

European Union and SOPAC

**Programme for Water Governance
Fiji Water Resources Management
at National Level**

Final Report

Water Policy Services Pty Ltd, November 2006

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Final Report:
Chapter 1: Summary and
Recommendations

Water Policy Services Pty Ltd,
Sydney

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Chapter 1. Summary and Recommendations

1.1 Introduction and scope of pilot

The European Union funded Fiji pilot for the Programme for Water Governance (PfWG) has been intended to progress water resources management at the national level in Fiji. In doing so, it was understood that there are several important elements for introducing an IWRM approach and establishing the requirements for water resources management to handle emerging and future challenges posed by the progressive impact of development on water, the likely increase in demand for water and potential population increase, and the pressures on water quality.

The pilot involved the assistance of an international water resources consultant with a total input of three months August 2005 and August 2206. A local consultant report on water resources information involved one half month input. The Government of Fiji provided accommodation and facilities for the pilot.

While environmental management is responsible for some aspects of water resources regulation, in particular monitoring, pollution control through discharge permits, there are other important aspects of water resources which are not covered as they should be, in particular water allocation.

The pilot identified the following elements in its analysis of water resources management requirements:

- Policy on water resources
- Legislation for water resources management
- National coordination for water resources
- Institutional arrangements
- Planning mechanisms
- Water resources information
- Technical capacity
- Education and awareness

Recommendations are made in each of these seven areas.

This outline does not include consultation and participation as a distinct element, but the intention has been to build them into the other elements.

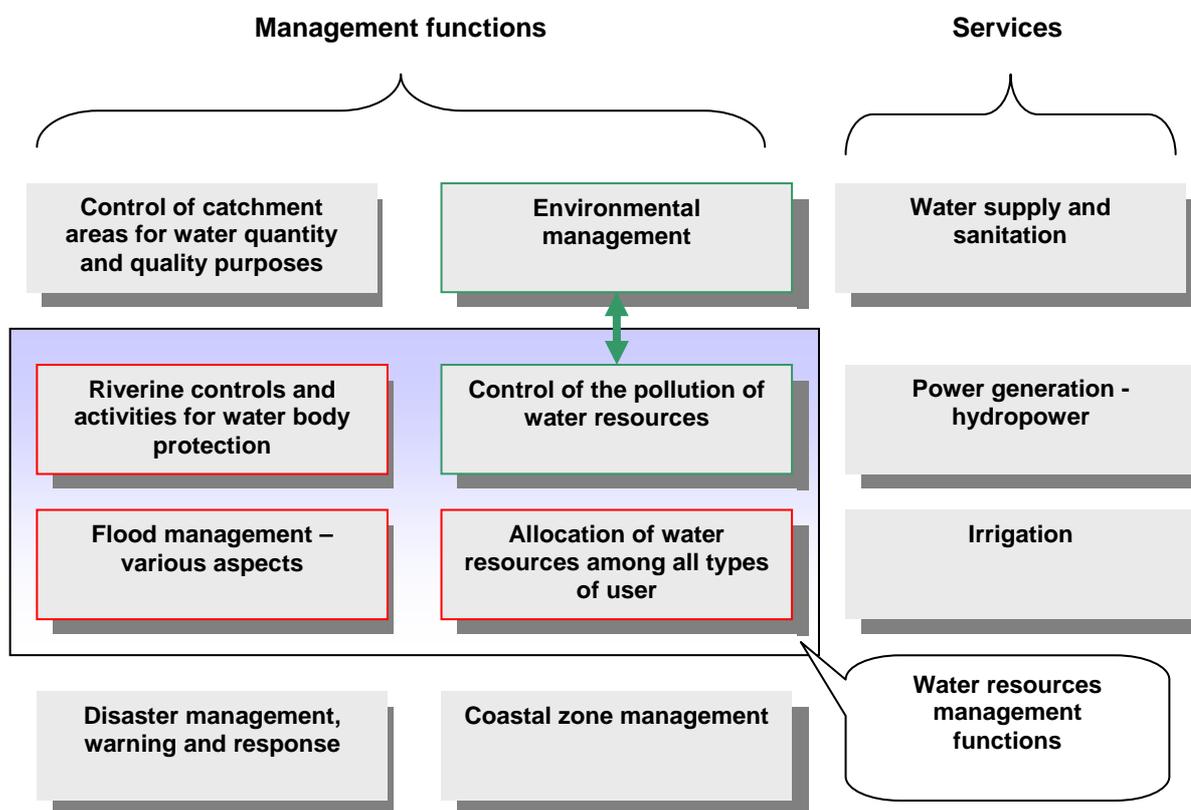
1.2 Definition and scope of water resources management

The focus of the pilot is on 'water governance' which aims to established or strengthen the function of government known as water resources management. Problems in the water sector are now recognised to be closely related to governance, which includes organisation, policy aspects of cultural practice. It is also widely understood that water services and water management are different types of government responsibility. The first involves providing services such as water supply and sanitation to the public as consumers, and it therefore amenable to commercial models which focus on customer service. This is the philosophy behind the commercialisation of the Public Works Department (PWD) water supply and sanitation responsibilities.

Water resources management, however, is a core function of the government, similar in nature to the management of other natural resources such as forests and minerals. Water resources management is defined as the active management of freshwater resources, whereby the government ensures that they are being exploited productively, fairly and sustainably and at the same time protected. The protective aspect is important for water resources in ways that do not apply to minerals, for example, as water is susceptible to pollution.

Water resources management in the broadest sense includes a number of responsibilities which are being undertaken in Fiji today, as shown in Figure 1, which shows four 'core' aspects of water resources management, along with other related management functions and the most common water-related services and water use functions.

Figure 1: Water management and related functions of government



Pollution control is most frequently undertaken as part of environmental management, although it can also be categorised as part of water management. In Fiji, the control of water pollution is the responsibility of the Ministry of Environment and should remain so. However, it has a close connection with the allocation of water resources. The three remaining areas, shown in Figure 1 as water management functions, are those which this report most actively deals with, namely water allocation, riverine controls and flood management, not including disaster response which is already covered by the National Disaster Management Office (NDMO).

The pilot programme aimed to identify what is currently being done and what needs to be done in the future in order to develop the water management capability that Fiji requires. The following recommendations are made in the key areas covered by the pilot..

1.3 Water resources policy

During the course of the pilot, Cabinet approved an interim National Water Policy draft, subject to consultation. The policy document received assistance from the PFWG pilot in the form of advice and drafting suggestions. The document viewed by Cabinet is interim because it was developed prior to consultation but also because it needs to be further developed in important areas.

The current policy states the key principles for water resources management in Fiji and commits the Government to further advances in (i) a national water council, (ii) water resources legislation, and (iii) water resources information.

Further work on policy has been completed through the pilot, comprising:

- Detailed policy proposal for small settlement water supply installation and management;
- Identification of other policy areas that require development.

1.3.1 Policy on provision of local water supplies

A policy proposal had been developed for the provision of small or local water supply schemes. These may take supply from rivers, streams or groundwater. They do not normally include a rainwater harvesting component. The policy is intended to bring a comprehensive approach to the design and management of water supply at the local level. The policy also addresses the problem of pollution of water sources and the management of water supply schemes at the local level.

The key instrument introduced by the policy is a water supply management plan (WSMP) which must be signed by those representing the communities being supplied and by the relevant government agency. The plan states the responsibilities of the local community and identifies the people whose task it is to oversee the scheme, to operate it and maintain it. The plan performs the role of a set of obligations on the part of the government and the village community, which would be relevant to any future request for assistance. In this way, it is hoped, the community will see the scheme as theirs and not merely as something the government built in a location nearby.

The draft policy proposal is provided in Chapter 3.

Recommendation:

- That the national water committee consider the draft policy proposals and take steps to have a policy adopted by Cabinet, amended if appropriate, following consultation.

1.3.2 Flood management and floodplain development

Policy needs to be developed on the approach to flood control and management in Fiji. Currently, various flood control projects are undertaken, mainly by LWRM, but these have been done without a policy framework that would guide and provide consistency and also without the foundation of

The fastest development in Fiji is in coastal areas and associated floodplains, where consideration of potential flooding needs to be more actively considered. If flooding is not considered, coastal

development will form barriers to flood flows adjacent to and behind the coast, with the resulting disruption and property damage.

Matters on which policy decisions need to be made are:

- How flood risk is assessed and at what level of flood risk measures should be taken to limit development;
- Excavation in rivers and other water bodies;
- Catchment protection for high value water sources;
- Water allocation
- Water and health;
- Environmental water requirements.

A survey is required to identify the environmental values in Fiji which are supported by water in water bodies such as rivers, lakes and groundwater. Where areas of high environmental value rely on freshwater sources, there needs to be a policy to guide the manner in which the values will be protected.

Recommendation:

- That a flood management policy be developed to encompass the flooding issues in upper catchments, flood plains and estuaries, with the objective of linking development in all areas and establishing appropriate flood plain plans and controls.

1.3.3 Water allocation

Water allocation – the development of groundwater– Is the issue that has drawn the attention of the Government to water resources management. In order to establish a working water allocation scheme, a number of important policy decisions must be made. They include:

- Whether some water uses, such as town water supply, should have priority over other uses at times to water scarcity;
- How the interests of native land holders should be accommodated in the decision to grant the right to take and use of water;
- How water users should pay for water use and whether differential payments should apply to different categories of water users;
- The types of sanction that should be applied to breaches of water licences.

To resolve these issues, it is recommended that water allocation policy be considered as a specific task. However, the implementation of water allocation policy requires (i) appropriate legislation and (ii) administrative resources. The legislation is required provide legal control of the taking of water. However, a process should be possible where policy is discussed and decided and legislation is also being developed at the same time. While some aspects of water allocation policy need to be decided before legislation is introduced, other policy questions need not be reflected in legislation. These categories are discussed in Chapter 2 on water policy.

Recommendation:

- That policy on water allocation be developed and formally adopted, if necessary prior to the establishment of legislation and a water allocation scheme
- That the national water committee consider the development of the water allocation policy

1.3.4 Other policy issues

There are a number of other policy issues, that are discussed further in Chapter 3. These are:

- Water conservation and recycling;
- Impact of freshwater management on the coastal zone;
- Riverine activities, excavation and dredging
- Consultation and participation for water management
- Riverine protection areas
- Aquifer protection areas.

Recommendation:

- That policy be developed in the areas noted above, according to the priorities of the Government, following consideration by the national water committee and national water council

1.3.5 Policy recommendations

The following general recommendations are made on water resources policy:

- That the current interim draft national water policy be adopted after consultation, as requested by Cabinet;
- That the interim national water policy be further developed, as proposed in the water reform strategy
- That, for the time being, the national water committee develop a timetable and program for policy development with emphasis on specific issues (eg those noted above and others which may be a matter of priority);
- That the draft policy on provision of rural water supplies be considered by the Government and adopted following appropriate consultation;
- That further areas of policy be developed, as suggested in Chapter 3 of the report.

1.4 Water resources legislation

1.4.1 Pilot inputs

The pilot covered water resources legislation in the following respects:

- Reviewed previous reports and proposals on water legislation;
- Identified legislative issues for water resources arising from the commercialisation and restructure of the urban water supply;

- Incorporated legislation proposals for groundwater control, as developed in the amendments to the Mineral Resources Act;
- Explored ideas on legislation at the workshop in integrated water resources management in November 2005;
- Further developed a water law framework at the workshop on water legislation in June 2006;
- Provided a final briefing to the National Water Committee in August 2006.

The outcome of these activities is the provision of a framework water legislation proposal. The proposal is provided in two forms: (i) a set of policy proposals that describe the intent of proposed legislation and (ii) more detailed drafting proposals. These documents are provided as separate chapters.

1.4.2 General recommendation on water law

The general recommendation is that the time is appropriate to introduce a water resources law for the Fiji Islands, that provides for the management of water resources as a specific function and responsibility of government. The law would cover the areas identified below and would clearly state the situation regarding the right of all parties to take water from natural water sources. It would also contain protective measures which complement powers in the environmental legislation.

1.4.3 Issues for water law in Fiji

There appears to be broad agreement that 'water needs to be fixed' and that legislation is a component of the solution. However, there are different reasons for thinking that water problems need a legislative solution. Perceptions include:

- The failure of the urban water supply to deliver reasonable and consistent services;
- The difficulties encountered in regulating groundwater extraction for commercial use;
- The desire to provide greater rights to native land owners, including rights related to water;
- Increasing pollution of water.

Not all these issues require water resources legislation, but there are some important issues that require water legislation for resolution. These are:

1. the establishment of a clear legal power to enable the government to allocate water for all purposes and from all sources, and
2. the control of surface water allocation and groundwater allocation.

A critical issue for Fiji is the native land owners rights and water, a matter which has been receiving considerable attention. Any right of native land owners to water resources would be closely linked with the two aspects of law listed above: namely whether the government has, or should have, a legal right to control water resources, and the role of the government in allocating and therefore controlling the taking of water for all purposes. Because the native landowner issue is so important it is discussed separately below. There is also a separate chapter on this issue.

1.4.4 Native land ownership and water

There is discussion on behalf of native landowners, about whether they should be granted a right to water, which would entitle them to some compensation if others took the water for various types of use. There seems to be a fairly widespread view that the ownership of native land should be accompanied by other rights, including rights to water associated with that land. According to this idea, the land owned by native landowners includes the water which naturally occurs on the land or under it. The idea is attractive to land owners who would expect to require others to make payments, similar to lease or rental payments in return for the right to take water.

The pilot project argues that water, as a natural resource, differs significantly from land and differs in ways that make the attachment of water to land, in most cases, either undesirable or unworkable. The Government has already found that it requires the power, in its own right, to control groundwater extraction, in order to meet a number of public objectives, including the need to ensure that water extraction is sustainable, to ensure that various water uses are not in conflict and to ensure that supplies are available for public purposes such as water supply.

There are two questions, therefore:

- Whether native landowners should have a right to decide who may take and use water that flows past, through or under their land, and
- Whether native landowners should have a right (without the right to decide on the allocation of the water) to compensation from a user of water that flows past, through or under their land.

On the first question, it is important that the government continue, as now, to exercise the right to allocate water, ie to decide who takes water, from where, and in what amounts. This power is already available to the government, under the *Rivers and Streams Act*, and should be maintained. Note that an alternative legal view has been put by the NLTB in its water policy paper, which argues that the water resources were never ceded to the British Crown and have therefore rested with native landowners. This view is considered incorrect and is in conflict with a previous investigations of water resources legislation (such as the study by S D Clark, 1987).

On the second question – compensation to native landowners for the use of water by others – the outcome is a policy decision for the government, It would add to current imposts on commercial enterprise and could also require a differential policy depending on the type of use – ie to avoid public utilities from needing to pay compensation. This issue is discussed further in the report.

1.4.5 Water resources law

It is recommended in the strongest terms that the Government act to reinforce the existing powers it has in law, to empower it to allocate and manage the taking of water for all purposes and from all types of natural water source. Although the powers already exist, it is recommended that they be transferred to a modern water resources statute and enhanced by:

- Transferring the current mechanisms for surface water allocation from the *Rivers and Streams Act*;
- Adding appropriate legal mechanisms, to create an equitable and sustainable scheme for water allocation in general;

- Transferring the groundwater control powers currently being considered for inclusion in the *Mineral Resources Act*, to create the same water allocation mechanisms for groundwater taking and use;
- Including, as appropriate, legal measures for associated areas of water resources management.

Therefore, it is recommended that a Water Resources Act be introduced, covering these matters.

It is recommended that the following areas of legislation be reviewed, with a view to enhancing or rationalising existing statutes or adding appropriate measures to new water resources legislation:

- The control of excavation and similar activities which affects the beds, banks or foreshores of freshwater bodies;
- The design and construction of works for flood protection and mitigation, along with measures for planning on floodplains to minimise the risk posed by flooding;
- The protection of special areas for water quality purposes (drinking water), subject to agreement on the appropriate statute for such protective measures

Note that the draft water policy, approved by Cabinet for consultation, contains a number of principles which would be included, for administrative guidance, in a water resources law.

1.4.6 Riverine activities

Currently, the *Rivers and Steams Act* and other legislation dealing with land contain some provisions allowing the control of excavation in rivers. Technical advice is provided by LWRM, Department of Agriculture, to the Surveyor-General, who is responsible for administration.

It is desirable that a system of permits be created to control such excavation. The scheme should require the technical evaluation of the impacts of the activities and should also include an oversight role for the technical agency. The outline of the powers for the scheme would be included in water legislation.

1.4.7 Flooding

Flooding is a periodic issue in Fiji, Much flooding is local or based in urbanised areas, but in some valleys, such as the Nadi River valley, there is more widespread flooding from time to time. At present various activities are undertaken to deal with floods, but there is no legislation covering some important aspects. The various responsibilities related to flooding are covered in the section on administration. Detailed proposals for flood management are outlined in the chapter on proposed legislation.

1.4.8 Water management principles

Important principles have been adopted in the draft National Water Policy. These are suitable for inclusion in water legislation as a guide to the administration of water resources.

1.4.9 Recommendations

It is recommended that:

- A water resources law be introduced;

- The water law contain the principles stated in the draft national water policy as guidelines for the management of water resources;
- The law transfer the relevant provisions in the River and Streams Act and other provisions clearly stating that the right to the use, the flow and the control of water resources is vested in the State;
- The controls currently being considered in the Mineral Resources Act for groundwater control be transferred to the water law (to provide a consistent scheme for surface water and groundwater control);
- The law introduce legal mechanisms for allocating water by means of licences to all types of water user, including public bodies, and thereby ensure both sustainable levels of use and also the allocation of water between users;
- The law include provisions in the following areas:
 - The design and implementation of works for flood mitigation or with a flood mitigation purpose;
 - A permit system for excavation in river beds or banks or the foreshores of freshwater and estuarine water bodies;
 - The power to develop and enforce floodplain management schemes which identify appropriate locations for construction and activities which may impede the path of flood flow;
- Further investigation of the need to rationalise existing powers for the establishment of special areas for the purpose of maintaining water quality.

Note that under this proposal, native land owners' rights in relation to water would be maintained as at the present – they would have unfettered access to water locally for domestic purposes but would not control the access to water by others.

1.5 Institutional development

1.5.1 General recommendation

The general institutional recommendation is that three bodies be established by the Government of Fiji, namely (i) a coordinating and consultative body at a high level, know as a National Water Council or similar title, (ii) an administrative body responsible for water resources management be created, to implement water legislation: the body may be created in part with technical staff already undertaking relevant tasks within the administration, and (iii) a water tribunal, a body judicial in nature, to adjudicate disputes on the right to take and use water from natural sources.

In addition it is recommended that the Government add water resources management to its ministerial portfolios, as a distinct responsibility.

1.5.2 Current situation

At present Fiji lacks an administrative focus for the management of water resources. Water management-related responsibilities have been given, by default, to the Mineral Resources Department,

(MRD) because of political issues arising over the exploitation of groundwater for commercial purposes, and the potential conflict of use of groundwater in the Yaqara valley. However, an active responsibility has not been assigned, nor have the resources for water management been considered. Therefore MRD is capable only of limited interventions which must be made over and above its normal responsibilities.

This situation does not allow for the active management of water resources as distinct from the provision of water supplies. At the present time, water supply and sanitation responsibilities are being separated from PWD, precisely in order to create an organisation that can focus on urban services without being distracted by other responsibilities. That organisation will not be a water management agency, but a water service utility, more closely focused on customer service delivery than before.

There remains a need for the government’s water management responsibility to be identified and enhanced. That need forms the core of the institutional recommendations of the pilot.

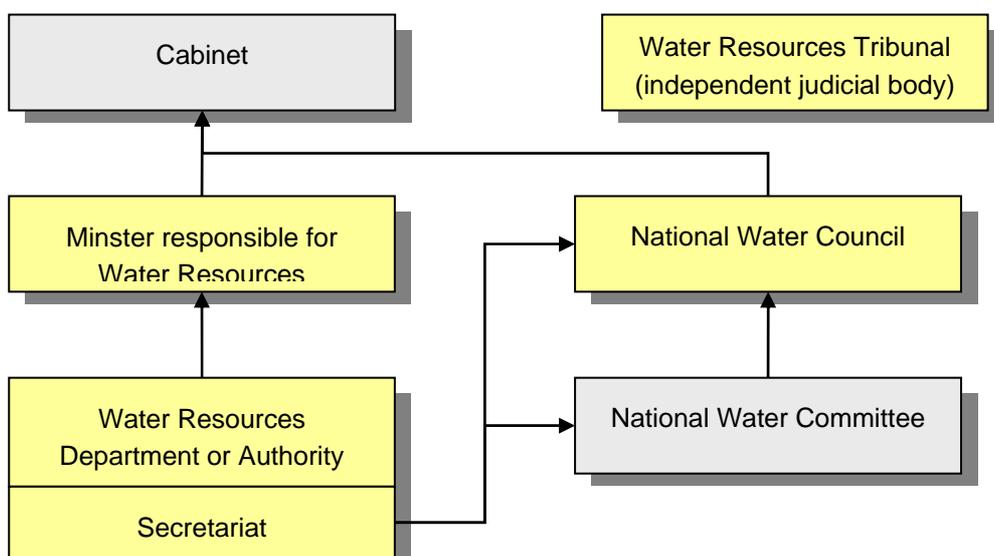
1.5.3 Water resources management function of government

Note that national coordination of water resources

The key to the institutional development recommendations is that a water resources management function should be created. At present some aspects of water management are being undertaken, but fragmented and without legislative backing, usually either as ad-hoc activities or by default where departments have appropriate technical expertise. This is not an adequate approach for the future. The most important step will be to develop a specific responsibility for water resources management as a distinct function of government, differentiated from water supply with which it is often confused.

The water resources management function is considered to require both political and administrative change. There needs to be a ministerial responsibility for water resources, otherwise it will not receive attention at political level, except when a specific problem occurs. The elements considered necessary are shown in Figure 2.

Figure 2: Proposed institutional set-up for water resources management in Fiji



The key elements are, apart from a specific ministerial responsibility, are:

1. a national water council, to be a high level advisory body;
2. a water resources department, to administer the water allocation and other water management elements of the legislation, and
3. a water resources tribunal to adjudicate water allocation disputes.

1.5.4 National Water Council

It is recommended that a national water council be formed. The council's functions would be:

- To advise the government on any matter of national significance pertaining to water resources;
- To review progress with water reform, including the establishment of the administrative elements;
- To make proposals on any important water resources issue on which the council can find agreement.

The purpose of the Council is to bring together representatives of all key organisations, sectors and interests in Fiji, to debate and agree on the way forward for water management. It is intended that the Council would undertake a number of tasks, which are:

1. to oversee the implementation of the national water reform strategy and report to the government on its progress: ie to ensure that the strategy is being implemented;
2. to review matters of policy advanced by the national water committee and advise the government;
3. to discuss matters of serious contention or difficult which are of national importance where the Government wishes to receive coordinated advice.

The council membership is proposed to include high level representatives of ministries, water-related industry groups, sectors of society and interest groups. They should include representatives of native land owners. It is proposed that the Council be chaired by a person who is independent of the various sectors and interest groups and who has a national profile that will ensure credibility. It is important that the chair of the Council is capable in organising a group of high-level representatives and bringing advice to the Government that reflects a national consensus as far as possible.

The detailed rationale and proposals for the national water council are contained in Chapter 3.

1.5.5 Specific recommendations

The pilot recommends that:

- a Minister be given responsibility for water resources (management) – this is separate from responsibility for water supply (which should be under a different minister);
- a National Water Council be created, which advises the government on water resources issues and includes representatives of the key ministries plus major non-government stakeholders and is headed by an independent person;

- the National Water Committee act as the technical committee to the National Water Council and that a secretariat for the Council and Committee be established (which would be located in the water resources department);
- a water resources department be established to undertake the functions provided for in the water management legislation;
- a Water Tribunal be created, to review water allocation decisions (similar to the proposed tribunal for mining).

These recommendations are shown diagrammatically in Figure 2.

The only elements in Figure 2 which currently exist are the Cabinet (no minister has formal responsibility for water resources) and the National Water Committee. The Mineral Resources Department (MRD) is taking responsibility for the relevant initiatives, namely the national water policy and legislation, but is not resourced for a water resources management role, not has it the formal mandate.

Elements of the recommendations are as follows.

1.5.6 Portfolio allocation for water resources

It is recommended that a Minister be allocated responsibility for water resources (ie water resources management). At present no minister has that responsibility, although the national water policy has been developed through the Minister for Mineral Resources, but this is an incomplete measure.

1.5.7 Establish National Water Council

A National Water Council is recommended as a high-level coordinating and advisory body to the government. It should report to the minister responsible for water resources. It would comprise representatives of ministries and private sector water stakeholders, such as native land owners, industry groups, and should include the CEOs of the water sector utilities (FEA and the future water supply utility).

The role of the Council would be to consider matters referred by the Government, the Minister or matters that the Council decided it should review, and provide coordinated advice to the Government. It would be advisory only, not a decision-making body. It should be headed by an independent person who is respected and can oversee discussion on water issues by stakeholders who may have very different perspectives. It is essentially a policy advice body.

