Vila. In 1998 the ADB prepared a Sanitation Management Plan that recommended the construction of a formal sanitation system by the PWD. The lack of defined roles and limited capacity for sanitation management should be addressed in the implementation of this strategy.

### **2.11. Governance**

As the foundation for sustainable management of water is good governance, the strategy attempts to address governance issues at all levels. The current governance structures have contributed to the low level of service delivery outcomes for water, particularly in rural areas.

Increased participation by civil society in policy formulation and decision-making is considered a necessary move towards improving governance structures. Good governance at the provincial level is a challenge with greater needs for support at this level from the National Government staff.

Strengthening financial management and accountability systems at the Provincial and Local Water Committee level will be key to effective service delivery. With improved representation on water management groups in particular from consumer groups, women and landowners, more transparent decision-making processes within the sector will be promoted.

Land and water disputes also threaten the effectiveness of water projects in Vanuatu. UNELCO's biggest challenges in the water sector relates to land ownership disputes hindering the development of infrastructure and access to safe drinking water for those residing in peri-urban settlements around Vila. Similar issues may arise in the Provinces during the implementation of the strategy and therefore should be proactively addressed in the strategy. To avoid disputes hindering the implementation of the strategy improved governance policy and institutional strengthening of the PWRAC and a proposed governance group at national level is recommended (See Annexure B for proposed structure of this group). Water Master Plans will be used to empower communities and civil society to help strengthen accountability, democratic process and legitimacy of decisions relating to water resources. Participatory approaches applied to the development of Water Master Plans and Watershed Management Plans will also support improved governance structures.

### **3. Statement of Strategic Direction**

#### **3.1. Vision**

**Sustainable and equitable access to safe water for the people of Vanuatu to support improved public health and promote social and economic development.**

#### **3.2. Objectives**

##### **Objective 1:**

**A clear regulatory framework and roles between Departments established to provide for transparent and accountable regulation and management of water resources**

##### **Current Situation**

- Overall coordination, monitoring and regulation for management of water resources are mandated to the cross-sector NWRAC. Appointed under the NWRA in 2002, a gap remains between their mandated functions (see Annexure C) and actual performance.
- The legislative framework is considered broadly conducive to an IWRM approach, except that sanitation is omitted from the NWRA and currently lies with the MoH responsibilities.
- In practice there is a general lack of coordination between Departments and integrated management of water resources.
- There is also a lack of regulation and policy for the management of water resources. Of the regulations that do exist (NWRA) the limited capacity available within the Government means these are not monitored or enforced.

##### **Strategic Direction**

- The strategy should be translated into strong political and institutional commitment. Sound leadership, effective planning, coordination and communications the National and at Provincial Government level and the allocation of adequate financial and human resources will be necessary.
- The DoW will act as a regulator for the water sector with the NWRAC providing representative and expert input and advocacy from across the sector to assist in sustainable management of the resource.
- By providing clear terms of reference, definition of functions and a broader membership to the NWRAC, a more effective institution with broader commitment and greater access to financial and human resources will be established (See Annexure D for proposed functions). The NWRAC will drive the progress of the implementation of the strategy.
- The stated functions and structure of NWRAC and the DGMWR should be aligned to complement their functions.
- To support decentralisation of government functions the PWRAC should be strengthened to serve as the principal planning, monitoring and regulatory body for each Province.
- A separate group to serve as a sector governance body needs to be established to prevent conflicts of interest within the NWRAC members and promote good governance structures at the provincial and community level.
- The NWRA specifies the need for the DGMWR to change its role from that of project implementer to sector facilitator and regulator with service delivery becoming the responsibility of the most appropriate agency either provincial officers, local water committees, private sector or NGOs.

- Appropriate regulations for water resource management need to be developed with correlating mechanisms for monitoring and enforcement of the regulations at both national and local levels.
- The incentives for different stakeholders to have improved regulation in place must be clearly outlined to gain commitment in applying and enforcing the proposed regulations. Revenue gathering from licensing and approval systems for water development should be considered as a mechanism for enforcement of regulations.
- The strategy implementation requires support of local customary leaders. Accordingly, customary decision-making and arbitration practices should be utilised in provincial mapping, planning, implementation, monitoring and environmental protection.
- Proposals under CRP to promote private sector involvement in water supply, while encouraging greater competition, should be taken forward by the NWRAC. However effective systems for government regulation and monitoring of the private sector needs to be put in place before contracts are offered. A system of registering and qualifying private contractors against agreed criteria should be included as part of this process.
- Subsequent action plans from this strategy should incorporate and support international and regional commitments and initiatives.

### **Targets**

- Clearly define water management and regulation functions and roles within the Government.
- Necessary and appropriate regulations, standards and guidelines developed, communicated to provincial and community level water managers and enforced.

### **Objective 2:**

**DGMWR adequately structured and has sufficient capacity to deliver on the Strategy.**

### **Current Situation**

The mandated functions of the DGMWR in relation to water supplies, as defined in NWRRA, are laid out below.

Table 1: Mandated Functions of the DGMWR

<b>Responsibility</b>	<b>Details</b>
<b>Policy Development</b>	<ul style="list-style-type: none"> <li>• Prepare Policies and Plans.</li> <li>• Establish necessary committees.</li> </ul>
<b>Regulation</b>	<ul style="list-style-type: none"> <li>• Support National Water Resources Advisory Committee</li> <li>• Regulation (incl. setting tariffs and fees)</li> <li>• Set scheme standards</li> <li>• Set drinking water quality standards</li> <li>• Control the use, construction, operation, maintenance of water works</li> <li>• Approve water supply schemes</li> </ul>



<b>Monitoring</b>	<ul style="list-style-type: none"> <li>• Establish a National Water Resources Inventory</li> <li>• Sector Monitoring</li> <li>• Record local water management committees.</li> <li>• Provide a testing service</li> </ul>
<b>Cap. Building</b>	<ul style="list-style-type: none"> <li>• Training water supply operators</li> </ul>
<b>Research</b>	<ul style="list-style-type: none"> <li>• Sector Research</li> </ul>

- The DGMWR's resources are currently directed primarily towards direct project implementation. Being highly centralised the DGMWR staff facilitate project implementation through liaison with provincial government, NGOs and private sector. Making the full transition from service delivery to sector stewardship and regulation will require major changes in the roles, structures and capacities of the Department.
- The current structure of MLNR includes three departments and seven operational units, including the DGMWR (see Annexure E). There are relatively few areas of common technical and strategic interest between water supply and the mining and geohazards operational unit, this has led to a fragmented management structure that serves no sector particularly well.
- The DGMWR has limited capacity to manage water resources effectively.