The National Water Committee should continue and would perform the role of technical committee under the Council.

1.5.8 Create a water resources department

It is recommended that a water resources department be created as a department or other form of government agency with regulatory powers and functions, Its role would be to manage water resources, to ensure their sustainable development, harmonious exploitation and relevant protection measures. Its role would not conflict with that of the Ministry of Environment which regulates wastewater discharges and has a general environmental protection role. Its main activities would be:

- Policy and education on water resources
- Secretariat for the National Water Council and the National Water Committee

- Surface water management – water allocation system with the issue of water licences
- Groundwater management – as for surface water, issues of water licences
- Bore drilling – issue of permits to undertake bore drilling
- Flood management – planning and development of guidelines
- Riverine and water body controls – issue of permits for excavation and dredging in rivers
- Water resources data – establishment of national water resources data bases.
- Inspectorial – monitoring and enforcement for the regulatory functions (water licences, excavation permits)

The water resources department would perform some activities which are currently with other ministries and departments, but it would have to be created by using staff from other organisations. In particular:

- Hydrology, assuming that the new water supply utility will not require the majority of the hydrologist, as has been put by the project assisting, they could be transferred to take on a role in a surface water network for all water uses and management in Fiji:
- Mineral Resources Department, where the groundwater staff and functions could be transferred to perform groundwater management and the issue of groundwater licences, as well as permits for bore drilling. The current staff are involved in technical advice on water supply as well as other business, which would need to transfer also;
- Land and Water Management Department of Ministry of Agriculture (LWRM), where some of all of the Department (as this has not been investigated in any detail) .but investigation of river flow, flooding, river excavation and related functions are already being undertaken by LWRM but not within the legislative framework that is needed. There could be overlap between the engineering expertise used for irrigation development and the same expertise applied to aspects of surface water management (such as assessment of the impacts of dams and other engineering water works).

In addition the department would require an administrative unit, one of whose tasks would be to provide the secretariat for the National Water Council and the National Water Committee.

The establishment of a department for water resources, as a new and distinct organisation, is not a light undertaking for the Government. This approach is proposed, rather than adding to an existing department for the following reasons:

- Although some existing organisations (MRD, LWRM) are undertaking activities which the new department would undertake, none of them is suitable under their present charter and range of functions to be a water management agency;
- A new department would clearly indicate that a water resources management function, different from water supply, is being established and would educate government and non-government participants in the fact that IWRM requires an active approach to water resources;
- The range of activities currently related to water resources management, including some pre-existing activities and other new or enhanced ones, needs to be brought together into one place. There is more likelihood of this succeeding by gathering them in a new organisation than by

pushing them into an existing organisation, whose budgets and operational structure would constraint and possibly strangle the water resources management functions.

It is important to understand that the enhanced water resources functions have important technical requirements which in turn have a cost to them. It will be necessary to build up the technical capacity in Fiji, which is a difficult in itself. However, from the government's perspective the more immediate issue will be the cost of such a department, which is expected to be a serious consideration, even if transfers are made as suggested.

1.5.9 Director of water resources

Currently, Fiji has a Commissioner of water resources, a position initially created during the colonial era and which relates to urban water supply. The position of Commissioner is likely to be dispensed with under new urban water legislation with the setting up to a commercial utility. The Director of Water Resources (or similar title) would be responsible for the Water Resources Department, but would also be the issuing authority for water licences, bore drilling licences and permits to excavate in rivers. Some approvals of the Director would be able to be appealed to the Water Resources Tribunal. It is considered undesirable that the Minister be the approving authority for the bulk of water licences and other permits because of the number and scale of most of them. This would be consistent with the issue of wastewater discharge permits by the Ministry of Environment.

1.5.10 Water Resources Tribunal

The Tribunal is a judicial body proposed for resolving disputes between water users and allow appeal against determinations of the director of water resources in the matter of water licences which give the holder a water entitlement. The tribunal is proposed to have similar features to the tribunal proposed for mineral exploitation, namely a judicial officer to preside and two or more expert members, who must be independent of the administration. The determinations of the Tribunal would be final except for points of law.

The purpose of the Tribunal is to allow the decisions of the Director of Water Resources to be questioned and evaluated. It may also be called upon by the Director to resolve disputes which are not amenable to negotiation between parties or with the intervention of the Director.

1.5.11 Regulatory framework for water supply

The water supply functions of PWD are to be made a separate utility whose formal organisational structure was not decided at the time of the pilot. Regardless of the precise details of corporate structure, and regardless whether the utility is publicly or privately managed or owned, the regulatory requirements remain the same. The utility needs to be subject to formal requirements for the key aspects of its operation and services, as shown in Table 1.

Table 1: Regulatory framework for urban water utility in Fiji

Regulatory requirement	Current or proposed response
Service provision – supply of water to consumers	Service regulation involving standard to be met for water supply and sanitation – agency not determined

Regulatory requirement	Current or proposed response
Price regulation	As at present, the commerce commission
Drinking water quality	As now, specification of drinking water standards and monitoring by Ministry of Health
Sewage discharge	Subject to permits issued and monitored by the Ministry of Environment
Access to water – water allocation	Not currently done: proposed Department of Water Resources for all sources, surface water and groundwater under water licence/s
Control of drinking water catchments	To be decided, possibly land to be owed by another agency, but control by the water utility

The water resources management proposals are consistent with and important for the commercialisation of the urban water supply in Fiji, in regard to the following:

- The control of water supply catchments which are needed to protect the quality of water entering and stored in reservoirs;
- The legal right of the water supplier to take water without the likelihood of claims or interference with the sources (eg upstream development);

1.5.12 Implementation

It is recommended that the institutional proposals, which are a part of the proposed water reform strategy be put be progressively evaluated and implemented. The first two decisions for consideration are (1) portfolio allocation for water resources management and (2) the establishment of the National Water Council.

In deciding whether to establish the National Water Council it is also necessary to consider whether to create a water secretariat to support it. If no secretariat is to be created, it is recommended that the Council proposal be put on hold as it is not expected to be effective without resources and support. In fact, the secretariat is a vital prerequisite for the Council's operation.

The creation of a department of water resources requires further investigation of staffing, technical resources, and the budgetary consequences. At this stage, the Government could be asked to consider whether it agrees:

- that the functions identified for a water resources management regime should be enhanced or introduced;
- if so, whether a Water Resources Department should be developed (recommended), or the functions be undertaken in some other way (less recommended).

The establishment of the Department needs to include an investigation of the requirements for establishing a national water information system or coordinated systems.

Should the Government decide in-principle to investigate the Water Resources Department with a view to proceeding, it is likely that a donor would wish to provide a support projects.

1.6 Water resources information

1.6.1 General recommendation

The key recommendation is that the Government of Fiji establish national data bases for surface water and groundwater to facilitate the assessment of water resources, for the purposes of planning and managing the resources.

The data bases should be coordinated by the Water Resources Department and some or all of the data may also be held by that department.

1.6.2 Current situation

Currently, data related to surface water is collected by (1) the Meteorology department, (2) the hydrology department of the Public Works Department and (3) the Land and Water Resources Management division of the Ministry of Agriculture. The data currently collected covers a considerable part of the larger islands of Fiji. The chief deficiency is the lack of mandate to provide data for national planning purposes. The Meteorology Department's mandate is the only one that extends throughout the Fiji Islands. The other surface water-related data is collected for specific purposes, namely by PWD inland data for water supply purposes and LWRM data for estuarine zone measures.

An initial proposal is that the core of the data collection and archiving staff of PWD and LWRM should perform the new national surface water resources data function.

Groundwater data is collected and archived by MRD. This data forms a partial picture of groundwater resources in Fiji, the main deficiency being that data collected by the private drillers is not included. That is proposed to be addressed by introducing bore drilling regulation and certification. The MRD groundwater data function can readily form the basis for a national groundwater resources data base.

Water quality data is collected by a number of agencies and is more fragmented than the physical data for surface water and groundwater. MRD collects data on water quality as well as quantity, as do PWD (for water supply) Ministry of Health and the Ministry of Environment. Much data, however is collected in the course of specific projects or investigation of issues and is contained not in database form, but in various reports. Both the Ministry of Environment and any future Water Resources Department would have an interest in national water quality data.

The key recommendations are:

- Establish mandate for national surface water data and groundwater data in Department of Water Resources
- Transfer existing data resources from PWD, LWRM and MRD to establish database and association functions
- Initiate programme to improve inter-agency coordination on water quality information with a view to developing data agreements and a data custodian role for that data
- Further investigate the data and information requirements for water resources management, including the technical facilities and human resources requirements.

These recommendations involve some administrative and technical realignment and need to be developed further. The details of the information recommendations are given in Chapter 5: Water Resources Information. For this reason, it is advisable that a technical review of water resources data

needs in Fiji be undertaken, to identify what data requirements would satisfy Fiji's water management objectives.

1.7 Water resources and planning

The pilot investigated the need for the introduction of new forms of planning for water resources management. Two areas in particular were identified, namely water allocation and floodplain management for possible planning mechanisms which go beyond current planning mechanisms.

The key fields for planning are discussed below.

1.7.1 Planning and water allocation

A water allocation scheme should be accompanied by the means to undertake a form of statutory planning for the allocation of water for all purposes. Although such planning may be used only in cases of serious conflict, the measures would be required within the relevant legislation. Formal or statutory planning for water allocation can contain the following measures:

- Within a river system, Identification of the volumes of water available for various water users or types of water use;
- Statement of rules for ensuring flow for environmental purposes;
- Statement of priorities among water users in circumstances of low flow or water scarcity;
- Statement of rules for operation of dams and other structures in circumstances of low flow or water scarcity;
- Identification of potential future opportunities for development of water resources.

The same approach can be applied to groundwater as to surface water sources such as rivers. For groundwater, the plan would state such parameters as:

- The drawdown levels or water table levels at which water extraction should be limited or should cease;
- The volumes that various water users may take and the rates at which the water may be taken;
- Various technical criteria such as minimum distance between bores;
- The rules that would apply if the water was drawn down to a level at which water access or other values were potentially threatened.

Such plans are based on the technical assessment of water resources and water demands, including such aspects as (for surface water) annual and seasonal flow and yield, and the impacts of water diversion and storage on instream and other values, and (for groundwater) the volumes, behaviour and recharge characteristics of the aquifer. Plans that deal with water allocation are also normally developed through a process which involves consultation or negotiation about the conditions that will apply to various water users and the consequent implications for the long-term reliability of their access to water.

It is not considered likely that statutory planning for water allocation would be needed in many locations, but in a few locations it could be an important tool for the government.

1.7.2 Floodplain planning

The pilot identified a need for an integrated floodplain management capacity, which links upstream and floodplain flood features. There are a limited number of river floodplains in Fiji where a broad floodplain approach would be advantageous. The Nadi River valley is the most prominent example because of the degree of development that has already occurred in the valley and on the floodplain.

An integrated floodplain management scheme would contain the following elements:

- Technical assessment of the upper catchments and the characteristics of streamflow in the major tributaries;
- Modelling of typical flow events, to identify the likelihood of flooding occurring in the middle and lower reaches of the river valley;
- Flood mapping or equivalent technology to show in what locations and how frequently floods are likely to occur;
- Active and preventive measures to minimise the impacts of flooding in those locations where floods are known to be likely to occur (ie at return periods of 5, 20, or 50 years);
- Planning for residual risk – the risk that remains after measures have been put in place to mitigate the impacts of floods within the 50 year return period range or whatever period is chosen at the standard for flood protection.

Note that flood response measures, which form part of disaster response, are of a different nature to most of those noted above. Flood response involves the planning for evacuation, rescues and protection of property immediately before, during or after a flood event. The management of residual risk includes flood response measures for a flood greater than the flood for which protection works have been constructed, for example.

Longer term flood management measures are those which involve structural and non-structural means for reducing or eliminating flood risk in the longer term. Various measures that may be taken to protect against flood damage and mitigate flood risk are either active or preventive. Active measures include construction of dykes and levees, use of dams to reduce flood peaks or store flood waters, diversion of floodwaters into retention areas, and creation of flood ways – areas which enable flood waters to drain readily. Preventive measures include the identification of land which should be kept free of certain types of development because:

- The land is important for flood flow and the drainage of flood water;
- The land will not be protected against relatively frequent flooding and therefore the value of development on that land should be limited.

The existing urban and rural system, established in the *Town and Country Planning Act*, has the capacity to control development on floodplain to achieve such goals. However, in order for such floodplain planning to be effective, there needs to be a process for developing flood plain plans which include the following elements:

- A technical assessment of flood events that identifies the frequency, depth, velocity, direction and location of floodwaters (which may require modelling);
- Flood maps, based on the assessment, that identify where and how frequently floods are likely to occur;

- A scheme of flood protection works and identified floodways or areas where floodwaters should be allowed to flow without impediment;
- The associated design criteria for the construction of buildings, physical barriers and roads.

Such plans require trade-offs between several types of interest, chiefly (i) the protection of existing property, (ii) the provision of areas for flood flow or flood diversion, and (iii) the opportunity for future development and the areas in which such development should be allowed. Therefore the process of planning becomes very important as land will be affected by the measures.

It is recommended as follows:

- That a floodplain planning scheme be introduced that provides the framework for minimising adverse flood impacts on property and enterprises by identifying:
 - The location of flood protection works;
 - The land which should not be developed and the conditions which should apply to development on other land
 - The construction and design criteria for development in flood prone areas.
- That the capacity of the *Town and Country Planning Act* to apply and implement the scheme be investigated and if necessary that Act be amended
- That steps be taken to develop the expertise and obtain the modelling capacity to undertake the technical investigations on which a floodplain plan would be based.

1.7.3 Establishment of protected areas and associated planning

Planning for protected areas refers to plans made for limited land areas which are specifically set aside or identified to protect and maintain the quantity and quality of water resources. Protected area planning differs from catchment planning which involves the coordination of settlement and activities to be compatible with maintaining water quality across a large area that drains into a water source or water body such as a stream or river. Protected areas are established around or upstream of reservoirs or sources of water used for water supply, where it is advisable to maintain high quality. Such areas are normally limited to land surrounding a reservoir, in the area immediately upstream of a reservoir or land above an aquifer, for the protection of groundwater.

Measures have already been developed, as amendments to the Minerals Act, for protecting the quality of groundwater, although no procedures or criteria have yet been proposed. The general mechanisms in the proposed amendments is the power of the Minister to declare a management area and to disallow specified activities within that area. The proposals are at the stage of consideration by Parliament.

The ability to establish and control special areas to protect water supply sources is important in light of the commercialisation of the water supply. The water supply, under the *Water Supply Act*, has a number of existing 'catchment areas' which may require transfer to another agency. Any future protected area would require

A deficiency in the provisions of the Water Supply Act is the absence of powers allowing the water supply organisation to control access to and activities within the special areas. Such powers are needed somewhere. A policy decision is still required whether (i) the ownership of the areas and (ii) the powers to control the land should be included in the legislation to set up the new water supply entity. The

legislation in Fiji needs to include powers that allow special areas to be established, for the protection of land from activities which would cause pollution or degradation of water sources, whether the legislation be the water supply legislation or water resources legislation.

Planning for special protected areas is relevant where there is a need to limit certain activities but not to proscribe all activities or prevent physical access. The levels of protection can be broadly characterised as follows:

No entry permitted except to those who are assigned to manage and protect the area	Total exclusion, highest level of protection (eg Sydney and Melbourne (inner) catchment areas)
Entry permitted on a controlled and non-permanent basis only	High level protection equivalent to national park
Controlled or limited agricultural or forestry activities permitted	High to medium level protection
Controlled or limited settlement permitted	Medium protection level
Normal settlement and agriculture permitted by nominated polluting activities proscribed	Protection only from the most severe threats

Naturally, issues of the right of landowners and others to use land may arise where special areas are established.

There are also provisions in the *Land Conservation Act*, which extend to the creation of catchment areas, for the purposes of protection but, similar to the *Water Supply Act*, there are no powers enabling protection from entry or prevention of activities which are contrary to the specifications of the catchment areas. However, it is not proposed that the *Land Conservation Act* provisions be moved, but that, if deemed necessary, the relevant control powers be added. This issue is discussed further in the report on legislation.

Recommendations are as follows:

- That a power to establish water resource protection areas be included in the water resources legislation, to include areas for protection of surface water and groundwater sources, and the provisions be equivalent to those currently proposed for amendment of the *Mineral Resources Act*;
- That a procedure for consulting and developing an appropriate management plan for of special areas be included in the legislation;
- That the establishment of protection areas be accompanied by appropriate power to control proscribed activities.

The details of proposed legislation and implementation issues, such as enforcement and discussed in the chapter on legislation.

1.7.4 Riverine protection and management planning

Two factors affect the natural health of rivers and streams, which are (i) the condition of the land adjacent to the river or stream and (ii) the condition of the beds and banks of the water body. A comprehensive river health programme involves the protection of land adjacent to rivers and the control of activities in the river such as excavation and alteration to beds and banks.

There are three possible technical approaches to the control and management of these areas, which are (i) individual assessment of the impacts of an activity or proposal, (ii) standard management rules for all streams and rivers, and (iii) planning based on the assessment of a specific area.

A plan for riverine control or management would specify in what areas certain activities or remedies should be applied. For instance areas to be vegetated or protected, or the extent to which material may be removed from specific stretches or river or locations in the river. Such a plan, if required to be followed would govern the management of rivers and riverine areas.

A combination of approaches is normally advisable. The facility to create plans that can be used to regulate activities would allow critical areas to be managed

Recommendation

- The legal facility to create water management plans should include plans for riverine management, to include the protection of riverine land and the beds and banks of rivers and estuaries.

1.7.5 Recommendations on planning

The following recommendations are made on planning and water resources management:

- That the power to create statutory plans for water management purposes be included in the water resources legislation with a view to plans for the control of activities:
 - Water allocation,
 - Riverine and estuarine activities and controls,
 - Protection of special areas;
- That the *Town and Country Planning Act* be reviewed to ensure that it is suitable for developing floodplain plans
- That enforcement powers be introduced to the appropriate legislation which empower control of activities in special areas for water quality and quantity protection;

1.8 Technical capacity for water resources management

1.8.1 General issues

Adequate technical capacity is one of the key requirements for the introduction of a comprehensive water resources management function in Fiji. Limitations in knowledge and understanding of water resources also limit the ability to manage successfully. Technical capacity, along with finance, is a severe constraint for South Pacific countries in general and one which has already received considerable attention.

There are two aspects to technical capacity and water resources in Fiji. The first is the technical expertise and capability in areas which already developed to some extent but which need to be developed further. The second is technical capacity in new fields.

Areas in which technical capacity already exists include: assessment of surface water flow, assessment of the impacts of riverine excavation and assessment of the impacts of groundwater exploitation.

The proposals would require technical assessments to be made systematically in a number of areas which are not covered now:

- Proposals to take water from streams and rivers and the impacts on (i) other water users and (ii) the environment and the sustainable level of exploitation of the source;
- Proposals for groundwater extraction;
- The extraction of material from river beds and banks;
- Flood modelling, flood mapping and identification of flood frequency and risk;

Secondly, technical capacity needs to be developed from a starting base, or where no agency is presently responsible for providing it, nor is it being provided in any regular manner. These areas are:

- Impact of freshwater on the coastal zone
- Water allocation and administration of water allocation schemes
- Water resources planning (statutory plans).

1.8.2 Surface water abstraction

Ideally, the following would be investigated in any case where a developer (public or private) wished to obtain the right to take water from surface water sources:

- The flow regime and the likelihood over the long and short term that water will be available at the location where the water is to be taken;
- The impact on the flow of taking the water as desired by the water user, including the impact on existing water user and on the environment;
- The impact on the quality of the water of taking the water.

The answers to these questions require hydrological,

The investigation requirements for groundwater extraction are similar in general nature, but require assessment of the following:

- The location, quality and behaviour of groundwater
- The recharge characteristics of aquifers;
- Assessment of the impacts of groundwater development on the quantity and quality of groundwater.

Note that, apart from more extensive groundwater reserves on the larger islands, where are numerous small and shallow aquifers on low-lying islands which may perform a useful function as water supply, but require protection from pollution and over-pumping.

1.8.3 Investigative capacity

Investigative capacity exists currently in the following agencies:

Table 2: Existing technical capacity in Fiji

Technical capacity	Where located
Meteorology and surface water hydrology	GMD, USP
Surface water hydrology	GMD, PWD, LWMD, USP
Hydrogeology	MRD, USP
Groundwater drilling	MRD, private sector (unregulated)
Riverine geomorphology	LWMD
Estuarine morphology and	LWMD
Flood investigation	LWMD
Flood modelling	N/A

1.8.4 Technical capacity proposals

The technical capacity proposals in this report have three elements: (1) institutional, (2) technical resources, and (3) human resources.

Institutional proposal

There is a very compelling argument for creating a technical unit within the government administration which contains some expertise in all the areas listed above. Such a unit needs to be created, as there is not such a unit at present. The logical location for the unit is within the proposed water resources department.

It is very important that, in any decision on the establishment of a water resources department, the creation of a technical unit within that department be a priority. The capacity of Fiji to manage its water resources will hinge, among other things, on the capacity to investigate and resolve the technical questions that arise in development decisions.

There is a global debate on the merits of public versus private provision of services. It is for this reason that the urban water supply is being commercialised – in order to give it a structure that conforms to private sector models, along with the appropriate incentives. However, the provision of technical expertise is a different matter.

There are three sectors which may contribute to technical capacity, namely (i) the public administration, (ii) private sector, and (iii) the education sector, in particular universities and tertiary institutions. The key question is to what extent the government of Fiji should rely on each of these sectors.

The public sector is already providing expertise in most fields, although not in a coordinated manner and not to the extent that would be ideal. Therefore it is possible to both consolidate and build up existing expertise in the public sector.

The private sector within Fiji or the South Pacific region is not sufficiently developed to provide technical expertise as would be required (ideally) for the water management tasks identified in this report. Therefore Fiji, as other South Pacific countries, has relied on international experts to provide the analysis. Such external intervention will always be appropriate to some extent, but should not replace the essential management requirements of the government. In particular, the government needs to maintain sufficient technical expertise to be capable of evaluating external technical investigations and reports.

The education sector does not currently possess or provide major technical support for water management, except in specialised areas, but in these cases, which involve the participation of academic experts in projects, the support is not sufficient to maintain or replace the ongoing capacity that the government needs. Nevertheless, the strategy for Fiji should have an educational element and there should be a two-pronged approach, to build up and coordinate capacity within the administration and within the tertiary education sector.

Technical resources

Technical resources are the hardware and software used in the course of technical activity. These are a less difficult issue, as they can be obtained by various means, including donor projects. The important questions are (i) deciding what is appropriate and (ii) maintaining the staff to use them.

Departments already have experience in the procuring of sophisticated equipment, such as drilling rigs and computer programmes. Some general areas of likely need are identified in the chapter on technical capacity, but there would obviously need to be technical assessment of the precise requirements in each case, such as flood modelling for example.

Human resources

Fiji, in common with other South Pacific countries, is limited by the number of home-grown professionals with the required expertise in technical fields. There are difficult and longstanding social and economic reasons for this deficit which need not be explained in detail here. Approaches taken to overcome the shortage of local professionals include (i) reliance on internationally-funded projects and (ii) the employment of professionals from developing countries in other regions.

The benefits of a technical unit which contains technical professional The reasons for aiming to create a technical unit which contains the key technical expertise for water resources are:

- The Government of Fiji needs to be confident that it has the basic capability for assessing studies, investigation and proposals which are provided by international or non-government experts;
- The planning and control of water resources and activities requires a core of technical expertise sufficient to maintain capacity for national purposes;
- A technical unit is needed to develop technical policy and advice on management matters which should not be left to external providers.

Further discussion of the technical unit is given in the chapter on technical capacity.

1.8.5 Recommendations

It is recommended that:

- A consolidated technical unit for water resources be established covering fields relevant to:
 - Surface water and groundwater allocation;
 - Riverine activities and protection;
 - Flooding and floodplain management
 - Estuarine management.

1.9 Water resources awareness and education

Awareness and education for water resources management in Fiji needs to be developed at a number of levels:

- **Political level:** members of Parliament and their advisors need information and understanding about the nature of the water issues presently facing Fiji. Further comment is made below.
- **National administration:** information and education on policy and the technical and social aspects of current water issues needs to be promulgated within the key central agencies and the line ministries with functions related to water resources.
- **Province level:** there is limited information on water resources management and the key concepts of IWRM at the provincial level. Improved understanding is important, in two respects: (1) the provincial councils need to understand clearly the impacts of developments and water schemes that they are promoting or participating in, and (2) provincial councils are the key promulgators of information to villages and local levels, for education of rural people generally.
- **Urban populations:** information on water conservation and the disposal of waste needs to be distributed and education in these areas improved;
- **Rural populations:** there are numerous water issues for different rural settlements, which include:
 - The management and maintenance of local water supply schemes;
 - Water conservation and saving water;
 - Local disposal of liquid and solid waste and water pollution;
 - Water quality and human health

A mixture of strategies is needed to address all these information and education requirements and action is needed on the part of a number of agencies, as shown in Table 3.

Table 3: Possible education and information strategies for water resources in Fiji

Strategy	Agency	Target audience
IWRM awareness and current water issues	Water management agency/ other national line agencies	Ministries and departments, provincial councils, major stakeholders groups

Strategy	Agency	Target audience
		including water users
IWRM awareness and current water issues	Water management agency, Prime Minister's Office	Politicians and advisors
Water conservation and wastage of water	Water management agency, Fiji water corporation, provincial councils and village leaders, NGOs	Fiji water corporation, urban water users and rural water users
Water conservation and irrigation management	Water management agency, Ministry of Agriculture	Irrigation scheme operators and farmers
Waste disposal and water pollution	Ministry of Environment, Fiji water corporation, water management agency, provincial councils and village leaders, NGOs	Industry, urban water users, and residents rural water users and residents
Water resources and health	Ministry of Health,	Rural residents, urban residents
Freshwater and the coastal zone	Water management agency	Rural populations
Water resources and the environment	Ministry of Environment, water management agency	Industry, developers, urban and rural populations
Management of rural water supply and sanitation schemes	Ministry of Environment, water management agency, Public Works Department (Regional Development)	Rural villages

Further details of the proposed information and education strategy are given in a separate chapter.

1.10 Outline of reform strategy proposal

In addition to the matters covered in this chapter, the pilot has developed a proposal for a water reform strategy, which, if implemented, will assist the Government of Fiji to establish a comprehensive water resources management capacity. The elements of the strategy follow the outline provided in this report, which is the summary of the recommendations in all areas.

The further chapters of this report are:

Chapter 2	Water reform strategy and action plan
Chapter 3	Development of water resources policy

Chapter 4A	Rationale for water resources legislation
Chapter 4B	Policy draft for water resources legislation
Chapter 5	Water resources institutional development
Chapter 6	Water resources information

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European Union and SOPAC

**Programme for Water Governance
Fiji Water Resources Management
at National Level**

Final Report: Chapter 2
Proposed Water Reform Strategy

Water Policy Services Pty Ltd,
Sydney

May 2007

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2. Proposed Water Reform Strategy

2.1 Introduction

The Programme for Water Governance (PFWG) for the South Pacific, funded by the European Union, has been piloted for water governance at the national level, in the Fiji Islands. The outputs of the pilot are summarised in Chapter 1.

A key output is a draft Water Reform Strategy document for use and consideration by the Government of Fiji. This Chapter contains that document. This Chapter includes the general rationale for a Water Reform Strategy for Fiji, the proposed process for developing and reviewing the strategy, a strategy document with proposed activities and explanation of the activities and an action plan.

2.2 Key recommendation

The pilot proposes that the Government of Fiji adopt a **strategy for water resources reform**. The strategy is to provide a plan for the strengthening of water resources management and would be initially planned for the five year period commencing January 2007 and concluding in December 2011. The reform strategy for water resources would complement the reform of urban water supply, which is already under way. Links between the two reforms are discussed below.

The strategy for water resources reform has a number of key elements, which have been characterised as 'building blocks', which are:

1. Further develop national water policy (as proposed in Chapter 3);
2. Introduce legislation for water resources management (as proposed in Chapter 4);
3. Establish a National Water Council to advise the Government on water management;
4. Create a water resources agency;
5. Establish a Water Resources Tribunal to resolve water disputes;
6. Establish national information databases for surface water and groundwater;

Actions which may be taken at a later stage or in parallel are

7. Develop water resources management planning mechanisms;
8. Strengthen technical capacity for water management;
9. Develop a human resources capacity building plan;
10. Develop a national water education and awareness plan.

Figure 1: Water governance building block approach

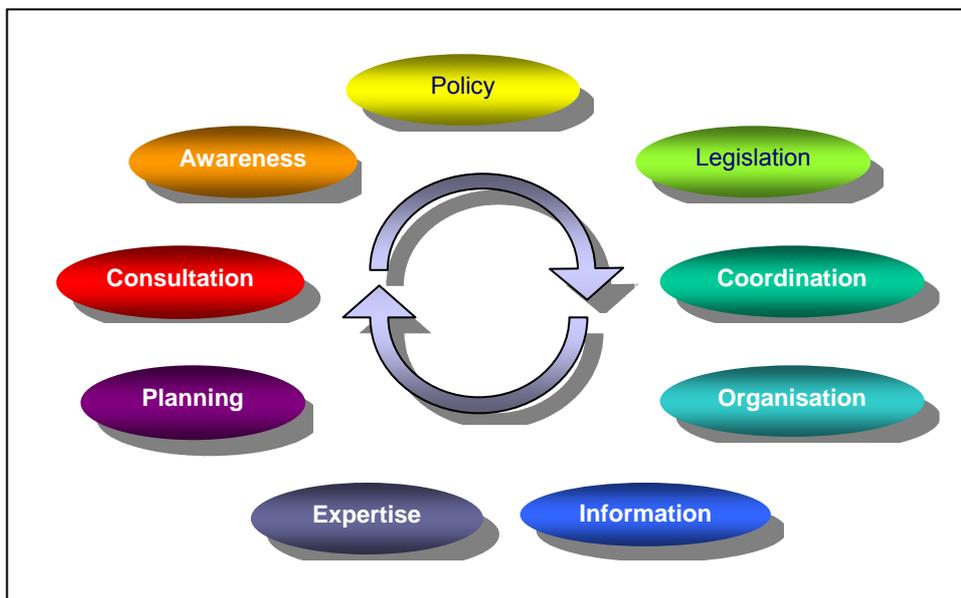


Figure 1 shows a number of 'building blocks' for implementing water governance. It is intended to illustrate the fact that water management is a complex matter and its implementation has a number of elements which must be developed and introduced in parallel. Policy and the directions being set by government are the first requirement. However, policy is an ongoing requirement and policy needs to be developed at several levels, ideally starting with the most general principles and then working towards detailed aspects. Fiji has taken the first steps along this path by considering an interim policy which includes some of the principles for water management and a few general proposals.

Legislation is required to apply policy and to enable the government to act on matters such as water allocation and some water protection elements not included in other legislation. The pilot has identified the major legislation issues and made proposals accordingly.

Coordination and organisation are needed to implement the policy and supporting legislation. The proposals for coordination and organisation are significant and require further development. Similarly, expertise is required to create capacity for implementation.

The information base is important for water resources management, because of the need to assess water sources and evaluate how water sources are affected by water uses and development. Without a useful foundation, it is difficult to make reliable water management decisions.

Planning is a water management tool that relies on the implementation of the earlier building blocks. It may be used, in association with other planning mechanisms (such as town and country planning) when the policy, legislation, organisation and capacity are in place and sufficient information is available.

Finally, consultation and awareness are mechanisms for implementing water management schemes in general and they need to be built into the approaches used for other water management elements.

This strategy covers the first five building blocks in some detail and refers to the others. The pilot project was capable of covering the first five building blocks to a general level of detail within the resources provided.

2.3 Background

2.3.1 What is already accomplished

Fiji has a good base on which to develop an effective water resources management capacity for the future, but further organisation and legislation are needed. Already in place are the following:

Water services

- Electricity generation, which involves dams and hydro-power facilities, which associate catchments, is under a commercialised authority, the Fiji Electricity Authority (FEA);
- Major urban water supply which has been operated by the Public Works Department is being commercialised to create the Fiji Water Authority which is intended to (i) form a stand-alone utility organisation that provides water supply and sanitation services, and (ii) establish a commercial model focusing on customer services (similar to the FEA);
- Rural water supply and sanitation is under local management and realise on district and village operation and is not yet extended to all settlements throughout the Fiji Islands;
- Public irrigation schemes are owned and operated by the Ministry of Agriculture and are located in locations where suitable land and water sources are available.

Water management and water regulation

- The introduction of the *Environment Management Act* administered by the Ministry of Environment creates a number of important facilities related to water resources management, which are:
 - Control of wastewater pollution through a discharge permit scheme that applie4s to public and private organisations (in process of implementation);
 - Environmental impact assessment procedures that require the impacts of development on water resources to be consistent with the environmental objectives of the *Act*.
- The Mineral Resources Department has experience in investigating the impacts of groundwater extraction and is currently developing proposals for the protection of groundwater quality;
- The Ministry of Agriculture, Land and Water Resources Management Division, has a role in river engineering, estuarine clearing and catchment management projects, in addition to
- The Hydrology Unit of the Public Works Department has a river gauging network across the larger islands
- The regulatory arrangements for utilities are complete in all essential aspects, namely:
 - Price regulation – Commerce Commission
 - Services and standards – Department of Public Enterprises
 - Wastewater controls – Ministry of Environment
 - Drinking water quality – Department of Health

In summary, there is a basis for establishing a water management function with the use of existing capacity, provided that some reorganisation occurs and some areas are strengthened.

2.4 Recent government initiatives

The Government of Fiji has made a number of IWRM related initiatives in recent years:

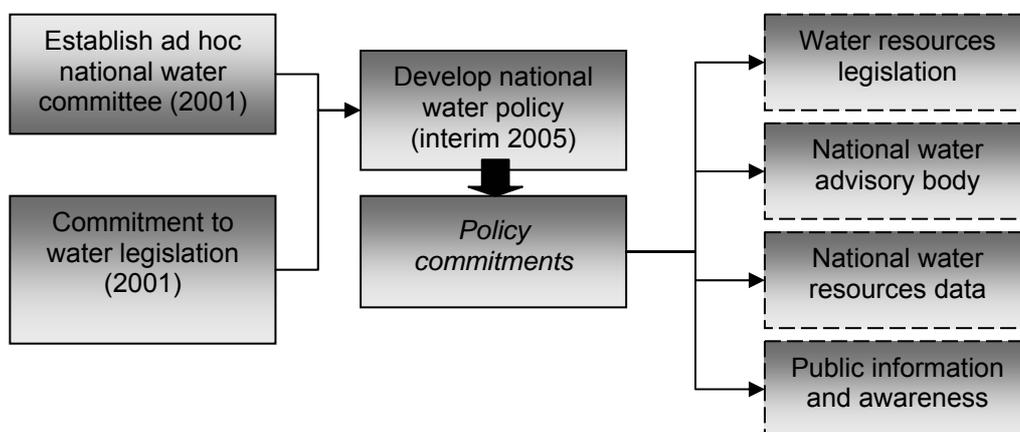
- Creation of the National Water Committee, a coordinating committee of officials to meet under the chairing of MRD;
- Development of a draft national water policy which has been accepted subject to consultation, which has not yet been completed;
- Commitments to consider new water resources legislation and national coordinating arrangements (as stated in the draft policy which reflects earlier cabinet decisions).

Within the interim policy draft, on which Cabinet asked for consultation in 2005, commitments are made to follow up on:

- water legislation: the need for a water resources law will be investigated;
- national coordination: the form of a high level advisory body will be investigated;
- information: the creation of national water resources data bases is promoted;
- public awareness: public awareness on water resources management to be promoted.

These directions are consistent with the development of a comprehensive IWRM framework for the country. The strategy is intended to provide the means for achieving the framework.

Figure 2: Sequences of water management decisions by Fiji Government



The initiatives indicate that the government is considering strengthening IWRM, but decisions so far have been preliminary and action has not yet been taken to establish more effective arrangements. The strategy is intended to map the path towards accomplishing the intentions of the government.

2.5 Water Reform Strategy Workshop

2.5.1 Purpose of workshop

A workshop on water resources reform for Fiji was held in November 2005. The workshop was attended by representatives of ministries and departments in all important areas related to water resources. The objectives of the workshop were:

- To identify the current status of water management in Fiji;
- To highlight and discuss the key issues for water management in Fiji;
- To develop and agree on the strategy for improving water governance,

Although the workshop was designed to concentrate on water resources at the national scale, the point was strongly made that local water supply and water resources conservation and protection is of great importance. Therefore the national approach to water policy and legislation should be effective for dealing with the needs of small and remote islands and local communities.

The need for a new regulatory framework for water services (urban water supply and sanitation) is relevant to changes to improvement in the management regime, and the two should be developed in parallel. In particular, urban water supplies need a firm legal basis for their right to take water for their schemes. No such legal system is presently available. A second issue for urban water supply is the protection of drinking water supply catchments, which are presently controlled by PWD but which would come under different control if the water supply utility is created.

2.5.2 Vision for water resources

A vision for water resources was proposed by participants at the workshop:

The sustainable, equitable and profitable management, protection and use of water resources for the essential needs of Fijian citizens, for the development of the economy of Fiji and the well-being of Fijian society, in such a way that the values of the freshwater environment are maintained and coastal waters and ecosystems are not degraded.

The vision could be used as a basis for describing national outcomes for water resources in Fiji.

Various issues were identified at the workshop as outlined below.

2.5.3 Need to consider small island water management

Concern was raised that very different water resource conditions apply on the large island and on small islands of Fiji. While alternative sources of water can be developed or accessed on the large islands, small islands that rely on groundwater and rainfall or rainfall only have few or no alternative water sources in circumstances of low rainfall or drought. For this reason, attention should be drawn to the needs to small islands for two reasons. Firstly, the approach to water supply and management needs to differ from the approaches commonly used in the large islands. Secondly explicit attention needs to be paid to small island water issues so that their needs are not forgotten. A proposal for the national water policy draft will be made to address this matter.

2.5.4 Reform of water services and water management to proceed in tandem

The programme to commercialise the Water Supply and Sewerage Division of the Public Works Department raises a number of issues for water resources management. Water Supply and Sewerage Division is to be converted into a Commercial Statutory Authority (CSA), which requires the regulatory framework for public water supply and sanitation to be better defined. Legislative change will be required to establish relevant aspects of the CSA (meeting with Ministry for Public Enterprise and Public Sector Reform) and an appropriate regulatory environment needs to be applied or developed.

There was discussion of the service-related regulation requirements for the water and sewerage CSA, such as price determination (Commerce Commission), service standards and drinking water quality (Ministry of Health) as well as the rights of consumers. Additionally, two issues of regulation and management arise, namely water allocation and control of protected catchments.

2.5.5 Freshwater and coastal waters

The key impact of freshwater and its management on marine waters is on water quality, mainly but not exclusively via river outflows. Given the importance to Fiji of its coastal zone, it is important to ensure that rivers and coastal outflows do not harm marine ecosystems, coral reefs and other fauna and flora. Worldwide, integrated coastal zone management (ICZM) is increasingly receiving attention, but explicit legal and management responsibilities for coastal waters are not commonly assigned. While it is not proposed that a water resources management responsibility in government should be actively responsible for coastal waters as such, it was agreed that decisions about freshwater management should be explicitly required to take into account whether an impact would occur to the marine environment and its resources.

2.5.6 Water and catchment management

Fiji recently approved a catchment policy which, however, concentrates mainly on land-based resources – soils, vegetation, forest resources. Catchment degradation was considered to be a problem in Fiji, and there was a strong view that the links between water management and catchment management should be effective.

2.5.7 Workshop conclusions

Although the workshop was designed to concentrate on water resources at the national scale, the point was strongly made that local water supply and water resources conservation and protection is of great importance. Therefore the national approach to water policy and legislation should be effective for dealing with the needs of small and remote islands and local communities.

The need for a new regulatory framework for water services (urban water supply and sanitation) is relevant to changes to improvement in the management regime, and the two should be developed in parallel. In particular, urban water supplies need a firm legal basis for their right to take water for their schemes. No such legal system is presently available. A second issue for urban water supply is the protection of supply catchments, which are presently controlled by the same

There is strong support for a number of directions for a water strategy in Fiji. These are:

- water management is already facing problems of demand and protection and these pressure will increase over time, so that more robust management measures are needed for the future;

- water legislation is required for the management of both groundwater and also surface water resources;
- a water allocation system should be developed to allow water resources to be more explicitly shared and allocated to important water uses;
- water-related rights and obligations of native land owners in Fiji need to be more clearly defined and commonly understood;
- the freshwater-marine water relationship should be clearly recognised in policy and law, to ensure that offshore aquatic resources are protected;
- national coordination of a more permanent and formal nature should be implemented
- a governmental responsibility for water management should be recognised, distinct from land management and water supply;
- the town and country planning system does not cover important aspects of water development and use, and: a facility for related water planning is warranted, although it would be implemented mainly in locations of need;
- the information base for water management needs strengthening and national responsibilities need to be assigned and supported for the collection and maintaining of data on groundwater occurrence, and for surface water resources;
- there is a significant need for capacity building in water management and administration, information technology and technical fields including groundwater assessment and surface water monitoring.

It is no surprise to find that the workshop agreed there is a need for capacity building and education and public awareness. The key public awareness issues were considered to be pollution/water quality protection and water conservation. In summary, the workshop provided an initial basis for developing the strategy for water resources reform.

2.6 Purpose of reform strategy

The purpose of the reform strategy is to develop the capacity to manage water resources in Fiji to a condition where the present and future challenges to water resources and water use can be met. A number of challenges are facing the Government at present, which include:

- The increasing private interest in the exploitation of water for commercial purposes;
- Growth of commerce, industry and tourism, being promoted by the Government, which will require sources of water;
- Competition in some areas for water, which may become intense (eg Yaqara valley);
- Increasing threats to water resources from pollution from industrial sources and sewage;
- Progressive degradation of catchments resulting in less reliable stream flow and deterioration in water quality;
- Threat to some natural environmental values due to water pollution or unreliable water flow

- The potential threat to coastal waters and coastal ecosystems resulting from deterioration in the quality of fresh water flowing into the sea;

The key purpose of the strategy is to identify the water management requirements to meet these challenges in Fiji and to develop a strategy for achieving them.

2.7 Objectives of water management strategy

The strategy proposal has the following general objectives:

1. to ensure that existing water resources and trends affecting water are understood in order that measures for their protection and exploitation can be developed;
2. to provide the mechanisms for balancing economic, social and environmental factors to provide an equitable and productive outcome for society;
3. to enable the Government to plan for and control activities that affect water resources;
4. to ensure that water resources development does not adversely affect coastal waters and the coastal environment.

To achieve these objectives it is desirable to develop a comprehensive water management function in Fiji. The key steps are outlined in the action plan. Brief comment is made on each of the elements of the strategy.

2.8 Phased introduction of reforms

2.8.1 Key phases

It is possible, and helpful, to consider the order in which various actions might be taken. The strategy recognises that reform is needed in several areas at the same time, and it is therefore important to ensure that proposals for change considered by the Government are manageable and logical. Three phases can be identified:

Figure 3: Major phases of water reform for Fiji

Phase	Timing
Initial phase	First 12 months
Implementation phase	Second 12 months
Consolidation phase	Third and fourth years

The timing and actions beyond the first 12 months are relatively broad and would require adjustment and further development, depending on progress in the initial phase. It is proposed that the National Water Council report on progress to the Government annually and in the course of reporting indicate how the remaining reforms should be undertaken, and the programme timing.

Initial phase of water management reform

If the Government agrees with the proposed direction, the actions in Table 1 can be implemented without delay, as they can be undertaken without the need for legislation or major institutional change. There are some financial implications for the establishment of the National Water Council secretariat, but if that step is not taken, no serious advance is possible, because the National Water Committee also requires support. The lack of such support is a reason why progress since 2001 has been so slow.

Table 1: Actions in start-up phase of water management reform

Action	Implication and issues
Approve water reform programme	Decision of Cabinet
Complete consultation on interim national policy document	Should be accompanied by an information programme on the reforms as a whole
Approve interim national water policy	Cabinet should consider next steps at this stage
Conduct policy consultation on water rights and land ownership to resolve policy and legal approach	Two-part programme (i) discussion with stakeholder representatives and (ii) broader discussion (<i>desirably following consensus on (i)</i>); The Council may assist
Develop policy on specific issues	Identification of key issues by Cabinet: note work already underway on sustainable rural water supply (see Chapter 2, Appendix)
Prepare water legislation	Policy document already prepared under this programme, for consideration and refinement, subject to resolution of water rights issue
Establish National Water Council	Council may be established by decision of Cabinet without the need for legislation initially, provided a budgetary mechanism is available
Establish Council Secretariat	The Secretariat is vital to the operation of the Council and would have to be established by administrative decision
Strengthen National Water Committee	Revise and formalise terms of reference as supporting committee to the Council
Develop project proposal for national water resources data	National Water Committee to develop proposal

Major implementation phase

The key elements of the consolidation phase are:

- Introduce water resources legislation;
- Develop water resources agency functions, and
- Initiate coordinated water resources information system.

Following these actions, it will be possible to introduce the water allocation scheme and pursue policy more actively in such areas as floodplain management.

Table 2: Actions in second phase of water management reform

Action	Implication and issues
Further policy development	Some areas might include (i) guidelines on floodplain development and construction, (ii) water allocation guidelines, (iii) environmental water requirements
Introduction of water resources legislation	Legislation should take into consideration the relationship of other statutes, such as the EMA, Town and Country Planning
Review and determine water agency structure	Further work required to identify staff, resources and transfers needed to develop water agency in single location, and the appropriate location for the functions (note that the Council/Committee secretariat would be part of the agency)
Implement water resources agency	Cabinet decision requires administration structure and staffing decisions and budgetary allocation
Commence water allocation scheme	Design and implementation of water licensing scheme in interim period as determined by water legislation and regulations
Develop flood management function	Develop coordination mechanism/s for floodplain planning and technical base
Water information system review	Conduct information review (National Water Committee to steer) and submit outcomes for approval (see Chapter 6)
Identify and plan for technical capacities	National Water Committee/Water agency to develop capacity plan

Note that the actions in the second phase are stated in the most general terms, but most are quite significant in scope. Significant decisions would be required of the Government regarding institutional structure and change, along with budgetary allocations for the water management function. As noted in Chapter 5 (Institutional Reform) both LWRM (Agriculture) and MRD have expertise and experience

related to surface water management and groundwater management. In addition, the Hydrology Unit of PWD has the closest to a national surface water flow network, while MRD collects groundwater data.

The second phase would set up the key elements of the framework, except for the coordinated information system which requires further investigation and negotiation for its development.

Consolidation phase

The third phase would see the development and refinement of the main water management schemes and programmes.

Table 3: Actions in third phase of water management reform

Action	Implication and issues
Continuing work on water policy	Prepare and approve national water policy to replace interim policy
Complete implementation of water licensing scheme	Issue of water licences to all major water users in Fiji by water agency
Establish and if necessary convene Water Resources Tribunal	Implementation as required when water licensing scheme is in operation
Report on progress to Government	National Water Council monitoring role
Complete first floodplain plan	Initial plan and planning mechanism to provide model for other locations in Fiji
Develop design codes and guidelines for construction on flood prone land	Water agency to coordination and obtain Government approval
Develop capacity building	Ten year plan for capacity development and retention
Approve national water information arrangements	Following investigation, requires negotiation for data access and exchange/coordination
Commence national water data-base development	Several agencies likely to be involved as water data custodians

The third phase involves the long-term consolidation and development of the major schemes, in particular completion of the policy on water allocation and introduction of the water licensing scheme, and arrangements for flood plain management.

2.9 Action Plan

The action plan is shown in [Figure 4](#). It provides a general estimate of the time required to undertake the proposed actions. Actual timing will depend in the initial phase on the consultation on (i) the interim national water policy and (ii) the water rights regime to be implemented. The latter issue is considered the most important for the further development of the water reforms.

Figure 4: Action plan for implementation of water reform programme

	Year 1				Year 2				Year 3				Year 4			
	1/1	1/2	1/3	1/4	2/1	2/2	2/3	2/4	3/1	3/2	3/3	3/4	4/1	4/2	4/3	4/4
Initial Phase Year 1																
Approve reform programme	▲															
Water policy consultation	■	■														
Approve interim water policy			▲													
Consult on water rights	■	■	■													
Specific policy issues	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Prepare water legislation	■	■	■	■												
Establish National Council	■															
National Water Committee	■															
Establish secretariat	■	■														
Water Council operational		▲														
Approve water data proposal		▲														
Implementation Year 2																
Introduce water legislation	■	■	■	■	■	■	■									
Determine agency structure			■	■	■	■										
Approve water agency						▲										
Water agency set-up							■	■								
Water allocation scheme								■	■	■	■	■	■	■	■	■
Flood management								■	■	■	■	■	■	■	■	■
Flood management plan												▲				

	Year 1				Year 2				Year 3				Year 4			
	1/1	1/2	1/3	1/4	2/1	2/2	2/3	2/4	3/1	3/2	3/3	3/4	4/1	4/2	4/3	4/4
Consolidation Years 3-4																
Water data review			■	■	■	■	■	■	■	■	■	■	■	■	■	■
Approve water data scheme					▲											
Technical capacity plan					■	■	■	■	■	■	■	■	■	■	■	■
Complete water licensing																▲
Water resources tribunal											▲					
Flood design guidelines					■	■	■	■	▲							
Capacity building					■	■	■	■	■	■	■	■	■	■	■	■
Develop national data bases						■	■	■	■	■	■	■	■	■	■	■
Council progress reporting				▲				▲				▲				▲

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European Union and SOPAC

**Programme for Water Governance
Fiji Water Resources Management
at National Level**

Final Report: Chapter 3
Water Resources Policy

Water Policy Services Pty Ltd, Sydney

May 2007

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- C Water policy discussion paper: provision of sustainable local water supplies

3. Water Resources Policy

3.1 Introduction

3.1.1 Importance of water policy

Policy was identified as the first of the building blocks for water governance in Fiji. Policy decisions are important in two respects:

- Some in-principle policy issues need to be decided in order to clarify the direction the government will take and to provide the community with certainty about how water resources are to be managed;
- Other more detailed policy work is needed to develop mechanisms for applying water management approaches.