### **Strategic Direction**

- For sufficient operational priority of IWRM, structural changes to DGMWR are proposed. Removing Geo-hazards and Mining from the unit to establish a DoW will more accurately describe its core function and potentially help to attract a growing number of external support agencies interested in natural resource management and conservation issues.
- Internally the DoW will be restructured in accordance with the functions required by the NWRA as outlined in Annexure F.
- A change in the DoW role from direct service delivery to sector facilitation, coordination and regulation is proposed. Capacity building must therefore take a whole systems approach i.e. one that is able to address the key policy, financial, institutional, technical (see Annexure G) and human resource requirements of moving to an IWRM approach.
- The current shortage of sector professionals, in particular engineers, in Vanuatu means a long term approach to human resource development is needed in order to help build a new generation of water sector professionals.
- The decentralisation resources and decision making to provincial level is reflected in DGMWR's proposed new structure at provincial level, as outlined in Annexure H. With the PRWAC in each Province mirrored on the NWRAC and involving provincial and customary government officials and consumer representation their regulatory and oversight functions will be more effective. The Provincial Water Supply Officers will provide the operational support for planning, implementation and monitoring functions.
- The capacity at provincial and community level must be appropriate to prevent roles that are too onerous and therefore not sustainable. The following five areas are identified as priorities for capacity building inputs:

**Table 2: Capacity Building Priorities**

1. Policy Development	Development of new procedures and standards to guide government staff and others in their new roles, including planning, monitoring and evaluation procedures, including regulation and public private partnerships, national water quality standards etc.
2. Sector Financing	Promotion of a SWAp, including pooled funding, to attract additional investments to the sector – including those from energy, power and

	environmental sectors.
3. Institutional	Restructuring and strengthening of the Department to meet functions as outlined in NWRA (2002) including introduction of new governance structure.
4. Technical	Upgrading the infrastructure, facilities, equipment and technical skills base of key sector stakeholders including government staff, NGOs and private sector.
5. Human Resources	Improving HR development processes in government, building a “pipeline” of new sector professionals and encouraging private sector involvement in service delivery through capacity building inputs.

- A pooled funding approach is recommended for both donor and government funds. There is the potential to increase overall funding available to the sector by attracting additional resources from agencies with primary interests in energy, agriculture, forestry and environmental protection. Pooled funding strengthens planning processes by improving the predictability of funds flow and allowing prioritised resource allocations to un-served areas.
- The ability to integrate power generation, agricultural production and protection of eco-systems into proposals for external support, and describe anticipated livelihoods benefits, is likely to further increase total funds available to the sector. Similarly, by moving towards decentralized planning, additional local resources (cash or in kind) may be utilized.
- At current growth rates the provincial capitals will eventually surpass the current infrastructure and the financial, technical and human resource capacity of the PWD. Therefore it is necessary to transfer of urban scheme management responsibilities from PWD to the restructured DoW, with a longer term view of promoting private sector involvement in management with regulation by the DoW in accordance with guidelines of the draft Utility Regulatory Authority of Vanuatu Act (2007).
- The DoW will be required to have a proactive role in planning for and meeting targets, clarity in its roles and functions at the central and provincial levels and provision for appropriate resourcing and training at each level tailored to meet the Department’s targets.
- Greater efficiency in the function of the DoW will also result from the centralisation of the data management system and the moving of some implementation functions to registered private sector contractors and civil society. These shifts will allow the Department to better fulfil its planning and regulatory role.
- Sanitation will need to be incorporated with the Department of Water Section if mandated responsibilities around environmental protection under IWRM are addressed.

### **Targets**

- A more appropriately structured Department of Water that includes sanitation and urban water management for the effective implementation of IWRM.
- Capacity Building of Department of Water (National and Provincial Staff) in roles under new structure for effective implementation of strategy.
- Sector-wide financing systems for water management in place at National Government level.

### **Objective 3:**

**Infrastructure operated and maintained by the communities with technical and management support from the Provinces and Department.**

### **Current Situation**

- With approximately 1200 small water supply systems spread across the islands of Vanuatu a decentralised management approach for water supply is considered to be more effective.

- Decentralisation of water supply management was initiated by the DGMWR with Local Water Committee training to transfer management, operation, maintenance and responsibilities for rural water supplies to the communities.
- Results from this training vary with some committees establishing pricing systems to fund ongoing maintenance of systems and others that have little or no effect on water supply in the community. A formal evaluation of this project has yet to be completed.
- A project piloting community management of infrastructure and at a broader level an IWRM approach to develop a Watershed Management Plan for Sarakata Watershed in Santo is projected to start mid 2008.
- The ongoing maintenance of infrastructure by the communities has been restricted by a shortage of spare parts and the provision of materials and skilled technicians to isolated areas of Vanuatu.
- There is a demand for awareness raising in communities of the roles and responsibilities of all the stakeholders in water resources management. The Provincial Rural Water Supply Officers as the focal point for the ongoing maintenance and operation of rural water supplies do not have the capacity and resources to reach all communities.
- The Rural Water Supply database holds information on most rural supply systems the approximate figures are; 663 supply systems are functioning well; 269 are in need of repair and 189 are not currently operating. The database is updated annually.

### ***Strategic Direction***

- Decentralisation relies on effective provincial and community level management of services and resources including water and sanitation. Pre-requisites for community management of water resources include appropriate government regulation, guidelines and standards, cross-sectoral coordination at all levels and commitment from the communities.
- It is necessary to integrate into all water and sanitation projects a public awareness campaign component (existing campaigns to build on include MoH, World Vision, Live & Learn, SOPAC) that includes hygiene and sanitation training, water safety, conservation and demand management to promote more effective community management.
- Information on water resources from the Government to Provincial Offices and communities must be institutionalised to ensure coordination and greater understanding of water resources and sanitation. The flow of information as a mechanism to prevent damage to water infrastructure resulting from land disputes and political interference could be supported by greater representation of Local Water Committees on the PWRAC as a forum to address these types of issues.
- Appropriate management and governance structures need to be designed for the local capacity, community context, environment and type of water supply for each watershed.
- The local water committee training in the Provinces on operation and management of the various water supply and sanitation systems within their catchments should be upgraded to include watershed management planning, financial management and potential pricing systems, water monitoring, sanitation management, land-use and water safety planning and water auditing of communities. Community water management should also be incorporated into the formal education system.
- Where there is sufficient capacity water monitoring and pricing systems should be managed by the local water committees.
- Watershed management planning is a collaborative process promoting ownership of resources by stakeholders and therefore responsibility for the health of the resource. Local water committees, with the support of Provincial Officers, will develop Watershed Management Plans. How this is implemented will vary from watershed to watershed.
- Effective participatory approach relies on access to information relating to water for all stakeholders including consumers to encourage best environmental management practice within a watershed. The Watershed Management Plans will provide a tool for communities to formalise communication and coordination across sectors and with various stakeholders.

- Coordinating community health workers and rural water supply officers to facilitate community training in sanitation and hygiene will stimulate community demand for appropriate sanitation management systems particularly in urban, peri-urban and provincial centres with growing populations where wastewater discharges threatens water safety.
- Watershed Management Plans will also provide an opportunity for stakeholders to reach agreement on priorities within the watershed to put forward for the development of the Provincial Water Master Plans.
- Effective means for water committees to access spare parts either independently through direct contact with private sector suppliers and/or via provincial staff will be established.
- Watershed Management Plans could become a pre-requisite for community requests for large infrastructure projects to ensure good management structures are in place, information on the watershed is available and a holistic approach to decision making including wide consultation within the watershed has been applied to the request.
- An evaluation of the Local Water Committee Training and Watershed Management Planning process for the Sarakata and Tagabe Watersheds will assist the DoW in supporting the Provincial Officers and Communities develop more effective Watershed Management Plans.

### **Targets**

- Local Water Committees effectively managing and maintaining rural water supply systems and sanitation.
- Appropriate community training and support for water resource and sanitation management.
- Provincial staff and/or private sector able to provide technical support to Local Water Committees.

### **Objective 4:**

#### **Available water resources and catchments known, managed and protected**

#### **Current Situation**

- There is currently no national GIS database that contains the necessary data on water resources available to government and stakeholders. The existing Vanuatu Natural Resource Information System (VANRIS,) located within the Lands Department includes topography, some data on land use and vegetation, some information on rivers, and protected areas but this is incomplete. It does not yet include specific information on watersheds, hydrology/hydrogeology or hazards mapping.
- The existing hydrological network is restricted to the few units still operational and uses expensive equipment which is difficult to maintain and repair. More appropriate and sustainable technology has been identified by the DoW, which would require additional funding and technical training for expanding the network. There is also a lack of useful data available on groundwater resources.
- There are currently no plans, which set priorities for water resource management for Vanuatu and very limited guidelines on the management of water in communities.
- Water protection zones have been established in Tagabe Watershed. Land was acquired and activities restricted for source protection purposes. The Sarakata Watershed Project will also apply water protection zones to limit human activity in certain areas.
- Many rural communities rely on rainwater collection systems for their drinking water. The protection of rainwater tanks from contamination requires ongoing community education campaigns.