The PFWG undertook work on water resources policy for Fiji as follows:

- Advice on the completion of the national water policy draft which was considered by Cabinet in 2005;
- Identification of key policy issues for water management in Fiji,
- Promotion of the idea that Fiji should adopt a comprehensive water reform strategy
- Development of draft policy ideas for rural water supply and sanitation.

3.1.2 Water reform strategy

The PFWG supported the idea that the Government of Fiji should adopt a water reform strategy. There was already a programme to restructure the national urban water supply which has been provided in the past by the Water Supply Division of the Public Works Department. That reform was spurred by frequent failures in maintenance of water supply and public dissatisfaction with the service. The Asian Development Bank provided technical assistance to establish a more commercially oriented water supply utility and the Government approved the creation of an authority as a public enterprise. The Government then set up a committee, in 2006, to advise it on the future of the Public Works water supply, and the current recommendation is that a stand-alone utility should be created as a public enterprise, created under the Public Enterprise Act, which is likely to be called the Fiji Water Authority.

At the same time, there has been widespread acknowledgement that reform is needed in the field of water resources management and that there should be water resources legislation. Before such legislation can be introduced, it is necessary for the Government to make a number of important policy decisions. Guidance is also needed both as to what should be done and how it should be achieved.

The PFWG proposed a water reform strategy, which is explained in more detail below.

3.2 Draft National Water Policy, 2005

3.2.1 Development of the draft policy

The national water policy was requested of the National Water Committee by the Cabinet of Fiji in 2001. Responsibility was allocated to MRD in the corporate plan, with a deadline for the end of 2005. The PfWG consultant was asked to comment on the draft shortly before the policy deadline, and gave input. Consultation and other work still needed to be undertaken to resolve important issues, so it was decided that the initial policy should be an interim one, and that further policy work would follow later. Cabinet agreed in December 2005 to adopt the policy draft subject to consultation, which MRD would undertake.

Important statements in the draft policy are:

- *the Government is responding to the water challenges by embarking on a water management reform program to strengthen the water management capabilities that already exist and introduce new water management measures where these are considered necessary.*
- *the Government must have the capacity to exercise comprehensive management control over the flow of water and the use of water resources*

The draft policy identified areas where the Government would initiate reforms:

- *investigate water legislation, which would:*
 - *establish the required mechanism to allocate water;*
 - *clarify the legal status of water users and all parties that rely on water or are affected by its condition and use;*
 - *recognise those benefits of water to which owners of native land should be entitled and ensure that they receive appropriate value;*
 - *include coverage of areas of water management not adequately included in current legislation;*
 - *establish a judicial mechanism to resolve conflict associated with water allocation and use.*
- *establish a coordinating body with secretariat support at national level, to provide consistent advice on water reform and water management problems of national significance;*
- *assign responsibility for water resources management within the administration and build up its capacity in relevant areas.*
- *identify the technical information needs for present and future water management at national level; and ensure that responsibility for collecting and maintaining water resources information is clearly allocated to the appropriate organisations.*

The undertakings in the draft national policy are therefore of critical importance. Provided that action is taken on them, Fiji may develop its water resources management to a considerable extent.

More detail is given in the report of the initial mission and Appendix 2 of that report, which provides the draft of the national water policy as submitted to Cabinet.

3.2.2 Further steps

The consultation programme for the draft policy has not been completed as of mid 2006. Consultation is required before the policy is formally adopted.

The current policy document is brief, concentrating mainly on principles and some general undertakings for further action by the Government. More detailed work is needed in a number of important areas,

some of which will require special consultation and political consideration. The key issues are outlined in the next section.

3.3 Key water policy issues for Fiji

3.3.1 General

There are a number of important policy issues for Fiji, which require resolution before water governance can be improved significantly.

The central issue relates to the legal status of water in nature, meaning water rights, including the rights of native landowners. The implications of granting an automatic water right to native landowners is extremely serious and the ramifications for essential services, industrial development, economic development, tourism and the environment are very poorly understood within Fiji. The issues are discussed below.

Other policy issues for the national level are:

- Allocation of water for all uses, from both surface water and groundwater sources, including resolution or minimisation of conflicts between water users, and ensuring that water exploitation is within environmentally sustainable limits;
- Sustainability of rural water supply and sanitation schemes;
- Flood management the approach to be taken to ensure consistent development in and affecting flood prone areas to minimise the potential for flood damage and risk to human life;
- Preparedness for water scarcity and drought;
- Protection of freshwater bodies, including river channels, wetlands, lagoons and aquifers;

3.3.2 The legal status of water

The *Rivers and Streams Act* deals with surface freshwater, but only in very general terms. No legislation deals specifically with the status of groundwater. In the majority of countries which have legislation dealing with water resources, the government has a clear right to allocate water and manage it in all its important aspect. It is a normal social expectation that the government will protect and provide for the population's water requirements. The key obligations of governments towards society in regard to water resources are:

- To ensure that urban and rural water is supplied for drinking, domestic use, commerce and industry;
- To enable water to be used for irrigation;
- To provide for water to be available for economic development, which, in Fiji, includes tourist development as a major component;
- To ensure that water resources are not over-exploited and water sources are not exhausted or used beyond sustainable limits;
- To protect water from contamination and pollution, including the waters of the sea;
- To protect people and property from damage and loss due to flooding.

The Government must have the legal power to control how water is used in order to meet its objectives. Therefore the Government must have the power, by whatever means, to allocate the water for essential uses and allows its use by others.

These include making water available for urban and rural water supply. In some countries there may be difficulties in obtaining the right

The key issue in the legal status of water for Fiji is whether the water resources of the country are under the control of the State of Fiji, in other words, the Government on behalf of society, or whether the water resources are 'owned by owners of native land. There has been an argument that native land owners are the owners of water resources as well. That is not believed to be the current legal situation. If a policy decision is made at some future time to grant native land owners a form of title or legal recognition of their ownership of water resources, some severe adverse consequences will result for the people of Fiji and its economy. The PfWG proposes that water resources should be clearly under the control of the State and the concept of 'owning' water is considered to be legally unsound and practically unworkable. This issue is further discussed in section 3.7.

3.4 Flood management

3.4.1 Current situation in Fiji

There are several elements to flood management, some of which are being addressed actively in Fiji, while others are not being addressed.

A number of organisations have responsibilities related to flood management, but there is no legislation dealing with flood management as such. Flooding is a serious issue for a number of the coastal towns on the larger islands, as floodplain and estuarine stretches of rivers are experiencing high flows, while changes in lowland development are causing greater threat to life and property. The main type of flooding is caused by rivers rising to discharge to floodplain areas, followed by local urban flooding where drainage liens have been built over and infrastructure is not adequate.

Components of flood management are shown in [Table 1](#).

Table 1: Components of flood management

Flood management component	Responsible organisations
Pre-flood and during flood events	
Climate and hydrology data	FMS, Hydrology, LWRM
Flood warning	Fiji Meteorology Department, DISMAC (LWRM at downstream locations)
Flood operation (where operable works exist)	LWRM (proposed in in Nadi catchment), FEA and any dam owners
Flood response: Evacuation, property protection, emergency shelter, food	DISMAC
Riverine clearing and flood diversion	LWRM, (PWD?)

Flood management component	Responsible organisations
Immediate post flood events	
Post flood response (repair, restoration, re-housing)	DISMAC
Planning and preparation between floods	
Flood mapping	LWRM (limited or not developed)
Floodplain planning (technical)	LWRM (limited)
Development and application of structural flood design criteria	N/A
Land and development zoning	Town and Country Planning (EIA)
Infrastructure design and construction	PWD, LTA and others (eg FEA)
Approval of structures (including infrastructure)	Town and Country Planning (EIA)
Urban drainage	Municipal councils
Design and construction (possible operation) of flood mitigation and control works	LWRM
Riverine works (clearing, dredging ,river channel restoration, buttressing)	LWRM

Some aspects of flood management are well developed in Fiji or are the subject of attention through various programmes in Fiji. In particular, flood warning and disaster response have been developed with the participation of the Fiji Meteorological Service (FMS), the Public Works Department, Hydrology Division and the DISMAC.

The areas not addressed well are related to the design and location of structures which stand in the path of floodwaters, and planning for flood passage. Some elements of these activities are undertaken by a number of agencies, such as Town and Country Planning, Ministry of Agriculture, Land and Water Resources Management Division (LWRM) and municipal councils. However, they do not combine to

3.4.2 The problem

Flooding has been regular and increasing in severity in some locations on the two main islands of Fiji. The major flood problems are occurring mainly in the lower reaches of larger rivers, where the floodplain is experiencing urban and industrial development and river are overflowing into the neighbouring low lying areas. The severity of flooding is increasing because:

- Upper catchments may be experiencing degradation, leading to faster and more intense runoff during and after rain events, and therefore higher flood peaks in streams and rivers;
- Downstream areas are being progressively developed, so that there are more barriers to flood waters, impeding the outflow of flood waters and causing floods to last longer.

The manner of development has caused flooding to become more severe in some locations. For instance, where roads and bridges or other similar structures have formed barriers or partial barriers to flood flow, the period in which flood waters remain on the land immediately upstream may be considerably increased. Similarly, where development crosses and blocks natural drainage lines, flooding will occur locally and may become more extended in other locations. There need to be measures to prevent flooding from worsening due to inappropriately located and designed developments on floodplains and surrounding rivers, and it may be appropriate to make changes to existing drainage and existing infrastructure.

Areas subject to frequent flooding should be mapped and the predicted flood frequency and severity identified, so that appropriate measures can be taken. Policy decisions are required as follows:

- establish a floodplain planning scheme, linked to urban and other zoning schemes, covering land both within and outside urban areas, which identifies flood prone land and floodways (areas set aside for the passage of flood waters), which has statutory force when approved and controls the location and type of structure and building on flood prone land;
- assign responsibility to an agency for developing floodplain plans and ensuring their requirements are followed both within and outside urban areas – within urban areas, a drainage plan might be included;
- set up a coordinating mechanism to include all agencies with roles in planning, approval of development, construction and building, infrastructure development and regulatory roles such as environment protection, to participate in developing floodplain plans;
- develop technical guidelines for the design of structures which cross or are situated within flood prone areas and a legal mechanism which ensures that they are applied;
- a consultation procedure for developing flood plain plans and associated guidelines.

3.4.3 Sustainable rural water supply

Fiji has many outlying and isolated communities which require a safe, clean, reliable and accessible water supply. Although many rural water supply schemes have been completed, there are communities which do not have permanent and reliable access to clean water. In addition, on some small islands the only water sources are groundwater and rain water.

3.5 Drought preparation

3.5.1 The problem

Fiji experiences serious drought conditions in some areas from time to time. Most recently in the 1990s areas in the north of Viti Levu and the north west of Vanua Levu experienced drought conditions that left rural communities short of water for domestic use and local irrigation. Fluctuations in climate and rainfall cannot be avoided, but the community should be prepared for water scarcity to occur from time to time.

One impediment to drought preparedness is the attitude during times when water seems to be abundant that there is not need to conserve it. The comment has been made in discussions and at workshops that many areas are not sufficiently aware of the need to conserve water at the local level. There may also be an expectation that the Government will step in when water shortages occur.

3.5.2 Policy proposals

The elements of drought preparation include the following:

- Fostering a water conservation ethic throughout Fiji including in remote communities;
- Create guidelines which identify at what point and under what circumstances external water supplies will be provided;
- Develop mechanisms for ensuring local management is available and sustainable;
- Introduce appropriate water supply schemes, taking into account all local water sources
- Where necessary introduce rules to protect local priority water supplies such as domestic water, and restrict other uses (requires a legally based water allocation scheme).

A national policy on drought preparedness should be developed in due course. A draft policy on sustainable rural water supplies has been prepared by PFWG for the consideration of the National Water Committee and the Government.

3.6 Water allocation, priorities, conflict and sustainability

3.6.1 The water allocation problem

The signs of impending conflict between water users are evident in limited areas in Fiji. Two particular examples are (i) the conflict, real or imagined, between neighbouring water bottling plants extracting groundwater or spring water, (ii) the potential for urban and tourist water supply schemes to disrupt river flow to a pre-existing irrigation scheme on the Sigatoka River. Although the water conflict is limited at this time, the competition for groundwater has brought water management to the attention of the Government. Beneficial

A second issue is that there is no means within Fiji for ensuring that water is not abstracted from water sources beyond sustainable limits, nor for ensuring that water is available to sustain features of the natural environmental such as wetlands.

A water allocation mechanism is needed in order to deal with the following water problems:

- Set priorities for water use in circumstances of water scarcity (such as low streamflow);
- Resolve conflict and potential conflict between water users
- Ensure that the total abstraction of water is kept within sustainable limits.

There are two parts to a water allocation policy:

1. policy decisions about priorities for different types of water use and the extent of access to water that should be permitted;
2. the mechanism/s for allocating water.

3.6.2 Policy decisions

Policy decisions are required on a number of important matters, as identified below:

- What types of water use should receive priority in general: it is most common for water for domestic and urban use to receive highest priority in times of water scarcity; there may be other priorities or criteria to help decision-making when competition for water occurs
- Whether an environmental flow or environmental water resource should be identified for rivers and other water bodies, and if so according to what approach would it be designed;
- What are the general parameters for the right to take water under a licence system, such as the period of time the right is issued, the
- What legal rights will existing water users have when a new water use is proposed, such as the right to object, hearing of objections and what process will be used to resolve such matters;
- What fees and charges will apply

Decisions are required on these issues in order to develop and apply a water allocation scheme.

3.6.3 Water allocation mechanisms

Policy should aim to design a water licensing regime for those uses that require management and control. The interim national water policy does not cover the detail of such a scheme. The same scheme should cover both surface water and groundwater. They should not be under separately created schemes and ultimately the same administrator should be responsible for both. The proposed amendments to the Minerals Act would create the basis for a groundwater permit control system for the time being, but it has been stated that those amendments should be in interim measure only, to enable control at this time. Ultimately powers to allocate both resources should be administered together.

Future water resources legislation would require various powers, including the power of access to water sources, both surface water and groundwater, similar way to the powers contained in the Minerals Act.

Important features of a water allocation regime are:

- A water permit or license is issued to those who take significant volumes of water
- Permits and licences would not apply to small scale uses, drinking and domestic uses in rural areas and basic subsistence use
- The permit defines how much water may be taken by the user
- The permit gives the user greater certainty that the volumes of water in the permit are protected against intervention by a new third party
- The permit may include various types of conditions, including an obligation of the user to provide information to the issuing authority about volumes of water taken and other related information for management and control purposes
- There must be legal remedies if the permit holder exceeds the volumes states – it becomes a breach of the permit
- In extreme conditions, the permit issuer must have the power to apply special measures such as assign priorities of use, restrict some uses, require users to take water at different rostered

times, and so on, for the purpose of maintaining harmony and facilitating the best allocation of the water.

The allocation mechanism should apply to both public and private users, based on the scale of use, not the type of ownership (note NLTB would probably not agree).

A policy should be developed which contains such matters as the following:

- The guidelines on water access for various purposes such as urban and domestic water supply;
- The matters to be taken into account when determining whether an application to take water should be granted or not granted;
- The procedures for obtaining and right to take water, for allowing others to protect their interests and for resolving the matters;
- The guidelines for imposing restrictions on water abstraction such as in times of drought or scarcity.

3.7 Water rights and native land ownership

The key water policy issue for Fiji is the question of water rights – who has rights to take and use water and under what conditions. native land ownership and water and whether native land owners should be granted a water ‘right’ which in fact recognises their prior ‘ownership’ of the water resources. This issue has prevented water legislation from being enacted in the past, and it has the potential to derail attempts to rationalise water management in the present. In simple terms, the issue is whether native land owners should be legally recognised as the ‘owners’ of the water resources of Fiji. Each native land owner would ‘own’ water associated with their own land holding. Presumably land owners would have rights to the water beneath, flowing through and flowing alongside their land. Thus, water resources in Fiji would be assigned to numerous land owners. The argument goes back to whether the original cession of Fiji to the British Crown included land and water resources or not, as some argue.

At the same time, the Government must have the power to manage water resources not only for native land owners but for the whole of the population of Fiji. The Government must have the undisputed power to decide where and when water for public uses is taken from rivers, streams and groundwater sources. It should also have an allocation role in authorising the taking of water by private enterprises, such as industries, tourist agencies and others, for the general economic benefit.

There is an inherent conflict between the two proposals, because the ultimate control of water must rest either with the Government or with native land owners. The consequence of each differ significantly.

This issue is discussed in Appendix B. It must be resolved before water resources legislation is enacted. In order to resolve it, there must be discussion and consultation between the government and others, in particular those representing native land owners, and a form of consensus reached. Unless there is a reasonably broad understanding and acceptance of the government’s position, it seems unlikely that a legislative and administrative solution will be successful. The National Water Council (as proposed in Chapter 5) could perform a very useful role in working to resolve this policy issue.

3.8 Summary

A number of important policy issues have been identified, which require further development. The current draft interim national water policy contains general aims and principles and some indication of the

government's future actions. Policy also needs to be developed for the major utility functions in urban water supply and sanitation, as well as for irrigation and also the key economic sectors such as industrial development and tourism.

Water development for tourism may be a critical issue in the future, because tourism is likely to take place in locations where access to freshwater is limited and may be over-exploited, and that aspect of development is frequently left to the last minute when designing development proposals.

The key policy issues are listed in the Action Plan for the proposed Water Reform Strategy.

Draft Interim National Water Policy

3.8.1 Cabinet consideration of draft national water policy

The following is the draft submitted to Cabinet for endorsement in December 1995. The draft was submitted to meet the deadline in the corporate plan for the Mineral Resources Department that was responsible for developing the policy proposal. At the time of submission, Cabinet was advised that the draft policy should be considered an interim one, as there was more work to be done on policy. The idea was that the interim policy would set some direction for the time being and that further work should be done later.

Cabinet agreed to the policy as it stood, subject to consultation. Consultation was undertaken, but the interim policy has not been returned for to Cabinet for final endorsement.

3.8.2 Background and scope of policy

This policy has been developed in recognition of the increasing threats and competing demands for the water resources of the Fiji Islands. Fiji has participated in international and regional discussions about water resources and recognises that water management is important for the social wellbeing of its people, its economic development and the continuing quality of the environment.

This policy covers all freshwater resources of Fiji, both surface water and groundwater, and acknowledges that freshwater can affect the quality of coastal and marine waters.

The policy states goals and principles to guide water management in Fiji, and it identifies the most important elements of water reform to be considered in the next two years.

3.8.3 Water management challenges facing Fiji

In general, the Fiji Islands are blessed with good rainfall and water resources, but the water resources are variable – they are not equally plentiful in all places, nor is water equally available at all times. Some areas, particularly small islands, have very limited water and some areas are drier than others. As well, Fiji has experienced serious droughts from time to time.

Meanwhile, the demand for water is increasing and becoming more complex. Fiji is continuing to develop water sources to provide water for essential domestic needs and water must also be available for agricultural, commercial and industrial enterprises, mining and tourism, to promote the growth of the economy.

Many human activities can affect the quality of water and in Fiji the growth of population and the economy is putting pressure on the quality of water resources. Not only industrial waste and sewage, but other widespread sources of pollution can affect the quality of water and thereby damage native fisheries and aquatic life in streams and rivers. Catchment development, forestry, and agriculture, as well as the growth of urban areas, can all cause the quality of water to deteriorate. Groundwater can be polluted by the infiltration of chemicals which are disposed on the surface of the ground.

Water use is already the subject of some conflict in some cases. Such conflict includes the abstraction of groundwater and activities that could pollute important groundwater reserves. There are emerging surface water use conflicts also in some locations. Management mechanisms are needed to control the taking of water.

Water bodies need increased protection. Uncontrolled excavation from streams, rivers or groundwater bodies can cause siltation and the release of undesirable chemical compounds from the soil and rocks into the water body.

Finally, the quality of water at the mouth of the larger rivers may affect coastal waters and the important marine life that is so important to Fiji.

3.8.4 The need for a water policy

The pressures on water resources in Fiji will increase in the future in two ways:

- Larger volumes of water will be demanded for water supply and sewerage, as new schemes are built and old ones are upgraded, to meet national targets for providing basic water services;
- Growth in industrial, energy, mining and commercial developments will place greater demand on water.

At the same time, the threats to water quality will increase through:

- increasing urban development,
- more intensive agriculture, forestry and exploitation of natural resources in general, which can have adverse impacts on water quality;
- new industrial and commercial enterprises; and
- more waste disposal which may cause pollution of water.

Fiji needs to ensure that all the activities affecting water are managed in harmony, that there is no serious conflict over access to water, and that all aspects of its management are adequately covered. In the past, there was less demand for water and water resources were not considered to require special legislation or management responsibility. Today the situation is changing.

Fiji, like other countries, needs to conserve its water resources for the future. They are variable but also finite and limited. Therefore an active and consistent approach to water is needed. This policy is an early step towards that end result, along with interim legislative changes.

3.8.5 Government response

The Government is responding to the water challenges by embarking on a water management reform program to:

- strengthen the water management capabilities that already exist;
- introduce new water management measures where these are considered necessary.

A first step is the development of this policy which:

- clearly states the Government's goals for water resources in Fiji;
- provides the principles by which water resources should be managed in Fiji, and
- sets out the major steps towards creating an effective regime for managing water resources.

3.8.6 Water management goals

The following goals should guide the management and use of the nation's water resources:

1. to achieve water supply and sanitation service objectives (consistent with the Pacific Regional Action Plan on Sustainable Water Management)
2. to ensure the sustainability of water by managing it as a renewable but finite resource;
3. to ensure water use is as efficient as possible and that wastefulness is minimised;
4. to allocate water to all types of use as effectively as possible with the minimum of conflict between water users;
5. to facilitate access to water, for the promotion of economic development;
6. to maintain the quality of water in water bodies, for beneficial uses and the environment;
7. to protect water bodies from physical damage which will harm the quantity or quality of their water;
8. to ensure the water needs of the environment are met, so that aquatic ecosystems are maintained;
9. to lessen the impacts of extreme events – flood and drought – by applying appropriate plans and measures;
10. to ensure that freshwater outflows into coastal waters do not cause unnecessary harm to coastal and marine ecosystems.

3.8.7 Water management principles

1. Nature of water resources and the role of Government

Water resources in Fiji should be managed according to the following principles:

- Freshwater resources, both surface water and groundwater are recognised as critical for human wellbeing, to provide for the economic growth of Fiji and to maintain the value of the natural environment;
- Water resources are finite and water sources can be exhausted or damaged: therefore water must be managed within sustainable limits for today and for future generations, to protect the long term quantity and quality of water in natural water bodies;

- The effective management of water must be on the basis of the hydrologic unit - meaning, for surface water, the catchments of streams and rivers and for groundwater the aquifer system: only in this way will the impacts of water exploitation in any location be adequately recognised and responded to;
- Surface water and groundwater are part of a unified water cycle and should be managed consistently as elements of the water resources of Fiji;

Therefore, the Government must have the capacity to exercise comprehensive management control over the flow of water and the use of water resources.

2. Water conservation and efficiency

- Water conservation is an important objective for Fiji: therefore water use should be efficient and wastefulness should be discouraged by appropriate incentives and measures;
- Opportunities for water reuse, recycling and research should be investigated and, where appropriate, adopted and encouraged;
- Water use efficiency plans are needed to develop strategies for conserving water resources in all sectors.

3. Water allocation and priority of use

- Water supply for domestic use should be given priority in times of water scarcity;
- Water requirements to maintain the environment and its important aquatic features will be investigated and where necessary provided for.
- In order to promote economic development, a system of water allocation should be developed to give secure water entitlements to water users who take significant volumes of water, and have made substantial investments in infrastructure which support the Fiji economy.

4. Water quality protection

- Water sources of good quality must be protected from depletion and pollution by adequate protection mechanisms, consistent with the rights and interests of those who may be affected.
- The control of point sources of pollution of water must be applied comprehensively to ensure that receiving waters in Fiji are protected from all artificial discharges, including sewage and discharges from industry and mining.
- Measures for controlling water quality degradation from non-point sources, such as soil erosion and catchment activities need to be strengthened.
- Small scale and fragile water sources (such as shallow island aquifers) which have value for drinking and domestic use should receive particular attention for their protection;
- The impact of rivers on the quality of coastal waters should be recognised and investigated and, where necessary, measures taken to prevent coastal degradation.

5. Financial

- Water services should be as financially independent as possible, provided that the cost of water for basic needs of society is affordable;
- Those water users who take and use significant volumes of water should contribute to the costs of water management;
- Water exported from Fiji may be subject to royalties.