### **Strategic Direction**

- Accessible information on the quantity, quality and location of all water resources allows government and communities to make more informed decisions about current and future uses of water.
- The current rural to urban migration pattern, economic and population growth may affect the capacity of water in some areas. An assessment of available water resources will assist Tourism, Agriculture, Forestry, Planning and Mining Departments in their strategic planning. Therefore coordination of existing data from these Departments is necessary.
- A structured approach to establishing a national inventory would include the development of an accessible database using a GIS mapping programme. Building on the existing capacity of VANRIS as a cross-sector tool to assist in the development of land and water policy could be developed. Surveying contours and collecting data on rivers to input into VANRIS would assist define watersheds for planning purposes. A common database will also promote coordinated management of water.
- Utilising the capacity and resources of existing projects such as the HYCOS project to research and collect data on available water resources will develop a sustainable database.
- An expanded hydrological network will provide data needed to assess potential for hydroelectric or geothermal development. Data on surface water is necessary for the planning of transport networks, land use activities surrounding river systems, the mitigation of flood hazards and to provide flood warnings. Data on rainfall patterns and rainfall trends is necessary for the agricultural sector, communities vulnerable to drought and to provide forecasts of periods of above or below average rainfall for water availability particularly important with recent changes in climatic conditions.
- Watershed Management Plans will promote decentralised integrated management of water resources while providing the necessary information to develop the Provincial Water Master Plans. These will identify needs and prioritise projects for donor funding for each Province.
- Water protection zones as part of the watershed planning process, will be required to protect vulnerable water sources where human activity occurs. Information from the Water Safety Plans will be valuable input for these Watershed Plans. This process has been initiated in the Tagabe Watershed, which can serve as an example for further pilot projects of watershed management planning and establishing of water protection zones.
- Information collected in the private sector should be made available to the Ministry of Lands or DoW as a condition of license or approvals and for inputting into VANRIS.
- A coordinated approach to regulation and protection of water zones is necessary to prevent conflicting land use policy within the Government.
- Local Water Committee training will include the management and protection of rainwater collection systems.

### **Targets**

- Inventory of Water Resources by watershed developed and maintained within VANRIS.
- Watershed Management Plans for protection and management of water resources to be developed for all catchments.
- Water Protection Zones assigned to protect water supply sources in priority watersheds.
- Water Safety Plans to identify mechanisms at Community level for protecting the different types water supplies from contamination including groundwater, surface water and rainwater collection systems.

## **Objective 5:**

**All water quality monitored and maintained to meet agreed standards.**

### ***Current Situation***

- Activities contributing to the degradation of the quality of surface and ground water in Port Vila and Luganville include the disposal of human and commercial waste and urban runoff. In rural areas, agriculture and mineral extraction and prospecting are of more concern. Natural activities such as volcanic activities, cyclones, flooding, droughts, and earthquakes also impact on water quality. The long-term effect on water quality from these activities is not known due to a lack of monitoring.
- Water quality information is collected on an ad hoc basis so it is difficult to draw clear conclusions. Method of collection of data, analysis and reporting has not been formalised.
- There is currently no laboratory operating procedures or quality controls in place. There are also no water laboratory technicians in the Government who are dedicated to water quality testing.
- There is no regular monitoring of Provincial water supplies or the private water suppliers around Vila.
- Generally a reactive approach to water testing is maintained as testing mostly occurs when water quality threatens health, as communities highlight problems. The results of tests are currently not shared across the sector.
- Previous monitoring programs have failed due to limited capacity and weak institutional arrangements.
- There are currently no drinking water quality guidelines for Vanuatu, waste-water quality standards for discharge, or a surveillance authority appointed, although the Public Health Act includes provision for regulations under the Act for standards, quality and adequacy of water for domestic purposes. Currently the World Health Organisation (WHO) guidelines are used by default where necessary (UNELCO contract to supply water in Port Vila applies WHO guidelines). Standards that are appropriate for rural and community managed water supplies in Vanuatu have also not yet been developed.

### ***Strategic Direction***

- The strategy seeks to introduce a coordinated nationwide monitoring programme across sectors to ensure efficient use of available capacity within the Government. An upgraded programme will support an IWRM approach by developing a more targeted approach to water management to reduce risk of potential health problems and to protect eco-systems from pollution. At the outset the programme will provide existing data in which to develop a baseline for water quality for Vanuatu.
- Monitoring discharges from commercial activities and water for private water suppliers should be a condition of Environmental Impact Assessment approval or Water Licences with regular ongoing testing to provide data for inputting into the National database.
- Local Water Committees with training in water safety planning could assist in water monitoring programmes with simple inexpensive tests for ongoing monitoring programmes for small supplies.
- Water Safety Plans developed for all water supplies by Local Water Committees will increase capacity for a community managed monitoring programme. Private suppliers in urban and peri-urban areas should be required by condition of Water Licences to develop Safety Plans. Water Safety Plans could become a pre-requisite for making requests for funding for water projects to ensure commitment by communities to the ongoing management and maintenance of the supply.
- A regular monitoring programme would provide useful data for analysis to be entered into a centralised database. The database should be accessible to assist in decision making at all levels and for development of appropriate policies and plans for

watersheds. Water quality information also assists in determining the level of protection of watersheds (surface and ground water) before degradation of water occurs.

- A sustainable monitoring programme must be based on agreed National water quality standards and guidelines for urban and rural areas. Appropriate and relevant tests and standards, including drinking water standards, need to be developed by the DoW.
- An assessment of the capacity of other government laboratories and the private sector for testing water quality should be completed to ensure existing resources are pooled appropriately.
- Training is required for the DoW Monitoring Unit staff on drafting monitoring programs, sample collection, analysis techniques and data storage to ensure effective policies and planning result from the monitoring program.
- A monitoring program will identify changes in water quality, the cause and impact on the environment to provide sufficient support for local action, policy development and/or enforcement. Only meaningful data should be included in a centralised database to prevent errors and a common system used across the sectors to present data.

### **Targets**

- Establish water quality and wastewater monitoring standards appropriate for rural and urban areas in Vanuatu.
- Enforce regulations to ensure appropriate monitoring and recording in a centralised database of water supply and waste-water discharges.
- Training programme for Local Water Committees to include community monitoring and water safety planning.
- Provide technical support to communities for preparation of Water Safety Plans.

### **Objective 6:**

**Appropriate and sustainable infrastructure installed to meet domestic, customary use targets and needs for sustainable economic development.**

### **Current Situation**

- The ongoing operation, management and maintenance of the existing infrastructure are currently a major barrier to meeting the targets for delivery of water to rural communities. The systems are designed with a 15 year life but due to lack of maintenance and management the average life of systems is currently approximately 5 to 10 years.
- Supply systems are delivered to communities on a relatively adhoc basis, usually as funding is made available.
- Communities make requests to the DGMWR or Provincial Water Supply Officer for new systems, repair or maintenance of existing systems.
- The DGMWR selects the most appropriate type of water system for communities according to the geographical layout of the area and available information on the water source. Rural water supply officers collect data for the DGMWR Engineer to decide on the type of system, its design and location. This process is currently very slow due to limited capacity and resources.
- There is currently no data being collected on the total percentage of the population with regular access to safe drinking water. The statistics available relate only to those serviced by formal water supply systems provided by NGOs and the DGMWR in rural

areas. Communities without formal water supply systems are not included in data collection.