6. Water services

- Major public water supplies are being placed on a commercial footing to encourage efficient management.
- Large public water and sanitation schemes should be subject to similar water management conditions and protection as private enterprises in regard to:
 - access to water resources, and allocation of water entitlements to them;
 - control of their sewage or other discharges to prevent pollution of water bodies.

3.8.8 Water reform measures

In order to meet the goals and principles in this policy, the Government will initiate a series of water resources reforms, as follows:

1. Water legislation

The Government will investigate the requirements for water legislation in order to:

- establish the required mechanism to allocate water which:
 - gives water entitlements to all types of use,
 - avoids or minimises conflict over water access,
 - gives water users greater certainty of access to water for their requirements,
 - enables sustainable levels of water exploitation to be maintained;
- clarify the legal status of water users and all parties that rely on water or are affected by its condition and use;
- recognise those benefits of water to which owners of native land should be entitled and ensure that they receive appropriate value;
- include coverage of areas of water management not adequately included in current legislation;
- establish a judicial mechanism to resolve conflict associated with water allocation and use.

2. Institutional strengthening

The Government will:

- establish a coordinating body with secretariat support at national level, to provide consistent advice on water reform and water management problems of national significance;

- strengthen the coordination arrangements between water use sectors and the various administrative units that deal with water resources;
- assign responsibility for water resources management within the administration and build up its capacity in relevant areas.

3. Education and awareness

The Government will improve public understanding about the importance of water and dangers to its quality by developing education and awareness programs on water resources policy and management.

4. Water resources information

Sound water management relies on comprehensive and reliable information and understanding of water resources: The Government will:

- identify the technical information needs for present and future water management at national level;
- ensure that responsibility for collecting and maintaining water resources information is clearly allocated to the appropriate organisations.

Discussion of Native Land Ownership and Water Rights in the Fiji Islands

3.8.1 The Issue

The key water policy issue for Fiji is the question of native land ownership and water and whether native land owners should be granted a water 'right' which in fact recognises their prior 'ownership' of the water resources. This issue has prevented water legislation from being enacted in the past, and it has the potential to derail attempts to rationalise water management in the present. In simple terms, the issue is whether native land owners should be legally recognised as the 'owners' of the water resources of Fiji. Each native land owner would 'own' water associated with their own land holding. Presumably land owners would have rights to the water beneath, flowing through and flowing alongside their land. Thus, water resources in Fiji would be assigned to numerous land owners. The argument goes back to whether the original cession of Fiji to the British Crown included land and water resources or not, as some argue.

At the same time, the Government must have the power to manage water resources not only for native land owners but for the whole of the population of Fiji. The Government must have the undisputed power to decide where and when water for public uses is taken from rivers, streams and groundwater sources. It should also have an allocation role in authorising the taking of water by private enterprises, such as industries, tourist agencies and others, for the general economic benefit.

There is an inherent conflict between the two proposals, because the ultimate control of water must rest either with the Government or with native land owners. The consequences of each differs significantly.

3.8.2 Current situation

The view of the consultant is that the legal control of water resources currently lies with the Government which took over all the powers of the British Crown at independence. The *Rivers and Streams Act*, which came into force during the colonial era assumed that British law applied in Fiji, including the common law, but the *Rivers and Streams Act* over-rode common law. The British common law includes the *riparian doctrine*, which says that a landholder may use water which flows through or past the landholder's land, *to a reasonable extent*. The meaning of *reasonable* has been the subject of numerous rulings in the United Kingdom through the centuries. British colonial powers acted as though water was subject to their legal system. If it was not, the *Rivers and Streams Act* is not valid.

There is an argument by some that water may be allocated by the government but still be 'owned' by land holders. This raises the question whether private ownership of water (ie native land ownership) is desirable or feasible. Some of the water management implications of private (though communal land owners) ownership of water for management in general.

If the Government legislates to recognise the legal ownership of water by native land owners, regardless of any other legislation, the State of Fiji would be open to legal challenges at any time regarding its role in water management. Land owners could claim with greater likelihood of success that the water was theirs and prevent any other person, including the government from interfering. If so, no water use would be safe, including public water supply (undertakings concerning public services may be given by landowners, but if they have the legal right to challenge public services over water, they may use it at some future time)..

3.8.3 Water, property and 'ownership'

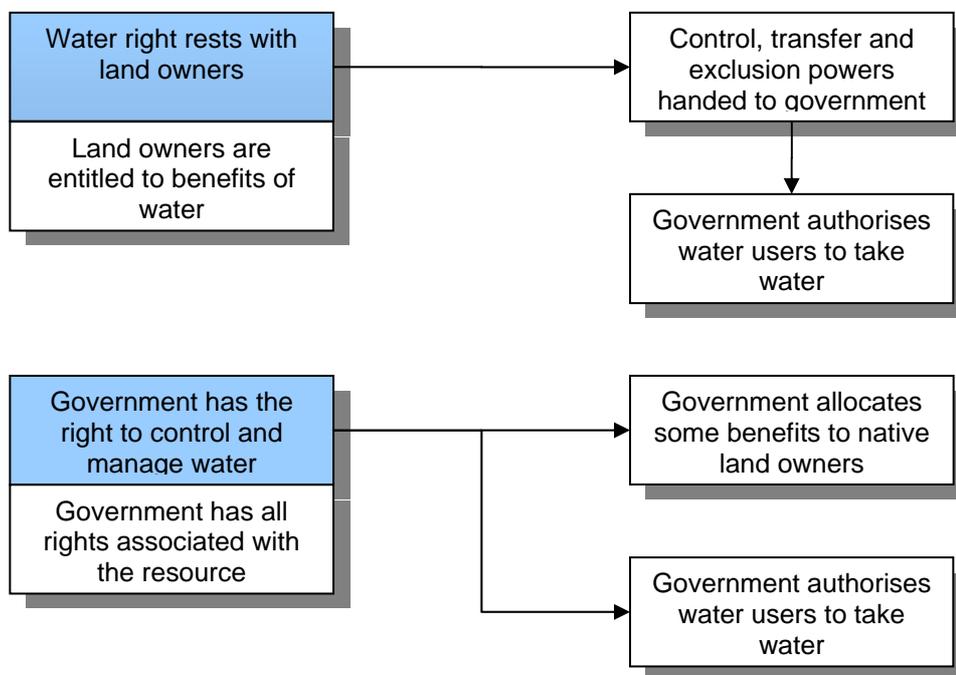
The notion of property or possessions, and the rights that accompany them belongs in a well-known legal framework. Ownership of property is regarded as attracting a 'bundle' of rights:

- control of the use of the property
- the right to any benefit from the property (examples: mining rights and rent)
- a right to transfer or sell the property
- a right to exclude others from the property.

The idea that native land owners' ownership of water should be recognised but that the government should be free to allocate and manage the water introduces the notion that the land owners' right to control the water , sell it or exclude others from it are handed over to the government, but that their right to benefit from it is not. There are only two types of legal resolution:

- to recognise land owners' ownership but to arrange that certain control is delegated to the government;
- to recognise the government's primary right and to provide for landowners to benefit.

Figure 1: Two legal options for the right to water



While ownership of land is easy to define, water differs from land as a resource because it is not static, but moves constantly;. For instance, where a land owner's holding fronts a river, what water precisely can be 'owned by that land owner? Any particular portion of water passes from the land of one owner to the next and so on, but does it change ownership along the way?

Some of the characteristics of legal property are that it can be defined (its location, quantity and boundaries) and can be physically controlled or protected and others can be excluded. Two questions arise regarding the control and exclusion of others in regard to water resources as a whole. For a land owner:

- can the water be controlled by the land owner (its movement)?
- would it be reasonable for the land owner to control it or exclude others from using or benefiting from it?

Water in rivers and streams is not under the control of land owners unless they or others with their permission impound it behind a dam or divert it to a storage location.

In summary, water as it occurs in streams, rivers and even under the ground is not a substance or resource that is simply or readily defined and controllable, nor is complete control of river flow in a limited location usually reasonable because of its impacts on others. It is not desirable for the concept of private or ownership to be applied to water. Communal ownership by small sections of society (native land owners) amounts to private ownership on a joint basis.

3.8.4 Obligations of ownership

If water is the property of native land owners the question would arise whether any person who suffered detriment because of flooding, water pollution or other water-related causes, had a right to sue on the basis that the owners of the water did not prevent the damage or did not do all reasonably necessary to prevent damage or loss of life occurring. This would be the case where a tree, privately owned, fell on a person or property and caused injury or damage.

Where the Government is clearly responsible for resources it is usually protected by legal conventions that enable government as a whole to work and is protected from being sued. Governance would become unworkable if any decision of a government official were open to civil action in a court. However, that principle might not apply in the same way to 'private' owners, namely native land owners.

If native landowners were granted a 'ownership' right to water, it would be absolutely necessary to introduce rules governing how much water the land owner can reasonably impound or divert and how much must be allowed to flow to other land owners and for other needs. Such rules would limit the owner's ability to dispose of the property without restriction.

3.8.5 Other Legal aspects

Some legal questions that arise where land owners have been granted the right to water, in recognition of their prior ownership of all natural resources.

If the water is considered to be owned by land owners, the government would have to be acting on their behalf, or at their delegation. That delegation, however, legally defined, would always be subject potential withdrawal by the land owner.

There is also the question whether the constitution of Fiji places an obligation on the government to ensure that it does provide essential and basic services to the whole of the population and whether granting the right to the water to native land holders would compromise the government's capacity to fulfil its obligation to society.

3.8.6 Water management issues

A number of important water resources issues face the Government. They include:

- The need of the government to allocate water for essential public purposes, such as water supply and power generation;
- The need of the government to resolve conflicts (which are more likely to arise in the future) over access to water sources by various water users, public and private;
- The need to ensure that water is available for industry, commerce and agriculture.

Economic stability and social well-being depend on having a stable legal regime for the use of water.

It is necessary both for public water services and for commerce and industry to have legally secure access to water. The Government must be in a position to ensure that the legal status of sources of water for town water supply cannot be challenged, that new sources can be developed without undue difficulty, that water for industry or commerce can be obtained from sources and maintained without the likelihood of legal challenge. For example, if a local water supply needed to be brought from the land holding of one owner to supply other land owners, it would not be desirable for owners of the land on

which the water source was located to have the power to interfering with that source or prevent the water from being taken and used by their neighbours. For these reasons, the government requires a clear legal right to control the water.

3.8.7 Key to the discussion

Native land owners are believed to wish to 'own' water resources mainly so that they may receive payments when the water is used by others. The term 'royalty' has been used, but a royalty means a payment or tax in return for a benefit, in recognition of ownership (ie from the day of monarchs' ownership of land). If native land owners are not the primary legal owners of water, the term royalty should not be used in relation to them (although the government might use it for itself).

If it is considered reasonable that native land owners should benefit from the use of water by others, it is better for the government to agree to a fee or charge, on a standard formula basis, which should be paid by water users.

In return to making payments, it is reasonable that water users should receive legal certainty as to their ongoing access to water for their uses. A formal licence system would provide such certainty, if introduced as part of a water resources statute.

3.8.8 Recommended approach

In light of the foregoing, the following recommendations are made regarding water rights:

1. It is recommended that it be recognised that water resources are not personal property or real estate in the normal understandings of those types of property and the term 'ownership' is not appropriate to be applied to water resources.
2. It is strongly recommended that native land owners as a whole not be granted water rights in the nature property rights, but that the government continue to be considered to hold the primary legal right to control, allocate and manage water resources within a legal framework which identifies the obligations of the government to provide water for society and meet sustainable management goals.
3. It is recommended that a future water resources statute include the provision that the right to the use, flow and control of water resources lies with the State, which must exercise its powers on behalf of society and the nation of Fiji.
4. It is recommended that if the government, as a matter of policy, decides that native land owners should receive any form of payment related to the use of water by others, that such payments be designed as part of a charge for water management and distributed on a standard formula basis.

Appendix C

Water policy discussion paper: provision of sustainable local water supplies

3.8.1 Background to policy proposal

Concern has been expressed at workshops on water reform (eg May, 2006, Suva) and in other contexts, about the future of water supply to isolated and small communities which must rely on local water sources. There is a need for effective and sustainable water supply schemes,

Responsibility for rural water supply may be reconsidered in light must of likely changes to the Water Supply Department of the Public Works Department and the creation of a Fiji Water Authority to provide urban water supply and sanitation throughout Fiji. It is an opportune time to consider whether a policy needs to be developed to better guide the implementation of rural water supply schemes and provide for their long-term management, especially for small and remote communities. The approach needs to take into account not merely the engineering and water supply aspect, but in particular:

- the potential for multiple local sources of water to be used in a logical manner,
- the relationship between water supply and the increased production of wastewater,
- ways to reduce the threat of water contamination which leads to health problems,
- how to ensure that the schemes will be better managed by the community.

All these factors should be considered in the design and installation of water supply schemes.

3.8.2 The Issue

Many small and outlying communities in the Fiji Islands rely on local water sources. On the larger islands there may be local streams and surface water, but in many areas, freshwater is limited to groundwater and rainfall. However, the use of local water sources has not always been optimal for the following reasons:

- The design of local water supplies has focused on one source alone without taking into account other sources;
- The construction of water supply systems has not been accompanied by initial training of local people in maintenance and operation;

- Maintenance back-up is not provided;
- Estimates of water use have been limited to existing levels for domestic use;
- The broader impacts of the use of a water source have not been assessed;
- The clarification of local responsibility and understanding of the water resources has not been developed adequately at the local level.

These are discussed below.

Design for a single source of water

It has been the norm for investigation of water sources to be limited to either local streams or a local aquifer. Some areas do not have permanent surface water and therefore the only permanent freshwater source is groundwater. A less than optimal result is obtained when rainwater harvesting capacity is not also taken into account. In some cases, possibly most cases, the combination of rainwater harvesting with other local supply could make the difference between adequate supply and periodic shortages which may have to be supplied by the temporary and costly transport of water from another location (by land or sea).

Lack of initial training in operation and maintenance

When local water supply schemes are constructed, the construction agency's task may be completed and the scheme is left in local hands. Without training in operation and maintenance, the system will deteriorate with time and will eventually become inoperable. This problem has occurred because a clear responsibility for providing in initial capacity and ongoing back-up has not been assigned.

Lack of support for maintenance

Training may be required in both the operation of schemes and in their maintenance. Maintenance may be important even for such basic schemes as water harvesting roofs, gutters and tanks, because failure of materials may be beyond the capacity of villagers to repair. Such deterioration over time has been a deficiency of locally installed water supply schemes in many parts of the world. Therefore initial training and later support is needed in addition to the design and construction of the scheme itself. Such support may require both expertise and material resources.

Inadequate estimates of water demand

When the demand for water in a local situation is made, it is not adequate to assume that current levels of water use will apply after a piped scheme is installed. Water usage increases dramatically when people have access to water taps, and the production of wastewater similarly increases. This may lead to two problems: firstly the water supply may not be adequate to carry the community through all periods, as assumed, and secondly increased disposal of liquid waste may be a problem for local water sources, in particular small streams and shallow groundwater in unconsolidated sand beds.

Wider impacts of water exploitation

The impacts of exploitation of water sources may be significant. An aquifer, if not investigated, may be drawn down to the point where it causes the deterioration of vegetation, trees and food sources. In worst cases saline water may intrude and ultimately the freshwater source will be lost. The impacts of water withdrawal on small streams may not be so dramatic, but are likely to occur in a local stretch of stream downstream of the location where the water supply is located. The impact will be doubly serious if increased wastewater is disposed to the stream.

The production of wastewater can threaten the quality of shallow groundwater also. Some types of water quality pollution have serious impacts on human health but are not perceived by the local people who do not realise that their own actions are causing the problem.

Lack of clear management responsibility

From the foregoing it is obvious that construction of a water supply scheme must be accompanied by a capacity to operate and maintain it, but also it must be somebody's task to ensure that it is maintained. Not only that, but it must also be somebody's responsibility to ensure that;

- where relevant, the water sources are not damaged by over-exploitation;
- wastewater and solid waste disposal are not polluting the water sources;
- the physical infrastructure can be maintained, that there is somebody available and capable of maintaining it and that the person in question is assigned responsibility;
- operation of the scheme is understood and that the relevant people have an understanding of its operation and recognise their responsibility in this respect.

3.8.3 Summary

This discussion shows that there are a number of requirements for ensuring that local water supplies are appropriately designed and constructed, that they can then be locally operated and maintained and that they are operated in such a way that they do not cause harm to local water sources or that the sources do not become polluted.

3.8.4 Policy objectives;

The objectives of the policy are to ensure that:

- all sources of water, including rainwater, are investigated and jointly developed and managed to provide the optimum long-term supply for the local community
- the impacts of increased water use and wastewater disposal are properly estimated and measures taken to manage them;
- water supply schemes, once installed will be properly operated and maintained and that a plan to provide support is developed;
- local communities regard themselves as responsible for the operation and maintenance of their water supply schemes and have clearly assigned responsibility to the relevant people;
- water sources are sustainably used and that their quality is maintained and natural benefits protected.

3.8.5 Policy benefits

The benefits, if the policy is successful, will be:

- reduction in reliance by communities on external emergency water supply in conditions of water scarcity (drought) with potential reduction in water transport costs to the government;
- a greater sense of accountability within local communities for looking after their water supply schemes;
- the long-term sustainability of water supply schemes;
- the reduction of health threats from the contamination of water sources and supply;
- communities which are better educated about water, sanitation and health.

In order for the policy to achieve the best outcome, all of its elements must be applied consistently.

3.8.6 Policy principles:

1. Local water supply schemes should be designed taking into account all water sources, including the potential for rainwater harvesting, and should optimise the use of all sources of water;
2. Water supply schemes must not be designed and implemented without regard to their effect on the production and need to dispose of wastewater and sewage;
3. Local water supply schemes should not adversely affect local water sources by depleting them or causing deterioration of the quality of the water;
4. Communities which own, manage, operate or maintain water supply schemes should take responsibility for the schemes, and to maintain them to be sustainable in the long term;
5. Communities which use water from local water supplies should consider the water as a resource which is limited and not to be wasted and should use the water wisely; regardless of any apparent abundance of water in their area;
6. There should be measures for water supply, wastewater disposal and the protection of water sources from pollution which are complementary and these should be identified before a new water supply is developed.
7. Improved water supply and sanitation should reduce and as far as is possible eliminate the risk to health from drinking water and the use of water in other ways.
8. The provision of water supply schemes by the government is by mutual agreement with the local community receiving the supply and the obligations and benefits on both sides should be identified and accepted;
9. The contribution of government financial resources towards improving local water supplies will depend on the local community's record in managing any existing water supply scheme.

3.8.7 Policy mechanisms

Water supply management plan (WSMP)

A water supply management plan (WSMP) must be completed and approved before funding and installation of a water supply scheme may proceed. Approval of a WSMP requires both the government and the community to formally agree to its terms.

The WSMP should include the following:

- **Review of water sources:** All water sources are to be considered. The three main sources are rainwater, surface water and groundwater. The plan should indicate why each of these is appropriate or inappropriate in every case;
- **Estimate of future water demand:** The demand estimate should take into account the likely increase in water use that will result from installing a piped supply or more convenient supply and the possible installation of flushing toilets, use of appliances;
- **Wastewater and sanitation measures:** The plans must comment on whether sewage or waste water is likely to increase and, if so, the plan must develop the appropriate measures and facilities for disposal without contaminating local water sources. This is a requirement of the water supply plan;
- **The operational and maintenance requirements:** the operation and maintenance needs of the scheme must be included in the plan or in technical guidelines attached to the plan and these should guide the local community as to how to keep the scheme in working order in the long term;
- **Rules for water extraction:** the assessment of local water sources must identify the limits, if any to the full operation of the scheme and whether operation should be
- **Health guidelines:** if water sources are now or likely to be in danger of contamination from the disposal of solid or liquid waste, the plan must indicate what measures need to be taken to reduce that risk
- **Training and education measures:** the plan must identify and provide for, including the necessary funding, for (i) operation and maintenance skills, and (ii) community awareness and practices to main water resources in good quality and quantity;
- **Management arrangements:** those who will be responsible for oversight of the water supply scheme must be identified and their responsibilities confirmed;
- **Agreement between the parties:** the plan must include the formal agreement, by signing, of the government as the funding and resource management party, and the community as the party which will benefit and manage the supply locally. The parties must agree to the terms of the plan.

Factors to be taken into account in developing the Water Supply Management Plan

- The objective of the WSMP must be to optimise water supply from all available sources. Where more than one source is to be used, the plan should indicate how joint use of sources (eg rainwater and groundwater) should be carried out.

- In evaluating various sources, the following should be considered:
 - The capacity of the water source to supply current and projected demand;
 - The cost of developing the source (i) capital cost of construction, (ii) maintenance and operation costs, (iii) the cost/risk of scheme failure
 - The convenience of operation and maintenance of the relevant supply
 - The impact of the use on the source
- in estimating water demand, a likely increase in water use should be assumed and if necessary surveys should be used to identify how much more water people are likely to use if water is more conveniently supplied.

Water availability and demand

When assessing water availability small local sources of water (such as shallow groundwater) must be investigated to determine whether:

- Whether limits should be imposed on the water supply scheme to take water in the interests of protecting the supply,
- Whether there is a potential threat to the quantity or quality of the source if it is overexploited.

If a potential threat is identified, the water management agency must specify the required limits to water extraction or diversion and ensure that management arrangements are in place to enforce the limits. The limits developed by the water management agency are to be stated as a set of rules for pumping groundwater or diverting flow from a surface water body. When specified, the rules must be followed by those responsible for operating the water supply.

Wastewater and pollution of water sources

It is a key principle that the introduction of a new water supply should lead to the pollution of water sources.

The WSMP must identify whether the increased production of wastewater has the potential to pollute a local water source and if so

- A wastewater management plan must be developed which:
 - Identifies whether sanitation arrangements require the installation of facilities to dispose of wastewater
 - Contains the practices that should be followed by members of the community to prevent the pollution of water resources
- Where sanitation and wastewater disposal facilities are required, these should be designed and included in the WSMP, which may not be completed otherwise

Sanitation schemes must follow the principles and objectives in the Environment Management Act and must be designed to eliminate or reduce the possibility of the pollution of water sources.

Accountability

A water supply scheme will not be approved until the management arrangements have been decided and agreed to, formally in writing, between the government and community.

Management arrangements include:

- The identity of persons responsible for oversight of the scheme
- The arrangements for operating and maintaining the scheme;
- Compliance with any rules for limiting the extraction of water, to protect water sources,
- The collection and recording of information about water sources and water use, as required by the water management agency;
- Methods and procedures for limiting water pollution.

The WSMP must be signed by a person or persons who can guarantee that the obligations of the community will be carried out as stated in the WSMP

Successful negotiation and signing of the WSMP will ensure funding of all aspects included in the WSMP.

Operation and maintenance of supply and sanitation schemes

The WSMP will identify the operational and maintenance requirements for the water supply and any sanitation scheme installed under the WSMP.

The community must keep appropriate records of action taken in operating and maintaining the scheme.

Should the community make a request, after the scheme has been installed, for rehabilitation of the scheme or external financial assistance, the government will evaluate the actions of the community in operating and maintaining the scheme in the meantime. Financial support will depend on the extent to which the community has followed its operation and maintenance obligations under the WSMP and the technical guidelines.

Related assistance

Where communities require assistance, the WSMP should include financial provision for such assistance in the areas of:

- Understanding of water resources management and the features of local water sources;
- Technical training in appropriate operation, maintenance and repair;
- Practices which will lead to health risk from water contamination and measures to detect and avoid such risks;
- Procedures and practices to minimise water pollution;
- Any other area of information or training relevant to the long-term sustainability of water supply, water resources and sanitation.

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European Union and SOPAC

**Programme for Water Governance
Fiji Water Resources Management
at National Level**

Final Report:
Chapter 4: Water Resources Legislation

Water Policy Services Pty Ltd,
Sydney

July 2006

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4. Water Resources Legislation

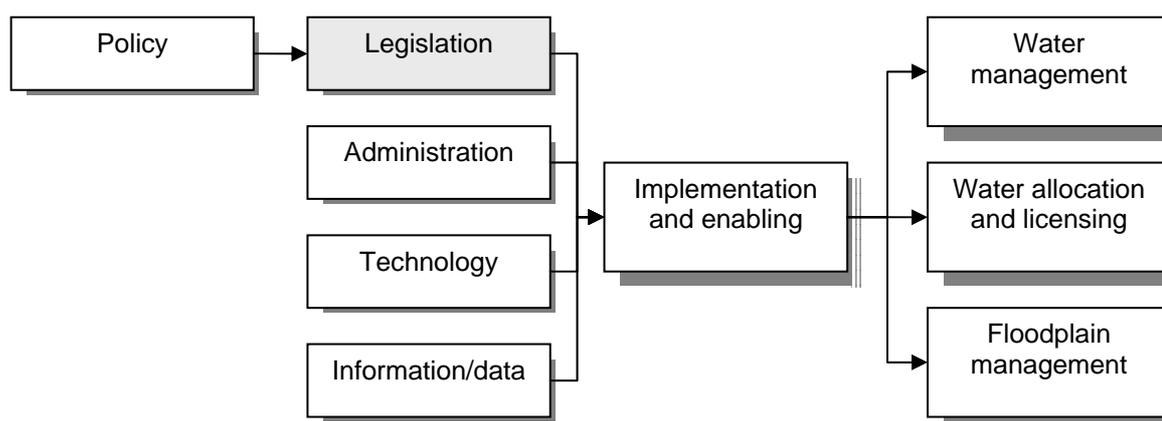
4.1 The role of legislation in water resources management

Specific laws for the management of water resources exist in a minority of countries and have been developed mainly in the past 30-40 years in those countries which have instituted them. The water sector, however, has legislation going back at least a century in most countries, or much longer in some countries. Water sector legislation includes laws to enable such activities as urban water supply, rural and domestic water supply, sewerage and sanitation and irrigation.

A general development in modern times has been the introduction of legislation for management of the natural environment. Fiji only very recently enacted the Environment Management Act, 2005 (EMA), which covers water resources from an environmental perspective, as one element of the natural environment. However, there are other matters that environmental law may or may not cover. In particular, the allocation of water for all uses is a matter that may be included in an environment statute or covered separately in a water resources law. The EMA does not provide for water allocation or specify the right to water. Therefore a case exists for the development of such law.

Legislation is the formal building block that enables governments to regulate and control water resources for IWRM purposes. Legislation is ineffective without a number of other prerequisites – policy, appropriate institutions, technical and management capacity and to a significant extent, water resources data and awareness. At the same time, IWRM cannot be implemented without adequate legislation. Therefore legislation must go hand in hand with other reforms, as promoted in other chapters of this report.

Figure 1: Role of legislation in IWRM



Water legislation is necessary for resolving conflict between water users and for ensuring that the aquatic environment is protected. Fiji has a law, the *Rivers and Streams Act*, which was intended to deal with water rights and conflicts in the colonial era. That statute is not adequate as a water management statute and has not been used in recent years for the purpose of allocating water.

This Chapter discusses the nature of the legislation required to implement those aspects of water management that are not adequately covered by existing laws.

4.2 Activities under the Pilot

4.2.1 Summary of activities

The international consultant undertook and coordinated various a number of activities related to legislation, because of the importance that water law reform plays in achieving water governance objectives for Fiji. During the pilot, the following was undertaken in regard to water legislation:

- An analysis and summary of existing water law and water-related law was made, based on earlier work undertaken in Fiji;
- Advice was provided to MRD in regard to proposals made in the Mineral Resources Bill for provisions to control groundwater extraction and control activities which cause groundwater contamination;
- Legislation was discussed as one of the key building blocks at the Water Strategy Workshop in December 2005, and recommendations on legislation were made;
- A one-day workshop on Water Legislation was held in July 2006, at which an outline of possible legislation was discussed. The workshop generally endorsed the ideas included in the outline, subject to further consideration and discussion;
- Based on the outcomes of the two workshops, a policy draft was prepared, which may be used as the basis for developing a water resources law for Fiji. The policy draft is attached as the Appendix of this Chapter.

4.2.2 Water Resources Strategy Workshop, December 2005

Legislation issues were introduced and discussed at the water resources strategy workshop of December 2005. An outcome of the workshop was that the need for specific legislation on water resources was endorsed.

The workshop agreed that a new water law is needed, which will provide a unified management framework for the control, allocation and some aspects of protection of the naturally-occurring water resources of the Fiji Islands. This is a separate responsibility from water supply, sanitation and other water uses. The workshop did not consider that amendment of existing laws alone would be sufficient to achieve such a management regime, although it was agreed that some immediate changes are warranted, but these should be interim measures only.

Specifically, the workshop agreed that:

- current legal changes (in the Minerals Act) should be considered as interim only,
- a comprehensive water law should be introduced,
- the new water law should deal with water rights, the allocation of water for all uses and necessary measures to protect the quality of water (to the extent not already covered in the Environment Management Act and other legislation),
- the reform of water utilities (water supply and sanitation) should be closely linked with legislation dealing with water allocation and related regulatory aspects of providing essential water services in relevant areas.

4.2.3 Water Legislation Workshop

A one-day workshop on water legislation was held in Suva in July 2006. At the workshop a number of issues papers were presented, along with an outline proposal for water legislation. The proposal was based on:

- analysis of current legislation in Fiji and the water management issues;
- the recommendations of the water strategy workshop and the issues raised in that workshop;
- other discussions with ministries, departments and other organisations.

Issues papers were provided to workshop participants on the following topics:

1. Background to water resources legislation in Fiji
2. Surface water and groundwater allocation
3. The legal status of water in nature and the rights of native land owners
4. Statutory planning and legal rules for water resources
5. Protection of high value water sources
6. Small island water supplies
7. Protection of water courses and water bodies
8. Water fees and charges.

Also provided was a draft outline for water legislation, which covered all the matters considered by the consultant to be relevant to a water resources statute. The workshop considered the outline in a number of sessions.

The conclusions of the workshop were that legislation, in the general form outlined, was generally agreed to, but subject to closer consideration of the various proposals in the outline. It was recognised that the legal rights of native land owners relating to water was an outstanding issue and would require political consultation. This issue is discussed in Chapter 3 on water policy. It is critical that the water rights issue be debated and resolved before legislation is introduced.

4.2.4 Water resources legislation policy draft

Based on the consensus at the workshop, the consultant developed a legal policy draft which explains the recommended legal provisions for a water resources law and which may be used as the basis for developing legislation.

The legal draft includes provisions for the following institutional mechanisms:

- A national water council supported by a secretariat;
- An agency with administrative responsibility for water resources (both surface water and groundwater);
- A water resources tribunal.

The following steps are required for a water resources law to be adopted:

- Review by the National Water Committee;
- Referral to Cabinet for in-principle approval;
- Drafting by the Solicitor-General
- Approval of the legislation draft by Cabinet and referral to the parliamentary process.

It will be important to conduct consultations on key elements of such a water law, in particular the rights of native land owners pertaining to freshwater.

4.3 Water Legislation in Fiji

4.3.1 Legislation in general

In 2005, when the pilot commenced, Fiji had some legislation dealing with surface water resources and no legal reference in legislation to groundwater. Surface water was covered in the *Rivers and Streams Act* [cap 136], a colonial era law, based on a previous ordinance first introduced in 1880 and not significantly amended since 1926. Water supply was separately covered in the Water Supply Act, [cap 144] which provides for urban water supply schemes to be constructed and operated, along with necessary facilities, including protection of catchment areas for water sources.

Two initiatives had been made by the government at that time. The first was a Cabinet decision to include consideration of water resources legislation. The second was the drafting of amendments to the Minerals Act to include groundwater extraction controls and measures to protect land-based pollution of groundwater.

Major gaps in water legislation are the absence of:

- policy direction in surface water legislation, or concepts of IWRM and sustainable exploitation of the resource;
- a modern mechanism for the allocation of surface water, beyond the power to approve water uses and some very general considerations;
- policy guidance on activities such as excavation that affects river channels and other water bodies;
- enforcement powers to protect protected catchments for water supplies;
- any reference to groundwater.

There had been earlier reviews of legislation, the first notable one in 1976 and later in 1987. Legislation drafts were put forward at these times but did not proceed.

4.3.2 Rivers and Streams Act

The *Rivers and Streams Act* was forward-looking in its time, but that time was long ago. Fiji, after cession to the rule of Queen Victoria of England, was subject to a combination of legal doctrines. The British common law prevailed, along with ordinances (that became Acts after independence) introduced by the colonial administration. Because the common law riparian doctrine was seen as an insufficient basis for the allocation and use of surface water resources, the terms of the *Rivers and Streams Act* were introduced. The date of the first ordinance, 1880, is roughly the time that similar legal developments were taking place in Australia where the common law riparian doctrine was failing dramatically to cope with conditions there.

Under the riparian doctrine, landholders have the right to any water that remains on their land, but also have the right to take water from streams and rivers which pass through or alongside their land. IN Britain, the home of the common law, water could be taken, *to a reasonable extent*. The test of reasonableness implies that downstream water users need protection from an action that would unreasonably divert water upstream and away from those downstream who rely on it. The application of this doctrine had been progressively defined through cases brought for judicial determination in England

as a result of conflicts over water, in particular the definition of what was *reasonable* – the nature of the water taker’s downstream obligations – being the key legal question.

In Fiji it was seen as necessary to clarify the law and to place beyond doubt the right of the administration to allocate water for public uses. This was also required because the administration, on the one hand, exercised the authority of the British legal system, while at the same time aiming to allow native practices, traditions and laws to be followed on the local scale without undue interference. The *Rivers and Streams Act* attempted to do this as follows:

- it declared that rivers in Fiji *shall . . . belong to the Crown and be perpetually open to the public for the enjoyment of all rights incident to rivers* (s2);
- it also declared that the upper watercourses, defined as streams (s6), *with the bed thereof belong to the Crown* (s5) and their beds and banks are similarly open to the public;
- it allows the Surveyor-General to grant to inhabitants of towns, villages and residences *special rights to lead off, for purposes of irrigation, industry, agriculture or domestic use or other uses beneficial to their property, such portion of water as may be agreed on* (s7), which may be granted for up to 25 years, unless with the approval of the Minister for a longer period;
- it also allows an authorised officer to grant permits for up to one year for similar water use, in times of drought.

The provisions allowing public access to rivers had to do chiefly with permitting the public onto the land alongside rivers rather than the control of the water itself. However, it follows that if the beds and banks of a river have been made publicly accessible by the administration, then the water in the rivers is also under its control (unless legislation provides to the contrary). The Act also provides an approving power for the [Surveyor-General], currently exercised by the Director of Lands, to

The *Rivers and Streams Act* introduced two considerations or principles for the granting of water uses, namely:

- that downstream uses must be taken into account: *due regard shall be paid to the wants of other proprietors and of towns, villages or residences on the banks of such river or stream lower down than the property for which the water-right is prayed for* (s9); and
- that public water uses have priority over private uses (s9).

The major focus of the *Rivers and Streams Act* is public access to rivers and the land under and around them. However, it provides an important legal precedent, critical to the future management of water resources in Fiji, for defining the extent of the rights to the water resources, of the government versus those of native land owners.

4.3.3 Surface water sharing and allocation

Despite its capacity to do so, the *Rivers and Streams Act* has not been used as the means to allocate water from rivers to all and sundry who need it. The Surveyor-General has not, over the years, exercised a significant role in determining how water from rivers should be shared. It is likely that when public water supply schemes were approved by the government, to be constructed by the Public Works Department, it was not seen as necessary to obtain a water right from the Surveyor-General, in addition to the approval of Cabinet. Therefore the provisions on water sharing have been largely dormant.

As a result, there are various public and private water users whose water is taken as a result to the approval to construct the scheme (for public organisations) or via a development approval (for private water uses). These may not only be vulnerable to claims by native land owners that the water is theirs, but would lack protection from a decision, either by the government (Cabinet) to develop a public water use upstream of them or by a development approval to allow a private water use, also upstream.

For these reasons, legislation is required, either by amending the Rivers and Streams Act or a new water resources statute which includes a water allocation mechanism.

4.3.4 Water Supply Act, 1955

The Water Supply Act, 1955, [cap 144] is to be repealed and replaced by new legislation for the proposed independent water supply and sanitation entity that will supersede the current Water Supply Department of PWD. The Water Supply Act provides for the construction and operation of schemes for urban water supply and sanitation, of which there are thirty two in Fiji.

The Water Supply Act is expected to be replaced with legislation establishing a Fiji Water Authority, although that legislation is not yet at the point of being presented by the government to the parliamentary process.

4.3.5 Environment Management Act, 2005

In 2005, the Environment Management Act came into force, introducing modern concepts of environmental management, sustainable development and biodiversity preservation. Its provisions are relevant to water resources in several ways, in particular:

- The requirement that principles of sustainable development apply to activities;
- A system of wastewater permits for the control of polluting discharges into rivers and other waterbodies;
- State of the environment reporting which includes a survey of water resources;
- Review of environmental impact assessments for development proposals;
- Investigation of environmental issues and implementation of environmental programmes, including public awareness.

Environment management can encompass the management of water resources. The EMA

4.3.6 Irrigation Act, 1873

The Irrigation Act enables the construction and operation of irrigation schemes by the government. It establishes irrigation areas within which works and irrigation may be undertaken, and sets out the conditions under which individuals may use water for irrigation and their obligations. The Act also controls the unauthorised construction of diversion works and drainage works, enabling the government to control such works.

4.3.7 Mineral Resources Act

The Minerals Act includes some provision relevant to water allocation. The authority approving mining leases has the power to include the diversion of water for mining purposes and to impose conditions to prevent the pollution of water sources.

The Mineral Resources Act is in the process of being updated and included in the amendments are provisions which, if enacted, would achieve the following:

- The minister may declare a groundwater management area within which all groundwater extraction would require the approval of the minister;
- The minister may declare a groundwater protection area within which activities capable of polluting groundwater may be restricted or proscribed.

The intention of the proposed provision is to enable the government to control the extraction of groundwater in areas of potential conflict and to prevent groundwater from being contaminated by industry, settlement, waste disposal and other means. These provisions, if adopted would considerably widen the powers of the government to exert control over groundwater extraction, which is not subject to legislative control at present.

4.4 Gaps and overlaps gaps in legislation

4.4.1 Responsibility for managing water resources

The taking of water from rivers and streams is covered by provisions of the Rivers and Stream Act, but that statute does not establish a responsibility for managing surface water resources as such. There is no reference in current legislation to groundwater. Legislation does not set out objectives for water management or water allocation, such as sustainable exploitation or social and economic benefit to society. Such objectives would be important when deciding whether to allow water to be taken from a water body, for instance.

There is not formal responsibility in Fiji, for the management of water resources. Various aspects of management are undertaken by a number of portfolios, but the question of water management does not arise, because no water management exists which must be administered.

4.4.2 Control of how, when and where water is taken from water bodies

The Rivers and Streams Act contains the only current provisions allowing the government to control the taking of water from water bodies. However, the legislation does not provide any right of persons affected by a water allocation decision to object to that decision and for the objection to be heard. There are no procedures for the granting of approval to take water, nor is there any reference to priority or the manner of reconciling conflicting water uses when water is scarce.

There is nothing in the legislation to stop the Director of Lands from introducing conditions on the approval of water abstraction, such as the requirement to restrict usage in certain conditions, but no such conditions have been placed on approvals. At a time when a conflict may arise between competing users of surface water, the Director would, in theory, be required to resolve the conflicts by deciding who could have water and how much. The legislation gives no guide to how this may be decided.

There is no legislation covering the control of groundwater extraction, though draft provisions have been prepared for the Mineral Resources Act. However, the draft provisions do not indicate the objectives or guidelines by which groundwater extraction may be decided, nor are there procedures for making such decisions.

The right of existing water users to be protected from decisions which affect them is important in any case where a perception or the reality of water reduction is occurring. Water users who make investments based on a decision to grant them access to water from a water body are entitled to legal protection against others being granted a similar right which affects the earlier water uses and ideally, a legal body independent of the administration would adjudicate such cases.

4.4.3 Flood management

A number of organisations have responsibilities related to flood management, but there is no legislation dealing with flood management as such. Flooding is a serious issue for a number of the coastal towns on the larger islands, as floodplain and estuarine stretches of rivers are experiencing high flows, while changes in lowland development are causing greater threat to life and property. The main type of flooding is caused by rivers rising to discharge to floodplain areas, followed by local urban flooding where drainage liens have been built over and infrastructure is not adequate.

Components of flood management are shown in [Table 1](#).

Table 1: Components of flood management

Flood management component	Responsible organisations
Pre-flood and during flood events	
Climate and hydrology data	FMS, Hydrology, LWRM
Flood warning	Fiji Meteorology Department, DISMAC (LWRM at downstream locations)
Flood operation (where operable works exist)	LWRM (proposed in in Nadi catchment)
Flood response: Evacuation, property protection, emergency shelter, food	DISMAC
Riverine clearing and flood diversion	LWRM
Immediate post flood events	
Post flood response (repair, restoration, re-housing)	DISMAC
Planning and preparation between floods	
Flood mapping	LWRM
Floodplain planning (technical)	LWRM (limited)
Development and application of structural flood design criteria	N/A
Land and development zoning	Town and Country Planning (EIA)

Flood management component	Responsible organisations
Infrastructure design and construction	PWD, LTA
Approval of structures (including infrastructure)	Town and Country Planning (EIA)
Design and construction (possible operation) of flood mitigation and control works	LWRM
Riverine works (clearing, dredging)	LWRM

Many of the activities involved in flood management can be carried out under the mandates of organisations which have related responsibilities. Data collection and flood warning are undertaken by FMS, PWD Hydrology and DISMAC without the need for legislation.

Legislation is required, however, to ensure that:

- Roads, bridges and other public works that cross or run adjacent to rivers do not divert or impound flood waters in ways that worsen flooding;
- Development zoning and approvals do not cause flood impacts to become worse by such means as
- Flood mapping and planning can be applied to flood prone areas to limit prevent development from blocking natural drainage lines or diverting flood waters in to locations undesirably;

4.5 Nature of proposed water management legislation

The proposed legislation will state the objectives and principles for managing the water resources of Fiji, as presently included in the draft interim national water policy. Policy guidance in legislation is useful for assisting the administration in decision making.

It is recommended that the legislation confirm and expand somewhat on the right to water. The Rivers and Streams Act assumes that the [Crown] has the right to allocate water for public uses and that right, it is recommended, needs to be clearly stated in legislation, barring a future legal challenge successfully based on the Constitution or Deed of Cession. The legislation would need to make clear the extent of the rights of owners of native land to any water resources in nature.

The legislation should establish a water allocation mechanism which specifies, in the form of a legal document, the water to which water users are legally entitled. The proposed method is by the issue of water licences. In order to ensure equity and that all relevant factors are taken into account, there must be procedures for objecting and resolving claims to water. The legislation would establish a general procedure for hearing matters related to applications for a water licence, as well as a recommended tribunal to make final determinations where the decision of the administration is disputed.

The legislation should provide for rules or guidelines on the priority to be given to various types of water use and other policies to guide water allocation decisions from time to time. The water licensing scheme would enable an ongoing management regime to be established, where water taking is monitored and controlled if necessary, in response to the flow of water in a river or other water source.

Similarly, water management plans would be provided for, similar to the mining legislation amendment proposals.

The water legislation might include controlled activities which include those activities that would physically affect a water body, such as excavation or removal of material.

4.6 Policy draft proposal

Based on the legislation workshop outcomes in 2006 and other discussions and analysis, a policy draft had been prepared which may be used for consideration in the development of a water law for the Fiji Islands. The draft is included in the Appendix.

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**Programme for Water Governance
Fiji - Water Resources
Management at National Level**

Final Report:
Chapter 5: Institutional Reform

Water Policy Services Pty Ltd,
Sydney

July 2006

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Chapter 5. Institutional Reform

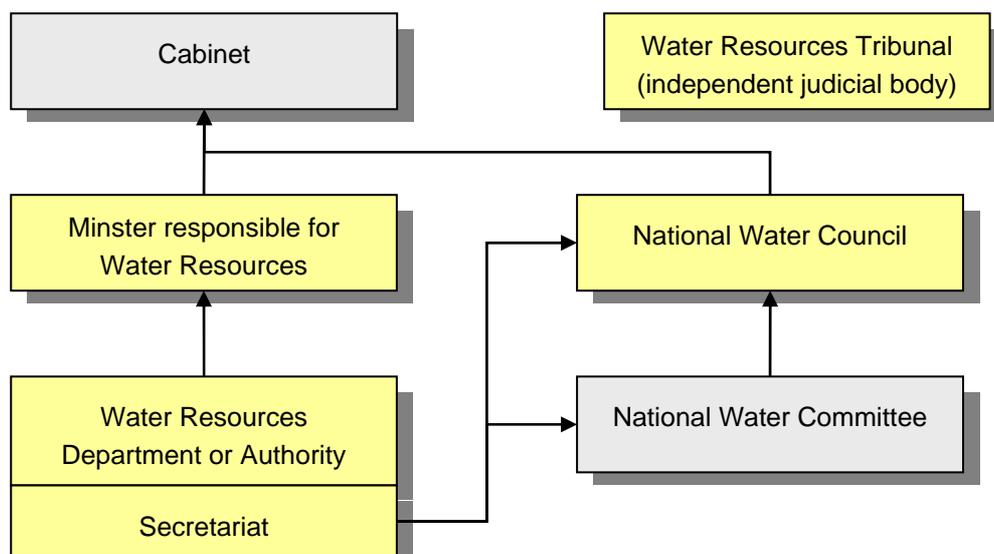
5.1 Summary of recommendations

This chapter deals with institutional and organisational issues for water management in Fiji. It makes the following recommendations:

- That responsibility for water resources management be allocated to a ministerial portfolio;
- That a National Water Council be created, to advise the government on water resources issues and include representatives of key ministries as well as major non-government stakeholders, to be headed by an independent person;
- That the National Water Committee act as the technical committee to the National Water Council and that a secretariat for the Council be established;
- That a department or equivalent administrative unit be established to undertake the functions provided in the water management legislation;
- That a Water Resources Tribunal be established, to review and determine water allocation decisions.

These are significant recommendations which require further development. They are to be considered by the current National Water Committee, which in turn will make its recommendations to the minister charged with water resources issues, to the extent that such responsibility has been assigned in Fiji. The proposals have been supported in a general sense by the members of the National Water Committee in discussions and meetings, but a decision to create any of the proposed organisations is a major step. One matter for consideration will be how the current 'zero growth' policy of the Government for the administration would affect such proposals. The proposals are as shown in [Figure 1](#).

Figure 1: Proposed institutions for water management in Fiji



The elements in [Figure 1](#) which currently exist are the Cabinet (no minister has formal responsibility for water resources) and the National Water Committee. The Mineral Resources Department (MRD) is taking responsibility for relevant water management initiatives, namely the national water policy and legislation, but the Department is not resourced for a water resources management role, not has it the formal mandate.

Previously, the Land and Water Resources Management Division of the Ministry of Agriculture was assigned the *'overall management of Fiji's land and water resources . . . in an environmentally sustainable manner'* although it does not have the legislation to undertake that function. Its activities in surface water are more extensive in scope than those of any other agency. Land management is a focus of the Ministry which has the catchment management function.

5.2 Current organisation and responsibilities related to water

5.2.1 Water services, management and regulation

Responsibility for water services includes urban water supply and sanitation, rural water supply and sanitation, irrigation and the related energy supply, which is a major water user. The Public Works Department (PWD) has until now been responsible for the 32 urban water supply and sanitation schemes in Fiji, but these will be separated and an independent water supply organisation formed. This is an important development with implications for water resources management. Rural water supply schemes are locally managed, but responsibility for developing them has been with PWD.

Irrigation schemes are constructed, operated and administered by the Ministry of Agriculture which has a very broad range of responsibilities. Power is provided by the Fiji Energy Authority (FEA) an integrated power generator, distributor and retailer. As an authority it is self-funding and in theory independent from direct government control.

5.2.2 Water Supply Department – urban water supply and sanitation

The Water Supply Department (WSD) of PWD is responsible for constructing, maintaining and operating the urban water supply and sanitation schemes within urban areas of Fiji. It is to be separated from PWD and made into a water supply utility. Full privatisation has been ruled out, but it will have some form of commercial structure, with the intention of making it a responsive service organisation. The separation of WSD raises some issues for water management, in particular (i) the need for a legal basis for defining the water sources to which the water supplier is entitled and (ii) the legal regime for protected water catchment control.

WSD also installs small water supply schemes in rural areas, but management of the schemes is local.

5.2.3 Rural water supply schemes

The responsibility for design and construction of rural water supply schemes may be transferred from PWD to the Ministry of Provincial Development. Both PWD and the Mineral Resources Department (MRD) have provided technical expertise for construction of rural water supply schemes, in the former case the installation of surface water schemes and in the latter case drilling bores. In neither case has the technical department been formally responsible for ensuring that the exploitation of water by local schemes is sustainable, or that all sources of water are adequately investigated to ensure the optimum sustainable, nor do they have a mandate or guidelines that require such an approach to be taken.

It is common to find problems occurring in the operation and management of village water supply schemes which have been installed by the government. In particular these are failure to operate or maintain the schemes so that they under-perform or become unusable. There are also problems of over-exploitation of groundwater sources and pollution of water sources. These problems are discussed in Chapter 3 on policy.

5.2.4 Ministry of Agriculture

Irrigation schemes and the associated headworks such as dams are constructed and operated where necessary by the Land and Water Resources Management Department (LWRM) of the Ministry of Agriculture. The Department also constructs dams for farm water supply and is involved in a catchment-wide exercise in the Nadi River valley to combine flood mitigation, enhanced water supply and downstream river channel clearing in a comprehensive programme. The capital cost of irrigation schemes is not recovered from water users and operation costs [what is the situation].

Other functions undertaken by the Department are:

- Estuarine dredging and river channel clearing
- Technical advice on extraction of materials from river channels to the Director of the Lands Department who approves such extraction;
- Flood projects and technical advice on flooding;
- Drainage scheme design and construction.