- The Water Resource Act requires that for the development of water supplies from any source, prior approval from the Director of Water Resources must be obtained. This provides an opportunity to ensure that systems are designed in accordance with current technical standards used. However due to a lack of capacity and appropriate regulations the monitoring of projects and enforcement of these standards is limited.
- There is currently no sanitation network infrastructure in the Port Vila and Luganville urban areas despite increasing pollution of waterways from septic overflows during rain events. In rural areas there are basic sanitation systems with some hygiene education and sanitation projects delivered by NGOs, community health workers and the Environmental Health Department (MoH) though this is on a relatively ad-hoc basis. The sanitation officers who previously managed rural sanitation projects are currently not functioning due to a lack of capacity.

### ***Strategic Direction***

- The current technical standards for the four types of water supply systems and sanitation systems used will be reviewed and upgraded if necessary to ensure infrastructure is appropriate and sustainable for community management. The DoW will also be responsible for the development of appropriate community guidelines for water management including quality monitoring, price controls and construction of sanitation and water supply systems in communities.
- The standards must take into consideration the lack of funds for maintenance, skilled technicians and the relative geographical isolation of some communities for the distribution of spare parts.
- The ongoing enforcement of regulations and standards will need to be managed at the provincial and community level with support from the DoW.
- The effective enforcement of technical standards will ensure delivery of the quantity and quality of water required and in the case of sanitation systems reduce the risk of pollution of the surrounding environment.
- Improved collection of data and access to information will assist in selecting the most appropriate and sustainable infrastructure for communities.
- The Watershed Management Planning process will include community consultation and participation for priority setting water and wastewater projects within the watershed, determining the location and appropriate infrastructure to promote sustainable projects.
- The construction of water supply and sanitation infrastructure will be undertaken by private sector partners, donors, NGOs and community groups where appropriate. In some areas distribution of spare parts, drilling and construction of water supplies may be better completed by the private sector under agreed government contracts and monitored and regulated by the DoW.
- The development of a more appropriate sanitation solution for Port Vila needs to be initiated.
- The reinstatement of the Sanitation Officers with increased funding and training will provide a focal point for rural sanitation projects. Working closely with the Provincial Office they should be represented at the PRWAC level. The role of these officers addresses both sanitation hardware and software. For each province the collection of data on the coverage of appropriate sanitation systems needs to be gathered to assist prioritisation of projects. Where capacity of these officers is limited a Community Led Total Sanitation approach could be used to promote community led solutions.



## **Targets**

- Water Master Plans developed for each Province to prioritise water and sanitation projects in accordance with standards, guidelines and regulations adopted by Government.
- Appropriate and sustainable sanitation systems established in communities that are prioritised by the Provincial Master Plans.
- That 95% of the population have regular access to an appropriate and sustainable safe drinking water supply.

## **Objective 7:**

### **Information and response mechanism in place that allows for mutual information sharing and accountability between government and stakeholders**

#### ***Current Situation***

- There are currently no clearly defined mechanisms for rural communities to highlight issues related to water management. Provincial Officers with limited capacity and resources are often restricted to service only problems in more accessible communities.
- Political interference to by-pass correct procedures and decision making for prioritising water projects occurs at the National, Provincial and community level.
- There is currently no national or provincial governance body to promote good governance structures, mutual information sharing and accountability.
- Information tends to be held separately by each department or organization.

#### ***Strategic Direction***

- Accurate, clearly presented information and response mechanisms appropriate to the relevant institutional arrangements including customary institutions will support improved accountability between government and stakeholders.
- The proposed Public Relations Unit within the DoW should prepare a communications strategy to formalise information flows for disseminating information to all levels. This could include cross-sectoral information gathering to support the role of the section.
- The collection of relevant information, analysis of data and development of response mechanisms is necessary for setting priorities and making decisions for policy and effective planning.
- Improved sharing of information across sectors and between different levels will build on the existing mechanisms by the strengthened NWRAC and PWRAC.
- Each PRWAC should be represented at the NWRAC meetings. Women's representation needs to be increased within the PRWAC and the Local Water Committees.
- Improved linkages between the political parties and provincial government, particularly around decisions affecting water and sanitation. such as the during the watershed management planning process.
- The Local Water Committee training could include organisational development support, and establish links for mutual problem solving with other villages and communities. This will assist the DoW in establishing efficient communication links with communities about water infrastructure for data collection and monitoring. Collective management will also create ownership of infrastructure and assist communities in more efficient operation and management of systems.
- Water Master Plans to be developed for each Province using a participatory approach will outline agreed priorities and National commitments to funding for larger projects in

an attempt to reduce the risk of political interference at Provincial and community level in project delivery.

- Protocols for responses to community requests, issues (in particular health risks) need to be formalised in the Watershed Management Plans. These plans provide a mechanism to develop watershed specific responses according to the capacity available within the watershed.
- A two-tier system for assessing projects to be developed with higher value projects being assessed by a number of different representative groups at each level including the governance group at national level. Smaller lower value projects could then be implemented at the Provincial level with less scrutiny as they would pose a lower risk.

### **Targets**

- Increase access to water resources information in the Provinces.
- Water Master Plans developed for each province to set priorities for water projects.
- Open and effective engagement between local water committees, government and private sector providers.
- Appropriate governance structures developed for each province.

## **4. Implementation of the Strategy**

In order to implement the strategy an Implementation Review Team (IRT) is proposed for formation under the proposed DoW structure. The IRT, facilitated by the Director, will be responsible for all planning, monitoring and review processes including the preparation of bi-annual progress reports to the NWRAC and an annual review.

A key factor in the successful strategy implementation will be the extent to which the strategy is perceived by key stakeholders to be accessible, informative, relevant and easily referenced. For this reason a standard template and set of tools needs to be developed to allow the easy collation of revisions and progress updates. Translation of the strategy into Bislama and French and wide distribution across Vanuatu is also required for this purpose.

It is intended that the strategy will be a living document, to be updated as required. Regular evaluation of progress will assist in developing the National Water Resources Policy as outlined in the Water Resources Act. The strategy will also require the preparation of implementation work plans to ensure that priority actions are identified and progress against them can be measured. The transitional work plan for the first three years of the strategy recommends changes to the institutional arrangement for water and capacity building across the sector for more effective project implementation in the longer term. This transitional work plan will support the existing activities of the DGMWR for the first year of the strategy as their role shift from service delivery to sector facilitation and regulation.

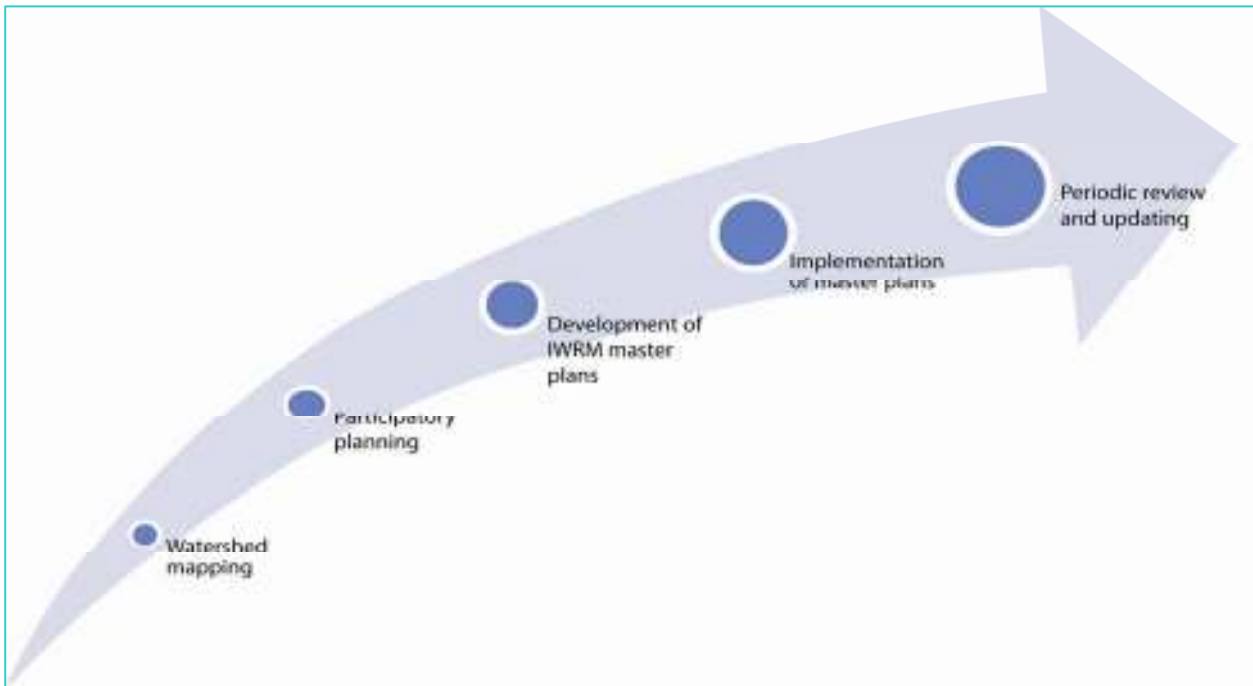
While the strategy makes provision for power, agricultural and production related uses, its primary focus is on the provision of drinking water and the protection of water resources and eco-systems. It also includes a number of pilot projects designed to gain experience of new working approaches in these areas and establish strategic markers for Vanuatu's water resource management programme. Many of these projects will require external funding from donors who will be encouraged to invest in this Strategy.

A phase-wise approach to strategy implementation is proposed in order to ease the programme learning curve and allow review and strategy modifications in the light of provincial level

implementation. Such an approach will also allow time for the capacity building needed to strengthen human resources in the sector.

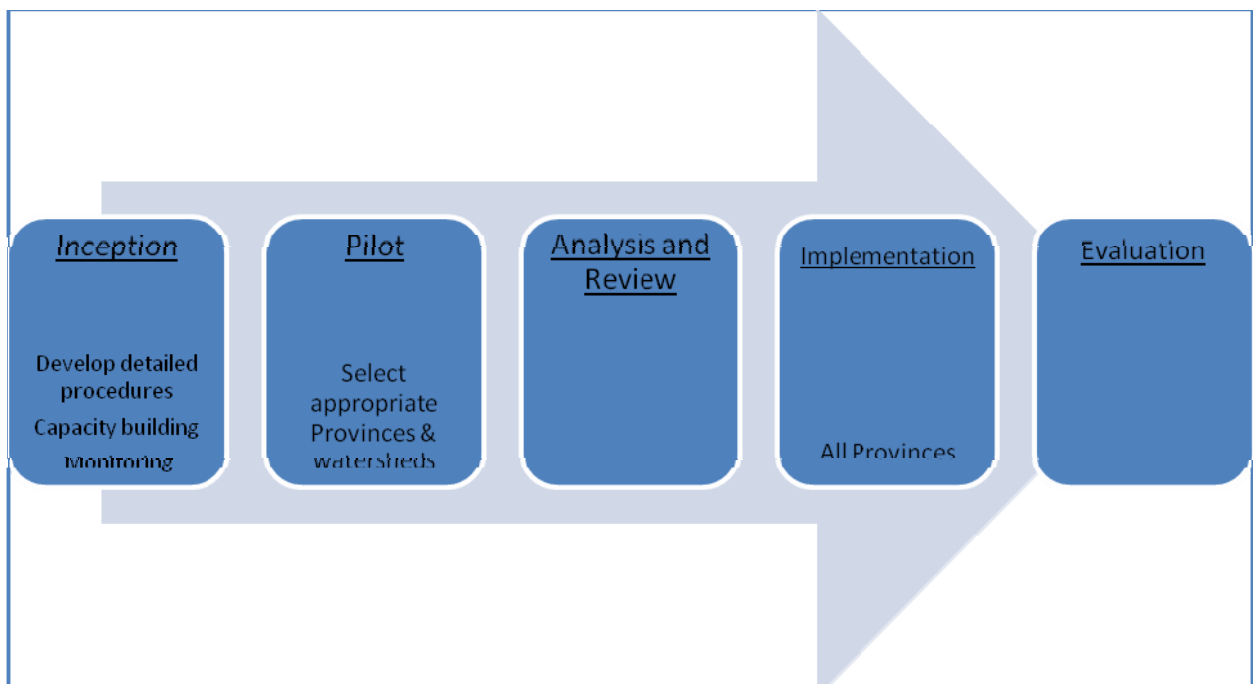
It is anticipated that the proposed restructuring and capacity building of the DoW and NWRAC will take up to 2 years. Once completed the DoW will implement the IWRM Approach at Provincial level following the step-wise approach illustrated in Figure 1. This involves comprehensive watershed mapping with data fed into provincial and national MISs; participatory watershed management planning facilitated by Department staff leading to the preparation of IWRM Provincial Masterplans including priority allocations; the progressive implementation of plans made using resources from various sources followed by periodic review and updating of progress made, including public dissemination of findings. Clearly, provincial budget allocations for IWRM will need to be committed by the National Government but with the Provincial Governments and Local Water Committees free to raise and assign additional resources as needed.

Figure 1. IWRM Step-wise Implementation at Provincial Level



As for all major sector initiatives, it will be important to pilot the IWRM approach in a small number of watersheds in representative Provinces. A full two years should be allowed for this inception phase and a thorough review undertaken before scaling up to national level. This process is illustrated schematically in Figure 2 below.

Figure 2: Proposed Inception and Roll-Out Process



Capacity building for community management of rural water supplies, development of Watershed Management Plans and cross-sectoral coordination process may need to be piloted. The number of pilot projects to be undertaken will clearly depend on the funding available.

#### **4.1. Monitoring and Evaluation**

A Monitoring and Evaluation Plan will be developed with the aim to ensure the strategy projects and proposed changes are effective and relevant and to provide valuable feedback to be used in implementation. The IRT reports should address the appropriateness of the targets and objectives of the Strategy and the progress against the performance measures in the work plan. This will ensure the activities in the work plan are aligned with the strategy.

The Monitoring and Evaluation Plan will identify 1) key performance questions, 2) key information needs and indicators, 3) baseline information requirements, status and responsibilities, 4) data-gathering methods, frequency and responsibility, 5) necessary practical support, resources and responsibilities for information-gathering, 6) necessary practical support for analysis, feedback, and dissemination.

Where possible monitoring, review and evaluation should be locally led with support from the DoW. Watershed Management Plans should include a mechanism for community evaluation of projects to build capacity in community led planning and implementation.

The Monitoring and Evaluation Plan will detail the linkages between monitoring, review and evaluation of activities funded as part of the strategy and of the overall strategy and the government's overall development objectives.

The goal of monitoring, review and evaluation of this Strategy is to assess its relevance and effectiveness and to provide feedback that can be used to improve implementation.