5.2.5 Fiji Energy Authority

The Fiji Energy Authority (FEA) has hydro-power dams on the larger islands and more are planned. This makes the FEA, as a dam owner, an important agency for the diversion and control of river flow. Some schemes involve the diversion of water from one valley into another, which is a matter of consequence for both valleys. The issues facing the FEA as an independent service organisation were brought into focus in the case by native land owners for compensation relating to the restriction of logging in the Monasavu catchment, and the substantial compensation payout that resulted. FEA does not have formal water entitlements for its dam or any other facility that takes water.

5.2.6 Management and regulatory responsibilities

Various water management related responsibilities are undertaken in Fiji, but no agency is responsible for water resources management as such. Relevant mandates are:

- Environmental management,
- Catchment (watershed) management and protection,
- Urban and rural planning,
- Water allocation,
- Flood management
- Riverine protection.

5.2.7 Ministry of Environment

The Ministry of Environment has a mandate, through the Environment Management Act, to protect the environment, which includes water resources. Its activities include the regulation of wastewater discharges, through pollution permits, the approval of environmental impact assessments (EIA), reporting on the state of the environment and provision for environmental features of special value. Much of this relates to water and maintaining the quality of water as well as providing for the water needs of the environment. However, the EMA does not provide mechanisms whereby water can be allocated to the environment or water can be retained in rivers so that instream flora and fauna are protected, or to ensure that the coastal zone is not adversely affected. The withdrawal of water from rivers does not appear to be a highly significant problem for Fijian rivers at present. Water quality is emerging as a greater problem. In the future it is likely that development will create greater pressures. Pressure is already more evident on groundwater resources in many places, but the EMA does not contain a mechanism to prevent over-pumping of aquifers.

5.2.8 Department of Town and Country Planning

The Department of Town and Country Planning administers the *Town and Country Planning Act*, which provides for the development of development plans and the approval of major developments. With the introduction of the EMA, new EIA procedures are being applied, which identify water resources impacts and raise the question of how much water should be permitted to be taken. Although a development approval may specify the location and amounts of water to be taken, it does not provide a monitoring and regulatory regime for water abstraction following the completion of the development.

The Department coordinates closely with other agencies that have management or technical roles, such as MOE, MRD and LWRM in the development of plans and the approval of development.

The planning powers in the *Town and Country Planning Act* may be used to identify the locations on floodplains and other flood-prone land for development or to be kept free of development, and may also be used, in conjunction with local government responsibilities to develop drainage plans for flood-related outcomes. However, there is no framework for ensuring that local government acts consistently on drainage with broader flood events, so that urban development may be progressively causing the worsening of flood impacts.

5.2.9 Mineral Resources Department

MRD has a *de facto* groundwater management role, although not a formally recognised responsibility. The Department's primary focus is mineral development and the management of mining activity, but it has a groundwater section which has groundwater information taken from its own investigations (including monitoring of mining activity) and also capacity to investigate groundwater occurrence and behaviour. The Department owns the largest drilling rigs for the construction of bores in Fiji.

MRD has been required to investigate the exploitation of groundwater in cases where industrial and commercial enterprises have come to the attention of the government for reasons of (i) the scale of water extraction, (ii) claims of interference between one groundwater users, and (iii) the need to protect groundwater quality by imposing restrictions on development above the aquifer. MRD therefore exercises a role close to groundwater management.

5.2.10 Ministry of Agriculture

The Ministry of Agriculture has two divisions with functions related to water resources management. The LWRM is responsible for (i) irrigation and drainage works design, construction and operation, and (ii) other engineering-based activities related to surface water resources. These include river channel works, assessment of river channel extraction proposals, estuarine dredging, and dam design and construction. LWRM has the competence for identification of flood-prone areas and has been engaged in associated programmes for catchment and flood management, such as the programme in the Nadi Valley.

LWRM also has a flow (water level) monitoring programme in estuaries which complements the upstream river gauging undertaken by PWD Hydrology.

LWRM has the closest set of functions to a surface water management role, based on its engineering capacity and related skills in planning and modelling.

5.3 Key issue 1: coordination on water resources management

5.3.1 Current situation

The overview of institutional arrangements in Fiji and the responsibilities of the ministries, departments and other agencies reveals that coordination is limited to specific aspects of water resources management, but it needs to be strengthened, as explained below. Coordination occurs in the following areas:

- Technical assessment of development proposals, where the impact of a proposal on water resources is reviewed by the relevant agency, such as MRD for groundwater, LWRM in respect of some surface water aspects and the Ministry of Environment for environmental impacts in general; the scheme is coordinated by the Department of Town and Country Planning which seeks technical advice from others;
- Administrative water issues on an ad hoc basis, through the National Water Committee which has no dedicated resources and acts on a responsive basis only;
- Some coordination occurs in environmental programmes, where departments contribute technical data or analysis;
- Catchment management programmes involve the participation of various technical organisations in steering committees and on-ground implementation arrangements.

At national level, the only coordinating body is the National Water Committee whose membership is limited to government officials, with some invited experts from time to time. The limitations of the Committee as a national coordinating body for water resources are:

- It does not have supporting resources;
- Its members are drawn from government departments, some of which have limited interest in its activities;
- It does not have a public profile;

- It does not have a direct line of communication with higher levels of government, except through the relevant permanent secretary/CEO and minister who does not have a clear water resources management mandate.

5.3.2 Coordination requirements

A national level coordination body needs to be established, not to replace the current National Water Committee, but to perform a more active and public task. There is a precedent in Fiji for the use and effectiveness of a high level coordinating body which is supported by a technical coordinating body. Such an arrangement has been used to implement catchment management programmes in a pilot valley and the two level arrangement was considered both necessary and successful.

The same in-principle requirement is considered to be needed for the national level. A national advisory body could perform the following functions in addition to those that the National Water Committee has been undertaking:

- Provide advice and liaise directly with the Government or Cabinet;
- Become a high profile body which can spread important messages on water resources to
- Represent the key non-government stakeholders in water and express their views
- Act as a negotiating forum to agree on suitable approaches to difficult issues
- Monitor the progress of reform in water resources management

The National Water Committee would become more effective if such a body was formed, because it would receive more specific direction than at present, where it has been directed only by cabinet decisions from time to time (which are normally initiated by proposals put to Cabinet by the administration).

5.4 Key issue 2: water resources management function

Earlier surveys and the current pilot have found that there is a gap in the government's management of natural resources, namely that water resources are not explicitly covered by a ministerial responsibility, nor a department or ministry whose task it is to manage water resources.

What currently exists is:

- The *Rivers and Streams Act*, administered by the Department of Lands in respect of authorization of activities within river beds and also the approval of some surface water diversions;
- The introduction of provisions into the *Mineral Act* that allow groundwater extraction to be controlled in declared areas and areas of land to be zoned to protect groundwater reserves from pollution: the legislation to be administered by the Mineral resources Department;
- The establishment of a National Water Committee, currently headed by the Director of The Mineral Resources Department and comprising the heads or their deputies of government departments and ministries with a role in water resources;

- The assigning of responsibility by Cabinet (of the previous government) to the Mineral Resources Department for the national water policy, which has been developed as an interim document subject to consultation.

Current developments which are relevant to water resources management are:

- The commercialisation of the Public Works Department water supply and sanitation to create a new and separate urban water service organisation, which may be known as the Fiji Water Authority;
- The development by the Ministry of Environment of a regulatory regime for wastewater discharges into all waters, that involves permits to pollute;
- Catchment management policy and programmes being undertaken as pilots in some valleys.

5.5 Key issue 3: flood management

Some aspects of flood management have been the subject of considerable work and reform in recent years, namely flood warning and the required information systems, and flood response. The Disaster Management Committee (DISMAC) was recently reconstituted and strengthened to provide for disaster warnings and response. It coordinates with the Fiji Meteorology Service (FMS) and the Hydrology Division of PWD which provide climate, rainfall and streamflow data. The pilot did not review the adequacy of these arrangements, as they have been the subject of other recent projects. However, it is clear that in regard to the other aspects of flood management, there is a gap in responsibility, namely:

- Identification of flood-prone land
- Control of development on floodplains and flood-prone land,
- Coordination of drainage at macro and local levels, to limit flooding in urban and peri-urban areas
- Development and application of guidelines for buildings and infrastructure in flood-prone areas.

Severe flooding occurred in early 2007 in several coastal floodplains and has been exacerbated by the location and design of developments which include buildings located in the path of floodwaters, and creation of barriers across natural drainage lines or severely restricting natural drainage, thus worsening flood impacts. Therefore, a lead role in flood management needs to be assigned, and the appropriate framework developed.

5.6 Comment on the current situation

5.6.1 Adequacy of current arrangements

It has been recognised for some time that the *Rivers and Streams Act* is no longer an adequate mechanism for the management of Fiji's water resources. That Act is administered by the Lands Department, which has no technical expertise in water resources (eg flow data, hydrology, water resources assessment) and has not played an active role in recent decades. Evidence of this is Cabinet's decision to assign responsibility for the national water policy to MRD, although that decision was initially spurred by the need to resolve groundwater problems. The Lands Department is therefore not, in its current form, suited to taking on the task of water resources management.

Cabinet initiatives – the National Water Committee and the National Water Policy – have been assigned to MRD, but the Department is undertaking them in addition to its normal responsibilities while it has been given no additional resources. MRD, in its current form, is not capable of exerting a water management function as proposed in this investigation. While MRD has expertise in groundwater data, investigation and drilling, its resources extend only to current responsibilities which include:

- Investigation of specific groundwater resources and evaluating their potential for extraction and use;
- Maintaining data on groundwater, although MRD has not been assigned responsibility for developing a nationwide database for general planning and management purposes;
- Drilling of bores;
- Responding to government concerns on issues that arise on groundwater, such as conflict over groundwater access, preventive measures for groundwater protection and development of policy on groundwater use.

The National Water Committee is intended to coordinate advice to the government on water issues. However it does not have specific terms of reference nor a secretariat. As a result it meets infrequently, because the background work required to make it effective cannot be undertaken consistently. Similarly, resources for consultation on the water policy have not been available. In summary, MRD has expertise relevant to groundwater, but not the resources to take on a management role for groundwater. MRD does not have expertise in surface water management.

5.6.2 Commercialisation of urban water supply

The need for an improved water management role is becoming more important because of the proposed privatisation of the urban water supply of Fiji. That process will create an independent water supply utility which will require legal certainty about its right to take water from existing sources and to augment those sources or obtain access to new water sources in the future. Since the urban water supply is an essential service, it is the governments' duty to ensure that it has access to water under reasonable conditions. This in turn requires a legal entitlement to water to be created, which gives the water utility sufficient legal certainty to be able to ensure a reliable supply to its customers in the long term (ie the right to the utility to water must not be subject to challenge by others or subject to infringement by government decisions to allow others to take water upstream of its off-take points. The FEA is in a similar situation although to date it has not experienced difficulty in accessing water. If FEA wishes to open up a new site, this issue will become critical.

Matters requiring attention that result from the commercialisation are:

- The need of the water utility for a guarantee that access to water sources can be permanently safeguarded and legally protected, including the understanding that new water users will not be permitted to take water in such a way that the water utility's access to water is adversely affected;
- The need to ensure that protected water catchments are adequately protected, which may require an agency other than the water authority to exercise some legal control.

Other elements of the regulatory framework for the water supply utility are outside the water management recommendations. They are catered for by existing agencies, namely (i) water service

standards, (ii) drinking water quality, (iii) wastewater discharge controls, (iv) financial management. The water resource management regime would regulate water allocation, meaning the right of access to water.

5.6.3 Legal and administrative gap

There is a legal and administrative gap in the functioning of the government of Fiji in regard to surface water allocation and management, and there is an administrative gap (partly covered legally) in groundwater allocation and management. This gap needs to be filled in respect of:

- Specific allocation of responsibility at ministerial level;
- Specified responsibilities allocated to a department or ministry;
- The legal powers required to carry out those responsibilities;
- The staff and resources required to carry out those responsibilities.

It is necessary therefore to develop new administrative arrangements and to introduce water legislation (see Chapter 3). The nature of the recommended administration arrangements is described in this chapter. Some areas in which it is desirable to assign more formal responsibility are:

- Responsibility for allocation of surface water,
- Responsibility for allocation and control of groundwater,
- Floodplain management, planning and related policy (leading role as flood management by its nature requires considerable coordination),
- Control of beds, banks and foreshores of rivers and other surface water features.

5.7 Importance of water allocation

The core recommendation on water resources management is the creation of a water allocation system for both surface water and groundwater. These should be administered together, as surface water and groundwater frequently interact or are planned and exploited as alternative sources.

Until now, the level of conflict over access to particular water sources has been manageable through *ad hoc* reviews and measures applied to individual cases. Nevertheless, the solutions have been partial only and, for groundwater, legislative changes are proposed to enable the government to provide a lasting solution.

It is already becoming apparent that an *ad hoc* approach will no longer be adequate in the future. Precedents for one situation can spill over with unfortunate side-effects for another case which has different features. Further, the lack of a comprehensive and agreed legal basis for determining who has the right to what will hamper economic development and even the provision of essential services (threats to water access for urban water supply, for instance).

The proposed mechanism is a water entitlement system applied through water licences, which identify the water that may be taken by the holder of the licence. These would be statutory instruments which give the licensee the right to take the specified water, but also impose limits on the taking of water in the interests of sustainable levels of water development and to create an orderly water sharing system.

The government's right to exercise such a role and find a workable balance is critical to Fiji's water management capacity in the future. Native land owners would like to obtain a legally-based right to the water which flows through or past their land and to dispose of it themselves. However, if they are granted rights in such a way that they can decide whether or not water can be used for public purposes or by commercial and industrial developments, they which use water can proceed, the country's economic development could encounter serious difficulty, unless there is a good working mechanism for balancing the interests of land owners and others.

A water allocation scheme is needed to prevent the following from occurring:

- No guarantee that water diversion will be within sustainable limits, with the result that severe river flow problems could result;
- No guarantee to any water user, except those obtaining water from the uppermost land owner in the catchment, that water will continue to flow to their diversion point – because upstream land owners could sell it to other water users – this will affect the willingness of investors to put money into enterprise that requires water and will affect the certainty of water availability to essential services;
- The likelihood of severe and widespread conflict between land owners when the actions of one impact on downstream areas;
- No guarantee that the pollution control strategies of the Ministry of Environment under the EMA will actually lead to acceptable water quality levels in rivers, if river flow cannot be controlled also;
- No capacity to give priority to essential uses such as urban water supply over other uses;
- No capacity to ensure that water is available for the environment (eg base river flow, water for wetlands and so on).

EIA procedures apply to significant developments which take water and thereby may impose some restriction on the amount of water to be taken. However, in order for the government to impose such restrictions, it must have a legal right to control water resources in addition to its existing powers. If a right in the nature of a water property right is given to native land owners, there will be a legal conflict between their right to dispose of their property and the government's obligation to protect the environment, maintain water resources for future generations, promote the economy and provide essential social services.

In regard to groundwater –

- The government will be powerless to stop extraction from one land area from affecting neighbouring areas, for instance depriving domestic water supply wells of water;
- No guarantee can be given that native land owners will not allow groundwater extraction to exhaust or permanently diminish the reserves, rendering them useless in the future;
- No guarantee can be given that groundwater extraction will not lead to the degradation of the quality of the water, such as by saline intrusion.

Some of these problems are occurring already, but at present the government does not have the legal basis for intervening to prevent serious degradation and to adjudicate between competing users.

If the government decides not to maintain its legal right to the water resources of Fiji, there is no point in establishing a new water resources administration, because the government's role will be limited to information, education and programmes to encourage good practices. This could be done from within existing departments.

5.8 Water allocation requirements

To establish a water allocation function in Fiji, the following is required:

- The ability to create legal instrument that provide water users with a water entitlement (a water licence);
- The investigative and consultation capacity to assess the impact of the water use and its effect on benefits enjoyed by others, both water users and communities;
- The investigative capacity to assess the impact of the water use on the water source and the environment;
- An appeal mechanism which allows objectors and the licence holder to challenge the decision of the administration but which also makes a final determination which can no longer be challenged at law – a water tribunal is proposed;
- An inspectorial function which monitors water taken under water licences and takes remedial action where necessary including imposing sanctions on water users;
- A penalty regime for breach of water licence conditions;
- An ongoing river flow and groundwater assessment capacity which enables the water administration to adjust day-to-day conditions and direct water users to continue, reduce or cease their water abstraction.

This last capacity is required in cases of drought where it is desirable to give priority to some uses over others. Naturally it would be the duty of the water administration to ensure the optimum access to water by all, but at the same time decisions may be required to allow some to continue while others have to be restricted.

It is clear that the administrative requirements are significant. However, water allocation can be phased in. Licences for surface water are required only for major developments at this time and although data are not available, these are expected to be limited to (i) the water taken by WSD, FEA, (ii) commercial enterprises such as sugar mills, abattoirs, (iii) tourist resorts and (iv) some major industrial users. Groundwater is taken by most of the above.

The registration (provision of information) of smaller uses should also commence, in order to obtain the data needed to assess the current demand and supply situation and for future water planning.

5.9 Institutional proposals

The institutional proposals resulting from the investigation of water resources management requirements in Fiji are:

- The addition of a water resources portfolio which gives an identified minister responsibility in this area;

- The creation of a National Water Council, a high-level body with representatives of important sectors and stakeholders, which would provide a coordinated view of water resources issues to the government;
- The continuation of the National Water Committee as a technical coordinating committee composed mainly of administrative officials, as now, but with the following modifications:
 - reporting to the National Water Council;
 - more explicit terms of reference;
 - secretariat resources.
- The creation of a department of water resources to administer the water allocation scheme and exercise a water management function: the functions and scope of the department are discussed further below;
- The creation of a water resources tribunal to adjudicate on water allocation objections and make a legally binding determination of water entitlements under the water licensing scheme.

These elements are discussed below.

5.10 Ministerial responsibility

It is desirable that responsibility for water resources be allocated to a Minister and that it be clear where responsibility for water resources lies. At present there is no such responsibility in Cabinet, and therefore the function does not receive attention, except when it arises through either (i) development proposals which require large volumes of water, (ii) disputes arising from existing water users' complaints that they will be affected by new enterprises' taking of water.

Water resources responsibility would extend to the management and control of water resources in nature, including their allocation. Water services and utilities would be under separate portfolios (urban water supply, agriculture [irrigation], energy).

Note that ***if the legal right to water is granted to native land owners, the effectiveness of this portfolio is significantly reduced***, since the government's role in water resources management would diminish and its legal capacity to manage and allocate water would be limited.

5.11 National Water Council

5.11.1 Nature and scope of Council

A National Water Council is proposed as an advisory body which can provide direct input to the Government on water resources issues. The primary role of the Council would involve the management of water resources, including the allocation of water and its protection. However, it should not overlap with or interfere with the water pollution control functions of the Ministry of Environment.

The Council should deal with both surface water issues and groundwater issues. The scope of the Council's advice could include the management of water resources in nature (water bodies) as well as water utility functions. Water utility functions would involve the performance of water and sanitation schemes, urban and rural, and the long-term policy for water supply and sanitation in Fiji. Responsibility for water utilities lies with various agencies that exercise a regulatory role. These are shown in [Table 1](#).

Table 1: Regulatory roles for water utilities

Area of regulation	Responsible agency
Service standards – water supply delivery and sanitation service	
Drinking water quality and standards	Department of Health
Service standards – irrigation	Ministry of Agriculture is both operator and guarantor of standards
Service standards – power generation	
Pricing of services	
Wastewater/discharge pollution control	Ministry of Environment
Water abstraction (all sources)	Not assigned – (proposed) water management agency
Land management	Not assigned

It is recommended that the Council’s advisory mandate include both water resources management and water services, including the monitoring and reporting to the Government on reform in both areas for the time being. In the future, the Council would advise the Government on policy and on the resolution of issue that cannot be addressed by the administration in the normal course of its activity.

5.11.2 Membership and mandate

The Council would need to be headed by a senior and respected person with the ability to bring disparate stakeholders to consensus around the table. The chair of the Council should be an independent person who is not closely associated with any of the water using sectors or any particular interest or lobby group. The role of the chair will be to gather the views of sectoral and interest representatives and promote them to the Government and as far as possible work towards a common view on important issues among the members.

Members of the Council should represent the key ministerial portfolios and also non-government stakeholders, such as resource owners, business and industrial sectors, and the environment. Expert members may be included, with academic expertise in important aspects of water resources.

Membership categories could include:

- Ministries
- Water users including water utilities
- Environmental and social interests, including land owners
- Academic and scientific experts

In order to be workable, the Council should not include too many members. For practical reasons, the Council should have the capacity to create advisory groups of a technical nature to provide it with information and the to investigate matters of concern.

Broad terms of reference for the Council could be:

- to advise the Government on:
 - the progress of the approved water reforms and water strategy;
 - the implementation of water legislation;
 - the establishment of the water resources department and its operation;
 - any matter referred to it by the Cabinet or a Minister, for advice;
 - any water resources matter which the Council considers to be of national importance;
- to monitor the Government's water reform programme and report to the Government;
- to organise for surveys and investigations to be carried out (by the relevant agency) to assist its deliberations and development of advice.

5.11.3 Location of National Water Council

There are two options for the administrative location of the National Water Council and its support unit, namely:

1. attached to a central agency such as the Prime Minister's Office or other central agency;
2. attached to a water resources administrative agency, if such an agency is to be developed

The Council needs to be administered as an independent body which reflects the views of the various competing stakeholders in water resources. Thus it should not be closely aligned with any sectional group of water users, such as water supply, irrigation, industrial development, tourism.

5.11.4 Council Secretariat

The National Water Council requires a secretariat in order to function usefully. It is proposed that the secretariat be located in the water resources department. The creation of a working secretariat is of the utmost importance. It is concluded that, ***if it is not possible to create an adequate secretariat, the establishment of the National Water Council should be delayed, as it will certainly be ineffective.*** The secretariat requires the following capacity and would perform the functions shown in [Table 2](#).

Table 2: Responsibilities of Secretariat to National Water Council

Responsibility	Capacity required
Organise meetings of Council	Liaison and administration
Organise and propose matters for discussion	Liaison and knowledge of water issues
Develop background papers for Council	Technical competence at general level in surface water and groundwater
Coordinate studies and investigations	Liaison and technical knowledge in water resources fields
Coordinate monitoring programmes	Technical information coordination and reporting
Publicising initiatives of the Council and the	Public relations and media

Responsibility	Capacity required
Government	

Table 2 assumes that the National Water Council would be proactive and attempt to influence and educate the people of Fiji in important areas.

5.11.5 Staffing and resources

The secretariat for the National Water Council would require a senior official to head it. The position might initially be held as a part-time responsibility, but over time, if the Council becomes effective, it is expected that the position would need to be a full-time one. However, there may be opportunities for coordination with the water management administration, if the Government decides to go ahead with water legislation and administrative changes, as recommended in this report. The Council secretariat would logically be located with or as part of the water resources administration. At the same time, the secretariat should have its own accommodation, clearly separated from other agencies and should operate as an independent entity.

5.11.6 Operation of the Council

The Council should have the freedom to organise its own affairs, but it would be important that the chairman or chairwoman exercise considerable influence on its agenda and proceedings without pushing for particular outcomes against the wishes of other members. The Council should have the capacity and hopefully the funding to do the following:

- establish sub-committees to advise it on specific issues (permanently or ad hoc);
- engage consultants (directly or through its secretariat), to undertake particular studies and investigations;
- direct the National Water Committee to undertake studies, provide briefings or analysis of issues for the Council's consideration;
- organise for consultation with various stakeholders or have consultation programmes undertaken throughout Fiji on specific issues;
- produce material on water resources for information and education.

The Secretariat of the Council would organise activities as directed by the Council and liaise with its stakeholders and others.

5.12 National Water Committee

5.12.1 Structure and operation

The National Water Committee is headed by the Director of Mineral Resources and comprises members at a similar level from the following agencies:

- Mineral Resources Department (in addition to Director)
- Ministry of Agriculture (Land and Water Resources Management Division)
- Public Works Department (Water Supply Division)

- Ministry of Environment
- Department of Town and Country Planning
- Department of Health
- Department of National Planning
- General Meteorology Department

Other experts and agencies are invited as suitable. Attendance is relatively flexible, so that representation may be included from other government departments or divisions(eg Hydrology Division of PWD).

It is recommended that the National Water Committee continue with similar membership as at present, but that changes be made to its operating arrangements to make it more effective. These are:

- Issue specific terms of reference to the committee
- The Committee currently reports through the Director of MRD to the Minister for Energy and Minerals, but it would report also to the National Water Council;
- The Committee needs to be supported by the secretariat established for the Council. A reason for the relatively spasmodic activity of the committee is that it has no support resources apart from MRD which has to carry it as an additional activity without dedicated resources.

These changes are considered necessary to make the Committee effective. Assuming the department of water resources is established, the director of that department should head the committee.