Performance measures to be included in the plan for monitoring and evaluation must address the following:

- The appropriateness of the targets of the Strategy and actions in the work plan.
- The effectiveness of the implementation of the Strategy.
- The alignment between expected outcomes and the activities funded under the Strategy
- How effective activities funded under the Strategy are in contributing towards the outcomes.

Specific performance indicators are to be outlined in the work plan for each year of the strategy. Various means of verification can be applied including studies, assessments and data as it becomes available from the different stakeholders in the water sector. Reports and feedback from the relevant Ministries, the NWRAC and PWARC as stakeholders in the water sector will also provide valuable input to implementation.

#### **4.2. Risk Assessment**

There are a number of risks associated with the strategy particularly relating to the lack of capacity of the Department. Managing these risks appropriately is crucial to the success of the implementation of the strategy.

Insufficient capacity within the Government, including the gaps in staffing, may lead to difficulties within the DoW to move from project based work to sector facilitation and regulation. There is a risk that efforts to encourage stronger coordination will be undermined by continued focus on processing individual projects. This short-term focus undermines work for stronger

planning and development of regulation for the whole sector. Institutional strengthening of the NWRAC and a Technical Assistant for capacity building within the DGMWR will be key to managing this risk. The NWRAC will advocate for the regulation for water sector while the capacity building at the Provincial level and within the DoW will assist create more demand for regulations.

Conflict over land ownership and use, including between civil society groups and individuals may undermine an integrated approach to water management. Land disputes resulting from ineffective leadership, a lack of clear policy on land ownership and management and failure to address differences between customary and modern views on land ownership threatens the sustainability of water supply projects. Increased dialogue during Provincial Master Planning and engagement with civil society groups will assist reduce this risk.

The risk of decentralisation of water management is largely related to the human and financial resource constraints preventing effective service delivery. The capacity of the private sector is not known, an assessment will help guide future decision-making on how services are best delivered.

There is a risk of a gap in service provision as the Government shifts this current role to the private sector and communities. The transitional work plan attempts to address this with Technical Assistance for capacity building and initial activities around regulation development and supporting the shift in the DoW role. The Department must continue with their current service delivery activities for the first few years of strategy implementation therefore Technical Assistance will be necessary to prevent roles becoming too onerous.

The updating of the Strategy as lessons are learnt during strategy implementation will promote more sustainable projects. For example if it is found that the private sector does not have sufficient capacity yet for undertaking the service delivery functions then this will need to be addressed before proceeding with out-sourcing.

Research as a method to manage risk is also proposed by the strategy. Increased knowledge of the water resources, capacity of communities, effectiveness of previous projects and customary management structures in the different Provinces will result in more appropriate and sustainable projects. Building on existing and accepted institutions within communities and the Provinces for the Watershed Management Planning Process, Provincial Master Plans and Local Water Committee training will improve the likelihood of success for these proposed mechanisms for management. Awareness raising and education as a component of all water projects will also support community ownership of infrastructure and therefore reduce the risk of projects failing.

#### **4.3. Financial Viability**

The Sector Wide Approach necessary to manage a cross-sectoral resource such as water implies that a certain amount of pooled funding for management of the resource will be committed to the sector. The financial mechanisms of the Vanuatu Government can support pooled funding with commitment from the various Ministries benefiting from water projects and water protection. As the benefits of IWRM become evident during implementation of the strategy it is anticipated that increased levels of funds from Government and Donors will be attracted.

Donor funding is necessary to support the implementation of the strategy. The strategy has been written broadly to enable donors to fund areas that support their objectives and existing aid programmes. Initial funding for the capacity building at National and Provincial level is required with the development of the National Inventory of Water Resources and Provincial

Masters Plan also a priority. The transitional work plan should be used to guide donors and funding agencies to the Governments priorities.

## ANNEXURE A – Legislation Review

### Other Legislation

An overview of other relevant government legislation is presented below. This is laid out for comparison of IWRM related concerns and responsibilities of various Ministries/Departments including areas of comparative advantage. Column three highlights anomalies or issues to be taken forward by the NWRAC, DGMWR or respective line ministry:

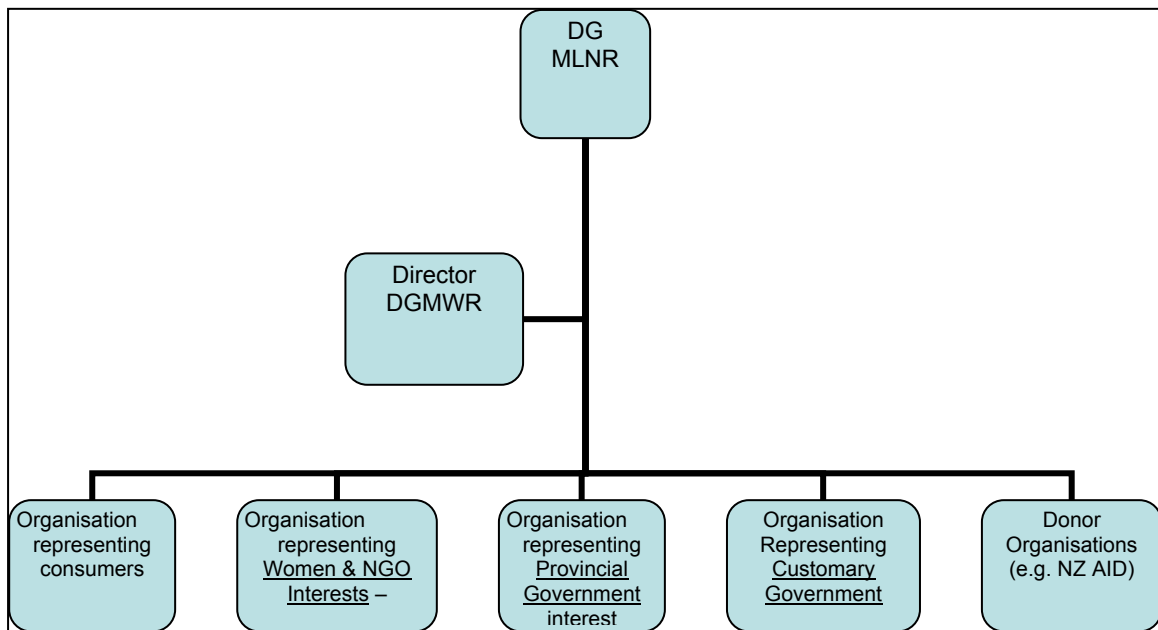
Legislation	IWRM Related Guidance	Guidance Note
<b>Water Resources Act (2002)</b>	Overall responsibility for protection, management and use of water.	Sanitation, as an essential IWRM component needs to be incorporated. Negotiate with MoH to lead on construction of sanitation infrastructure.
	Planning, development & monitoring of national water resources.	Monitoring system currently non-functional. Restructuring of DGMWR needed to place resources where needed.
	Cross-sectoral coordination linked to water resource management.	Need broader representation on NWRAC: Energy, Education, women, consumers etc. Need clear TOR and guidelines.
<b>Land Reform Act (2004)</b>	Establishes rights to land of customary and alienator users Guidance on land disputes, licensing, purchasing, compensation and appeals procedure. Government powers to purchase land in public interest. Environmental protection, land mapping.	Vital legislation needed to secure access to water resources. Need to incorporate national water resources within GIS based land mapping
<b>Environment Act (2002)</b>	Sets environmental standards. Makes provision for national environmental registry. Requires environmental impact assessments (EIA) for all projects.	Need to liaise closely with environmental officers at provincial level for EIAs. Need to link national water resource inventory to environmental registry. No specific mention of water resource protection measures - groundwater recharge etc. Need to lobby in this regard.
<b>Public Health Act</b>	Responsible for public health impact; Water quality monitoring;	Need to harmonise approaches to water quality testing with DGMWR.



	Sanitation promotion	No effective sanitation provision in place. Move responsibility to DGMWR under IWRM approach.
<b>Rural Electrification Proposal (2007)</b>	<p>Prepared by UNELCO at invitation of government.</p> <p>Gives details of proposed coverage, scheme types and projected costs.</p> <p>Includes hydropower and other renewable options.</p>	<p>Needs to be considered in the light of NURA Act.</p> <p>Need to ensure provincial water resource maps and plans incorporate proposed hydro-power schemes.</p> <p>Need to encourage additional private sector (including NGOs) involvement in micro and pico-hydro schemes.</p>
<b>Utility Regulatory Authority of Vanuatu Act (2007).</b>	<p>Proposes establishment of National Utility Regulatory Authority (NURA) to facilitate private sector involvement in utilities (water and electricity) supply.</p> <p>Includes setting service standards, tariff regulation, customer complaints and resolution procedures.</p>	<p>Proposed privatisation of provincial towns' water supplies should be guided by NURA.</p> <p>Possibility of overlap in roles between NWRAC and NURA – both mandated with regulatory role. NWRAC should concern itself primarily with rural supplies.</p>
<b>Water Supply Act (1988)</b>	Regulations including costs for household connections to urban water supplies in 4 regional towns	<p>Service levels and revenue collection reportedly poor.</p> <p>Effectively superseded by (1) UNELCO contract and (2) National Utility Regulatory Authority Act.</p> <p>Provincial town supplies recommended for privatised management as per NURA Act.</p>
<b>Decentralisation Act (1994)</b>	<p>Defines composition, structure, election procedures, powers and budgets of local government.</p> <p>Responsible for developing local economic development policies and plans.</p> <p>Highlights importance of local government involvement in construction, management and maintenance of public facilities.</p> <p>Enforcement of public health, hygiene and environmental protection laws</p> <p>Licensing of local businesses</p>	<p>Guidance still awaited on delegation of authorities from line Ministries and which Government Departments can be relocated to provinces. Study proposed on how state system can support and complement customary judicial system.</p>