Proposed terms of reference for the National Water Committee are:

- To provide coordination for the progress of inter-sectoral water resources issues which are not coordinated in other ways;
- To identify and study water management issues and provide advice on further action to the National Water Council and the Government;
- To investigate and provide technical support and information on issues that the Council requires;
- To investigate and make proposals on water management issues which the Committee identifies as important;
- To undertake activities as directed by the Council.

The Committee would require secretariat support for its activities. Support could be provided by the Council Secretariat. The two bodies would therefore act together.

5.13 Water Resources Agency or Department

5.13.1 Prerequisites for setting up department

The establishment of a completely new department is not a light matter. It is considered vital, but should not be contemplated unless:

- The government agrees with the recommendations on the right to water (ie that the primary right to water resources is with the State), and

- The government further agrees to establish a water allocation scheme (as set out in the legislation proposal).

These two recommendations, if adopted, will require a department dedicated to water resources, which may also undertake other functions.

5.13.2 Functions of department

Some functions are undertaken by default, without a formal mandate, or are undertaken in part. An example is the lead role in the planning aspects of flood management, where various agencies undertake activities, but no agency has the mandate and powers to ensure that planning on floodplains, as well as building design codes. Similarly, the protection of river beds and banks and the foreshores of other surface water bodies, with special groundwater area protection, could be a water resources management functions, although other agencies would need to take an important role. The precise range of responsibilities should depend on decisions made by the Government.

Potential functions and activities of a water resources department are shown in Table 3.

Table 3: Functions of water resources department

Function	Activities
Policy and legislation development	Develop policy, legislation and regulations for water resources management
Secretariat National Water Council and National Water Committee	Organise meetings of Council and Committee, provide technical and other input to issues being investigated by the Council and the National Water Committee
Surface water allocation	Receive water licence applications, advertise and investigate, accept submissions and objections, determine water licences and conditions, monitor water usage and take action against breaches of licence conditions, issue orders in time of water scarcity
Surface water allocation planning	Investigate resources of river basin, identify current and potential uses and values, develop plan for consumptive use, environment and social values, follow plan procedures, develop hydrologic models and river basin models.
Groundwater allocation	Receive water licence applications, advertise and investigate, accept submissions and objections, determine water licences and conditions, monitor water usage and take action against breaches of licence conditions, issue orders in time of water scarcity
Groundwater allocation planning	Investigate resources of river basin, identify current and potential uses and values, develop plan for consumptive use, environment and social values, follow plan procedures, develop groundwater models.
Surface water and groundwater information	Develop and maintain national surface water database (hydrology): Develop and maintain national groundwater database (hydrogeology)

Function	Activities
Groundwater drilling regulation	Register drillers, develop drilling standards and monitor drilling outcomes, including bore construction standards
Groundwater drilling	Operate drilling rigs for groundwater exploration, investigation and monitoring
Flood mitigation works	Design and construct flood mitigation structures
Flood management and planning	Flood mapping, flood modelling, flood zone identification, development of flood design criteria for buildings and infrastructure, develop floodplain plans, develop guidelines for urban flooding
River channel and water body protection	Develop technical guidelines for assessing excavation and other activities in the beds and banks of rivers, authorise excavation after investigation and issue permits, monitor activity and impacts and apply sanctions for breach of permit.
Dredging	Develop criteria for river and estuarine dredging, undertake dredging operations
Riverine health	Develop guidelines for the protection of the riparian zone, establish arrangements for the application of the guidelines by local authorities, monitor the condition of riparian areas and develop remedial programmes where necessary
Secretariat services	Organise and support meetings of the National Water Council, organise and support meetings of the National Water Committee, undertake liaison studies and investigations as required by these bodies.
Water fees	Submit water licence fee proposals to regulator, collect fees
Water awareness	Develop information, media and training programmes for awareness of

Such a department would be undertaking activities as follows:

- Policy and education on water resources
- Secretariat for the National Water Council and the Water Committee
- Surface water management – water allocation system with the issue of water licences
- Groundwater management – as for surface water, issues of water licences
- Bore drilling – issue of permits to undertake bore drilling
- Flood management – planning and development of guidelines
- Riverine and water body controls – issue of permits for excavation and dredging in rivers
- Water resources data – establishment of national water resources data bases.
- Inspectorial – monitoring and enforcement for the regulatory functions (water licences, excavation permits)

The requirements for setting up such a department are discussed in more detail below.

5.13.3 Establishment issues

The creation of a new department is a serious undertaking. Note that this report does not provide a full institutional analysis, but a general proposal only, as the scale of the pilot did not allow the full design of a water resources department.

The recommended department could have regulatory functions in respect of (i) water allocation and (ii) river channel and other water body protection and (iii) bore drilling. In all three areas, licences or permits would be issued. At present there is no regulation of water abstraction (allocation) but the Surveyor-General, according to the *Rivers and Streams Act*, may authorise the taking of water from rivers for public water supply and other purposes, though, as noted earlier, no approvals of this nature are believed to have been made for several decades.

The Department of Lands has been responsible for the control of excavation in rivers, based on in technical assessment by LWRM to identify the impact of excavation on the river channel and river flow. It is recommended that at a minimum the responsibility for technical assessment be transferred to a water resources department.

Functions already being undertaken are:

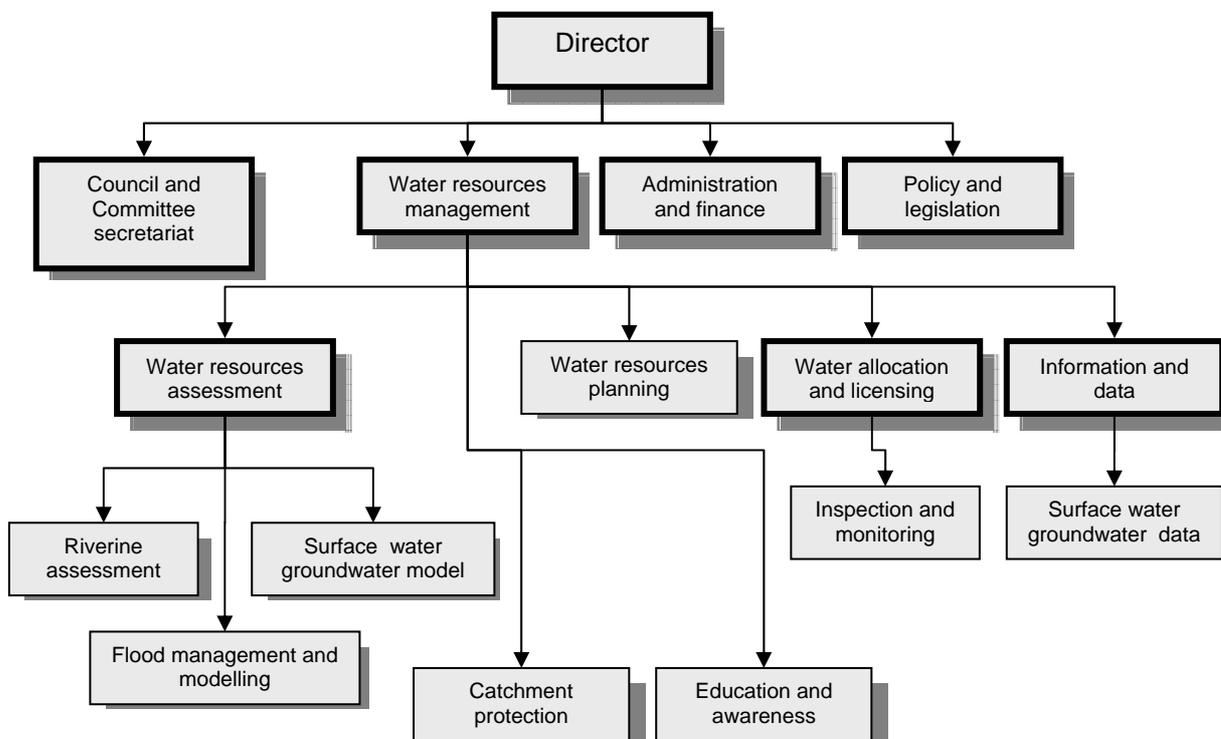
- Groundwater information and management – MRD: some basic functions and capacity are in place, but until now MRD has not had a formal groundwater management responsibility: these activities would be transferred to the water department;
- Surface water information: surface water data is located in different organisations, but the two with the most widespread and relevant data are the GMO and PWD hydrology section. Although the PWD hydrology section has been developed
- Riverine controls: undertaken by Lands Department which relies on LWRM for technical inputs – it could be transferred to the water resources department;
- Flood warning and control – DISMAC, with GMD and Hydrology are responsible for flood warning; although there is little by way of flood control works in Fiji, LWRM has undertaken work on flood mapping and the identification of flood prone areas, along with amelioration measures, such as dredging, though its mandate and competencies are incomplete.

It is not recommended that catchment management be transferred to the water resources department, even though it should have an important water component. Decisions need to be made about the control of catchments which require special protection. Most of these, at present, are areas of land surrounding water supply reservoirs. A key matter to be decided is whether the Fiji Water Authority will control such areas.

5.14 Structure of water resources agency

A water resource agency would have the divisions shown in [Figure 2](#). Note that the structure shown in this document is an initial concept for considering the elements that need to be considered. The actual structure would depend on (i) the functions agreed for the agency and (ii) the emphasis to be placed on various activities. For instance, if enforcement is considered important or if a number of enforcement areas are to be undertaken, an inspectorial or enforcement division might be warranted.

Figure 2: Possible structure of water resources agency



The divisions or units in Figure 2 outlined in black are those which would logically be established initially, while other sub-divisions could be added later or as required.

General responsibilities of the most critical units are shown in

Table 4: Functions of key units

Unit	Function and comment
Council and Committee Secretariat	The secretariat could exist as an independent entity to provide support for the National Water Council and the Committee and other ad hoc arrangements from time to time (see 5.11.4). It needs to be headed up by a person at level of director: otherwise the Director of the Secretariat and should be supported by a full-time official who reports directly to the Director
Policy and legislation	The preparation of policy at national level and subsidiary policy guidelines, including oversight or coordination of the production of technical guidelines (eg floodplain planning guidelines) Preparation of legislation proposals and implementation of legislation. Note the Water Resources tribunal, if established, would necessarily be completely independent and separate from the water agency
Water resources management	This division includes all the key water management activities and the technical facilities;. In an alternative structure,

Unit	Function and comment
	<p>information and technical areas could be separate, as discussed below.</p> <p>The water management division would investigate and analyse issues on which decisions need to be made and implement the solution in the relevant areas. Under this proposal, it includes regulatory functions (see below)</p>
Water resources assessment	<p>This unit is responsible for the measurement and analysis of (i) streamflow and (ii) groundwater occurrence. Analytical tools also form part of assessment, such as modelling to obtain information about the behaviour of water sources and the impacts on water of abstracting water or diverting rivers, etc. This unit would provide information on which to base decisions about water allocation and major development of water sources</p>
Water allocation and licensing	<p>This unit is responsible for issuing water licences to relevant water users and administering the licences. It includes a monitoring and regulatory role, to ensure that water is taken according to authorisations. It would also act in cases of water scarcity to assert priorities such as in case of drought.</p>
Information and data	<p>This unit would build up and ensure coordination of water resources data bases for the whole of the Fiji Islands. It is proposed that surface water quantity and groundwater quantity/occurrence be the two main data bases, but links with other data would also be encouraged. Depending whether the hydrology division of PWD transfers in total to the Fiji Water Authority, stream gauging would be part of this unit. Regardless where the hydrology unit is finally located, the water agency should lead in defining the purposes and scope of data needed for water management and therefore the features of the surface water data networks.</p>
Flood management and modelling	<p>This unit's functions would be limited to water assessment and it could be located differently. Flood modelling would be relevant to assessment, but would also be required for planning. It is emphasised that flood warning and response responsibilities would not be altered and would remain with DISMAC and GMD as at present, except that Hydrology's functions could be moved out of PWD to the water agency.</p>
Administration and finance	<p>This unit is necessary for support of the agency. If the agency is located within an existing organisation, it would not be needed as a separate unit.</p>

In addition there are potential units as shown in [Table 5](#).

Table 5: Other units in water agency

Unit	Function and comment
Water resources planning	<p>This unit would be established if an active planning scheme is developed. Planning areas could include floodplain planning,</p>

Unit	Function and comment
	water allocation planning and planning for the protection of riverine areas and other special areas. Note that some planning, such as floodplain planning would necessarily have extensive involvement by Town and Country Planning, which might adopt the leading role, but with support on technical aspects by the water agency.
Education and awareness	This unit would develop information and media for promoting public understanding of water resources management, for national issues but also increasingly for the local level village and small island. Other agencies and NGOs will be producing related material, so a high degree of liaison would be necessary.

The detailed requirements of the water agency have not been explored within the scope of the pilot project, but need to be developed further. The strategy for developing such an agency depends partly on the existing professional and technical staff who can be used to staff the relevant areas, and partly on the decisions about the scope of the agency. Some comments are made below on the location and extent of current capacity in Fiji.

5.15 Location and development of water agency

5.15.1 Matters for consideration

If the government agrees to establish a water resources agency, the two main options are (i) create an independent department or (ii) build up capacity and functions in an existing department. Factors that may assist in the decision as to whether the agency should be stand-alone are:

- The agency would have regulatory and inspectorial functions in water allocation and possibly in other areas such as riverine protection (materials extraction from rivers and other water bodies);
- Ideally, the agency needs to be independent of any major water use sector in order not to avoid the perception of bias;
- The agency must be capable of servicing the National Water Council and Committee directly;
- The funding implications of a new department.

The advantage of an independent department is that it clearly demonstrates that

Options for developing the agency within an existing department are.

- Attach to MRD which is already undertaking groundwater management functions;
- Attach to Ministry of Agriculture, combined with the water management functions of LWRM.

5.15.2 Mineral Resources Department

A water agency could be constructed by adding water management functions to MRD and providing the staff and facilities to undertake them. Groundwater assessment and data are already within MRD. It would be necessary to bring in staff from LWRM to undertake surface water management functions. It would be desirable to include the Hydrology Unit of PWD as the surface water data provider, but it could remain with the water utility, provided its terms of reference were altered as discussed below.

Prerequisites for this option are:

- The water functions should be separate from the minerals functions and;
- The secretariat reporting arrangements of the water agency to the National Water Council should be direct and should not require matters to be filtered through a minister or director who does not have a direct responsibility for supporting the Council.

5.15.3 Land and Water Resources Management Division

LWRM Division of the Ministry of Agriculture is undertaking various functions related to surface water management. It is also responsible for the development and management of irrigation schemes. If LWRM is to become the basis for a water resources agency it would require the transfer of the groundwater functions of MRD. The role of Hydrology Unit of PWD would be the same as for the MRD option.

Prerequisites for the development of LWRM as a water resources agency are:

- Irrigation development and management must be separated and placed in a separate Division: the separation might affect the technical resources, in particular engineers, who may currently be working on both irrigation and other water investigation or infrastructure from time to time;
- The reporting arrangements would need to allow for a direct line of reporting by the Division and the secretariat to the National Water Council;

The independence of the water agency from the agricultural sector is an issue for this option, although LWRM already undertakes most surface water management functions, as explained earlier.

5.15.4 Transfer of functions from MRD

Any option that involves the transfer of groundwater functions from MRD will raise the question of the continuing role of the groundwater drilling currently undertaken in MRD. The drilling rigs owned by MRD undertake government work and private work. The rigs would be needed in the future for drilling monitoring and investigation bores for water management purposes. The drilling operations would best be transferred along with other groundwater-related staff and facilities. If they were not transferred from MRD, they would be the only groundwater related activities remaining in the department. Therefore it is preferable that they remain united with groundwater management activities, wherever those activities are transferred.

5.15.5 Other options

The Ministry of Environment (MOE) is a theoretical option for the development of a water agency, but it is currently small and does not have sufficient resources for an active role across its current mandate. The addition of a water resource agency would expand it considerably, possibly causing water to predominate. Water resources management includes a regulatory role which is consistent with and complementary to MOE's role in wastewater discharge control. Personnel and functions would need to be transferred from MRD and that would include the groundwater drilling activity.

5.16 Water Resources Tribunal

5.16.1 Role of tribunal

A water resources tribunal is proposed. Its role will be to adjudicate on water allocation decisions made by the water agency before final legal approval. It was decided that an independent judicially-based body would better handle the final resolution of disputes about the allocation of water, than to use an administrative or political route. The tribunal's decision would be final,

Matters on which the tribunal might rule include:

- The issue of water licences for surface water or groundwater
- Decisions to cancel or restrict a water licence (which would be subject to legal provisions limiting the grounds for the administration to take such action);
- Determining the final conditions in a water allocation plan which defines volumes or amounts of water for all purposes including environmental purposes.

5.16.2 Establishment of tribunal

The Tribunal is similar in structure to the proposed tribunal for mineral resource rights, comprising a judicial officer as its head and two expert members. It is expected that the tribunal would be convened on an as-needs basis only, and not necessarily require a permanent office, though suitable facilities would be required for its deliberations. The tribunal would require a secretariat to process and archive its deliberations. Administrative arrangements for the proposed minerals tribunal might be used to support the water resources tribunal.

The head of the tribunal must be a judicial officer, although a retired person with judicial experience as a magistrate or a judge could be appropriate.

Expert tribunal members could be taken on any occasion from a previously selected panel of members. In the course of reviewing any particular matter, it would be advisable to have a person with professional or technical expertise related to the matter being reviewed. For instance, in a groundwater allocation dispute the expert member would desirably have hydrogeological expertise.

The second expert member should have the ability to evaluate social, economic and environmental factors and advise on the appropriate balance of benefits, according to the criteria in the water legislation.

Note that the water resources tribunal requires legislation for its establishment (as proposed in Chapter 3).

The tribunal must be independent of the water agency and the approving authority for water licences.

5.17 Capacity and expertise

5.17.1 The need for professional and technical capacity

Technical capacity in areas required by a water resource agency fall into several categories. The government does not need to undertake all technical studies and in the Pacific region it is not possible to retain sufficient technical staff to undertake all studies and the private sector frequently needs to be

engaged. However, there is a minimum essential technical capacity requirement, which means that the Government must possess sufficient technical or professional ability to assess the value of studies provided by the private sector. In some cases, including in developed countries such as Australia, government organisations rely on recruiting a second opinion to assess the value of technical reports produced by consultants. Unfortunately, even with a second opinion, the government may find itself unable to make judgements with confidence if it does not have its own professional or technical staff who are capable of assessing externally produced reports.

The water agency will require expertise in several areas as outlined below.

5.17.2 Current situation

The current situation in Fiji is very briefly described. More work is needed to identify accurately the qualifications and skills that would be required to undertake the water management functions for the future. The key areas are shown in Table 6.

Table 6: Current qualifications and skills

Field of expertise	Current qualifications and experience
Surface water flow	Hydrographic capacity is reasonably developed within the Hydrology Unit of PWD. The unit combines both flow gauging technicians and hydrographers (in Fiji called <i>hydrologists</i>) with the ability to analyse flow data.
Surface water hydrology	Hydrologic capacity in LWRM is present in the engineering staff, 9qualifications?), but advanced modelling experience is not available in-house at present
Riverine geomorphology	LWRM has engineering works experience with riverine 9minor)
Groundwater assessment	Hydrogeologists in MRD (qualified and in-training) have the capacity to evaluate groundwater occurrence and availability and make decisions concerning groundwater exploitation. Not groundwater modelling experience (?).
Planning	Urban planning expertise is located in the Town and Country Planning Department, but water resource technical planning experience is not available. However, such experience and capacity can be built with existing professional staff, through a combination of training and hands-on plan development
Catchment protection	Experience and qualifications are found in several areas, including Ministry of Agriculture, Forestry and notionally with PWD, although the
Water allocation	Experience of an organised scheme has not been developed, although MRD has been required to face groundwater allocation issues
Flood management	Flood warning and disaster management capacity is well developed and being enhanced through General Department of Meteorology, and DISMAC. Non-event aspects of flood management are less developed, namely flood modelling and mapping, although LWRM has some experience in these areas

Field of expertise	Current qualifications and experience
GIS	GIS development expertise is located in many agencies, including MRD, Agriculture
Data management	Database expertise is located in MRD, PWD and GMD.

Further investigation is needed to accurately identify the human resource capacity needs for the water agency or to accomplish the tasks that are needed for

5.18 Key areas for capacity building

5.18.1 Water allocation

Water allocation is identified as a major area for capacity building because the introduction of a formal water allocation scheme will require the issue of water licences and the management of those licences as part of the control of water sources, both rivers and aquifers. Capacity will need to be built through the development of the scheme, and it will be important to have expertise in a number of areas for which formal training will only be useful to a degree, such as:

- targeted consultation
- negotiation and dispute resolution;
- development of conditions for water abstraction.

5.18.2 Water resources assessment

The key requirement in assessment is modelling to assess both surface water and groundwater behaviour in

5.19 Progressive implementation

The institutional recommendations in this report are far-reaching but they may be implemented by stages. The organisational arrangements can be introduced progressively as shown in [Table 7](#).

Table 7: Proposal for progressive institutional change

	Institutional development action	Comment
1	Assign water resources management to ministerial portfolio	Immediate
2	Establish National Water Council	Immediately following action 1
3	Establish Secretariat for National Water Council	Prerequisite for action 2
4	Amend and formalise terms of reference for National Water Committee	Concurrent with actions 1 and 2
5	Approve terms of reference for Hydrology Unit and determine location	Following earlier actions and potentially on advice of Council

6	Decide location of Hydrology Unit	Concurrent with action 5
7	Decide location of water agency	Note this will be the same location as the Secretariat (action 3)
8	Commence development of water agency	Secretariat to provide support as initial core of water agency
9	Develop water allocation scheme	Requires water legislation
10	Initiate water resources data coordination mechanisms (see chapter 5)	Water agency to ensure coordination, but not necessarily to manage databases
11	Develop other functions of water agency	This would occur over a period of time, and would developed in line with decisions on the functions to be included in the agency and those to be located elsewhere
12	Institute Water Resources Tribunal	The tribunal will not be needed until the water allocation scheme is set up and water licences are being issued

Table 7 shows a progressive implementation approach which involves establishing the responsibility within government initially by assigning water resources management to a ministerial portfolio. Following that identification, it will be more likely that water management actions and the proposed reform programme will be reviewed and acted upon.

The establishment of the National Water Council (as proposed or modified) and its operating secretariat is the next key action required. As noted earlier, it is not recommended that the Council be established unless the secretariat is also provided. A Council without a secretariat would be ineffective as an advisory body or in any other role.

At the same time, the National Water Committee should be formalised and given terms of reference that link it with the Council. These actions (Minister, Council and Committee) should be undertaken at the start of the reform programme.

Closely associated with the initial decisions should be the further decision about the role and functions of the Hydrology Unit, currently with PWD. It is recommended (Chapter 4) that the Unit become the surface water data agency for Fiji. Its location can be decided at the same time, but the most important aspect will be its mandate for surface water data.

Closely connected with the development of a surface water mandate, is the initiation of a programme to coordinate water resources data from the various key water data sets. The water agency should be the leading organisation for initiating and ensuring the development of the water sharing arrangements according to agreed water data objectives for water resources planning and management.

Further decisions about the location and structure of the water agency may be taken following the set-up of the Council and Committee. The Council secretariat should form the core of the water agency, and the ultimate location of the water agency would also determine where the Council secretariat is located.

Further development of the water agency will depend on (i) decisions regarding the transfer or otherwise of some functions such as riverine controls, and (ii) implementation of schemes created by the water legislation, in particular water licensing and allocation. These functions may be developed over a period of time.

The Water Resources Tribunal would not be established until the water allocation scheme is in operation.

5.20 Conclusions and recommendations

5.20.1 Conclusions

The establishment of a robust IWRM capacity in Fiji would benefit from new organisational arrangements in three areas: (i) bodies to improve coordination, (ii) a water management agency, or water management functions developed within an agency, and (iii) a water resources tribunal for conflict resolution. If these changes are adopted, they must go hand in hand with appropriate legislation.

Coordination arrangements may be established immediately. A National Water Council could be established as a new advisory body and the National Water Committee could be given a formal mandate. A secretariat would be required to service these bodies.

Water management agency functions may be developed by using staff from existing organisations and strengthening the functions by adding to those staff and functions later. The most significant new function will be a water allocation scheme, with the possibility of water planning also.

Information and data coordination could be investigated immediately, as outlined in Chapter 5.

A water resources tribunal is recommended as a conflict resolution mechanism following the introduction of the water allocation scheme.

5.20.2 Recommendations

It is recommended that:

- a government minister be allocated responsibility for water resources management;
- a National Water Council be established to advise the Government on water resources and water utility issues and the reform programme;
- the National Water Committee be given a formal mandate and membership and report to the Government through the National Water Council;
- a secretariat be created to support the National Water Council and National Water Committee;
- a water management agency be established, either as an independent department or in association with an existing department, in which case it would require staff and resources to be provided and/or transferred from other organisations;
- the water management agency be independent of all major water user sectors and report to the minister responsible for water resources management;
- the water management agency adopt the responsibilities outlined in this report, including water allocation under the scheme introduced in water resources legislation;
- a Water Resources Tribunal be established as the conflict resolution mechanism for all disputes over water allocation and access.

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