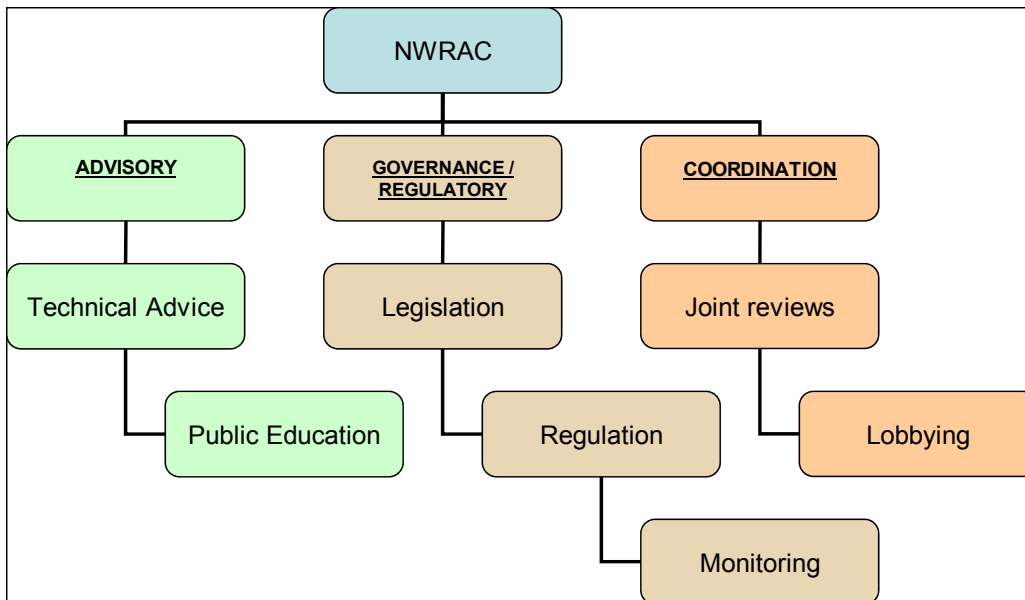
**ANNEXURE B**

**Possible Structure for National Governance Group for Water**

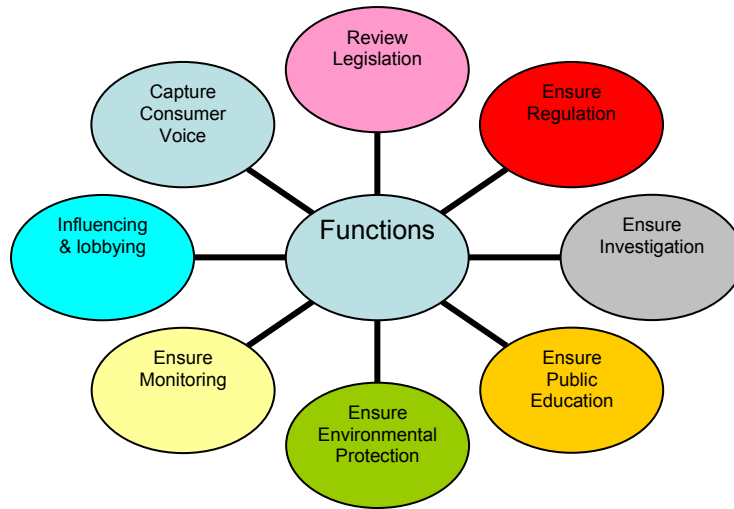


**ANNEXURE C - Current NWRAC Mandated Functions**

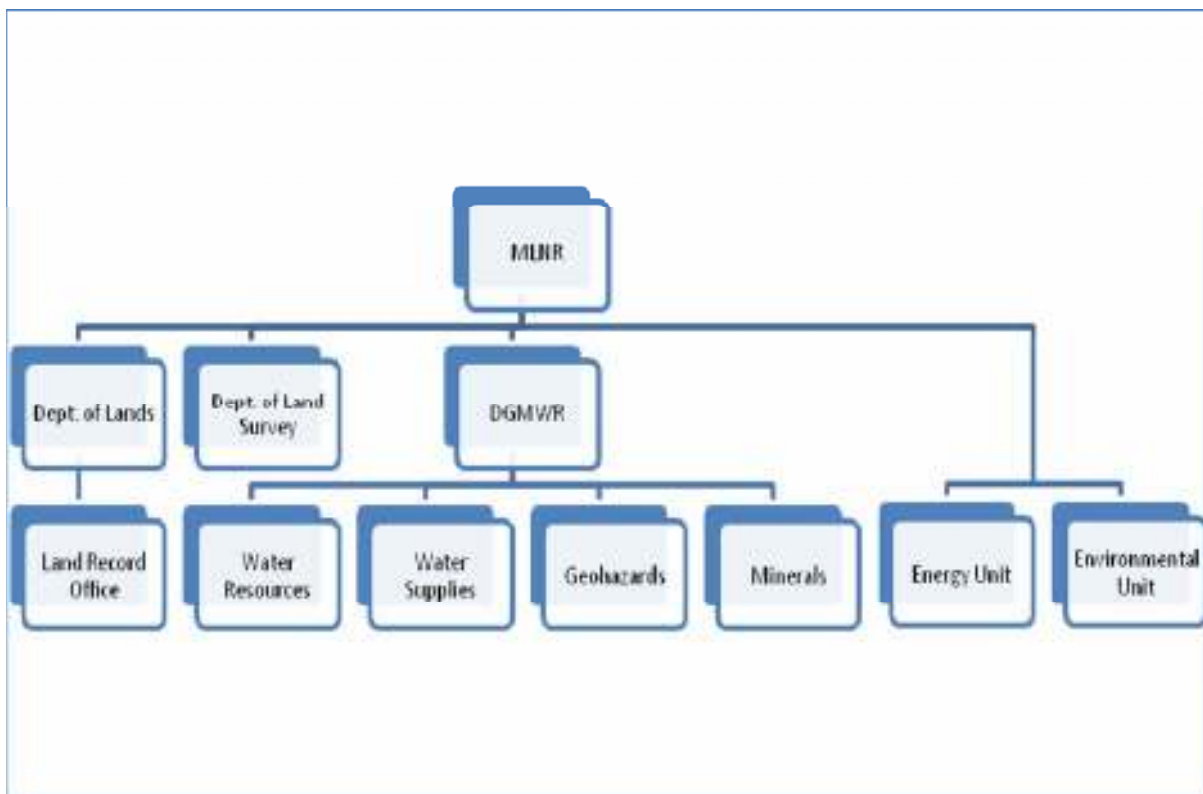
NWRAC Mandated Functions



## ANNEXURE D - Proposed Functions of the NWRAC

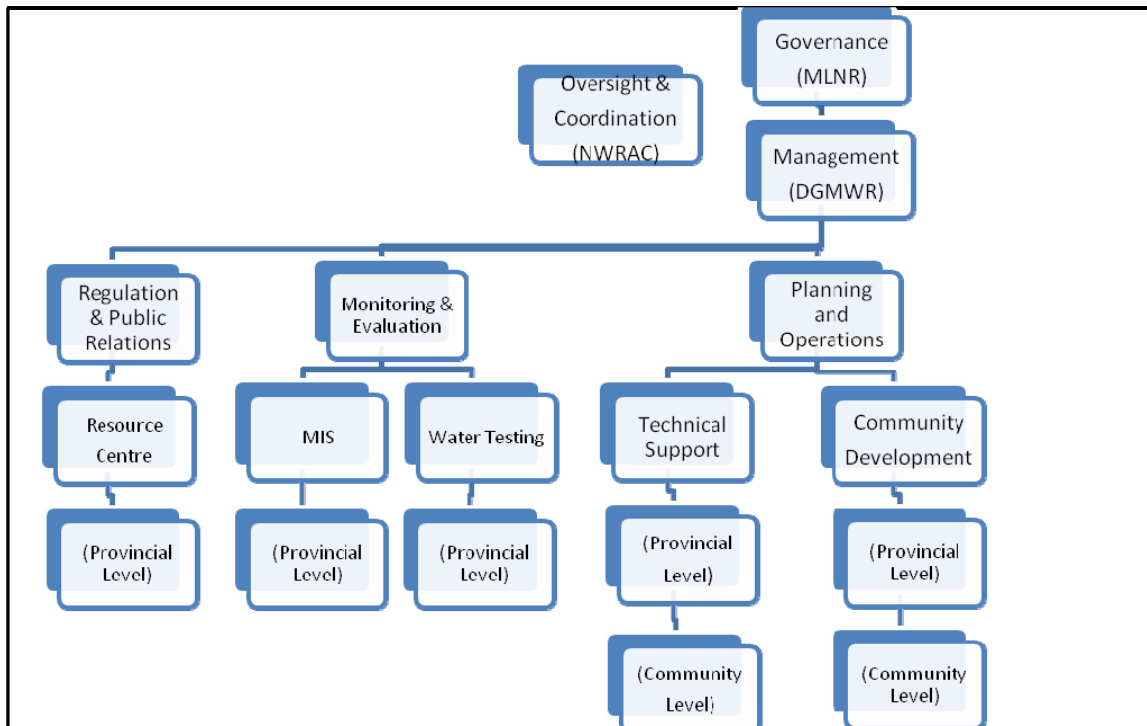


## ANNEXURE E – The current MLNR structure



## ANNEXURE F

### Proposed Restructuring of DGMWR Water Units by Function (excluding auxiliary staff)



This will require that additional staff be appointed to support regional activities and that, in several cases, existing staff will need to be re-assigned and trained for new functions. Notably:

- 1) The current Water Resource Manager post is expanded and renamed Monitoring and Evaluation Manager with responsibility for national water resource inventory, water quality and other monitoring related functions. Staff currently assigned to the Water Resource Manager move across to work under this new section.
- 2) A new post of Public Relations and Regulation Manager is created with overall responsibility for awareness raising, national and provincial resource centres, regulation, licensing and public relations. This should ideally be an experienced sector professional, with proven technical and communications skills. An additional supervisor will be needed to support these functions.
- 3) The current senior office post of Engineer is renamed Technical Support Manager with responsibility for the provision of technical advice on water supplies, hydro-power, agricultural, and other water development issues including environmental protection. The project supervisor will assist with these tasks. Provide advice for NGOs, manuals and designs developed. The currently vacant storeman post is not re-filled but replaced by an additional technician to provide provincial level support.
- 4) The current post of Community Development Coordinator is renamed with responsibility for facilitating provincial level planning and implementation down to community level. This includes providing process related guidance and training to local government, implementing NGOs, private sector organizations and communities.
- 5) Given the policy mandate for DGMWR to cease direct service delivery activities the drilling team (Drilling Supervisor, Driller and Drilling Assistant) should be reassigned to support provincial level technical capacity building functions under the Technical Support Manager. The drilling rigs managed by the Department should be privatized in accordance with

standard government procedures, while making provision for the new operators to be trained up by the drilling team. The Department should also enter into a service contract with the new operators so that it has priority access to these newly privatized drilling services.

- 6) The posts of auxiliary staff including Project Officer, Mechanics and Administrators remain unchanged.

## ANNEXURE G – Technical Skills Development

Key areas to be addressed at different staffing levels are summarized below:

### Proposed Technical Skills Development Areas

Cadre	Topic
MLNR committee members	IWRM Overview: Watershed Planning
	Good Governance
NWRAC members Provincial IWRM Committees	IWRM Overview: Watershed Planning
	Regulatory Framework
	Planning, Monitoring and Evaluation
	Good Governance
Director	Communications
	Integrated Planning & Budgeting
	Regulatory Framework
	Monitoring and evaluation
Section Managers	Technical and management options
	Management and leadership skills
	Good governance
	Public-private partnerships
	Regulation and Public Relations Manager
Regulation and Public Relations Manager	Public Relations
	Environmental Management
	Communications
	Technical and management options
M&E Manager	Natural Resource Mapping (GIS)
	Sector MIS
	Database Management (VANRIS +)
	Technical and management options
PlanOps Manager	Master Plan Preparation
Provincial Coordinators	Technical and management options
	Negotiation, facilitation, conflict resolution
Technical Manager	Technical and management options
Technical Supervisors	Training of Trainers - service installation
Technicians	Community development
Provincial Coordinators	

Provincial Officers	Training of local water committees in monitoring water supplies.
Local private sector incl. NGOs	Distribution of spare parts for the supply systems
Village Plumbers and Sanitarians	Technical skills on maintenance of water supply systems and sanitation system construction.
Community Development Manager	Facilitation Skills
	Monitoring; Regional MIS
	Community development
	Negotiation, facilitation, conflict resolution

### ANNEXURE H – DGMWR at Provincial Level

Proposed Structure by Functions of Existing DGMWR at Provincial Level, to be come DoW.

