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# Inception Report

## “Consultancy to Conservation International”

Contract number: \_\_\_\_\_

<b><u>TIMELINE</u></b>	<b><u>CONTRACT TITLE</u></b>
MAY-JULY 2021	Agreement for consultancy to prepare a Rapid Resource Assessment, Diagnostic Analysis and Ecosystem Goods and Services valuation for the Waimanu Catchment in Fiji
JUNE - AUGUST 2021	Agreement for Consultancy to Prepare a Waimanu Catchment Integrated Management Plan as the basis for crafting a Ridge to Reef Participatory Management Planning Guide for Fiji

**Prepared by:**  
**Conservation International**

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## Executive Summary

Waimanu is a sub-catchment of the Rewa – the largest watershed on Viti Levu. It is an important catchment for water security servicing the largest and most populated urban center in Fiji with a population of 244,000 (UNHSP, 2012). Using the lens of goods and services to assess ecosystem services that provide maximum benefits for human wellbeing, the assessment will attempt to understand the intrinsic relationships of environmental functions - nutrient cycling, soil formation and primary production as well as the processes of ecosystem services through provision, regulating and cultural aspects. Assessment will consider ecosystem service to identify the drivers, pressure, state, impact and response (Rounsevell and Dawson, 2010, Haines-Young and Potschin, 2010, Kelbel et. al. 2013).

Considering DPSIR alone simplifies the complex interaction and responses that exist between different activities, economic and social mechanisms and only considers the negative impact of with little emphasis on human wellbeing (Rounsevell and Dawson, 2010). Integrating ecosystem services and impact on human wellbeing with DPSIR ensures a more holistic approach (Haines-Young and Potschin 2010, Keble et.al. 2013). Valuation of potential positive impacts on the above would thus provide opportunities to assess trade-off and select the most suitable response strategy (Rounsevell and Dawson, 2008).

The objective of the consultancy is to develop Rapid Resource Assessment and undertake Diagnostic Analysis that will provide information for ecosystem goods and services through the application of Freshwater Health Index. Outcomes from the Rapid Resource Assessment and the Diagnostic Analysis will inform the drivers, pressure plus state of ecosystems and biodiversity while the Freshwater Health Index provides insight on ecosystem services through the lens of regulating, provisioning, and cultural services with respect to human wellbeing (Figure 3). The Index will provide a snapshot of current conditions and can be used in the future to assess impacts of land use change, infrastructure development, climate change as well as to highlight tradeoffs and synergies.

The above information will inform the development of the Waimanu Catchment Integrated Management Plan. Strategic management objectives for stormwater, wastewater, and associated activities in the catchment will be articulated in the Integrated Catchment Management Plan as well as an agreed range of management options and the preferred management approach for avoiding, remedying or mitigating environmental effects and risk while setting out roles, responsibilities, and tools for implementation and future review (Fenny et. al. 2008).

Given the current COVID-19 divergence from the original plan is inevitable. Key recommendation to support the successful completion of this consultancy is outlined below.

1. Undertake assessment of ecosystem goods and services through the lens of Freshwater Health Index and clearly articulate steps and processes to advance ecosystem management and decision making for improved management that will reduce pressures and drivers in Waimanu Catchment.
2. Realign budget line from **Fieldwork/Travel and Meeting** to **Professional Services** to enable the engagement of “subject experts” such as botanists and freshwater species experts. Available information in these areas are scarce hence professional knowledge and judgement is critical given that no field work will be possible during COVID-19 restrictions.

3. Allow subcontractors including Mr. Baya to review policy, laws and regulations (PLR); Mr. Tuiwawa to review flora, fauna and Ms. Bidhya to review freshwater biodiversity in addition to Ms. Aliti Vunisea to support the development of the Waimanu Catchment Integrated Management Plan.

## Background

Waimanu is a sub-catchment of the largest catchment on Viti Levu. The main water system in the Waimanu Catchment is the Waimanu River which is sourced from the ridges of Mount Delaiwaisulubonu in the Namosi Province. Tributaries of Waimanu River are sourced from Wainadoi, Naboro, Togalevu, Veisari, Savura and Colo-I-Suva streams and rivers.

There are three iTaukei villages and many settlements along the Waimanu River hosting a population estimated at 13,000 (Fiji Bureau of Statistics 2017) across a catchment area of 199 km<sup>2</sup>. The villages include Navatuvula, Sawani and Vunaniudrovu. Other settlements in the Waimanu Catchment are primarily smallholder agriculture lease holders. There are three schools within the vicinity of the catchment of which two cater for Primary education and one, a Secondary School.

Waimanu catchment is located approximately 20km from the City of Suva and 10km from the township of Nausori accessible via Princess Road and Sawani/Lomaivuna Road. Located in a peri-urban setting, it hosts a wide variety of land use (Figure 3) including gravel extraction & dredging, subsistence and commercial farming; quarry; timber harvesting; sawmill, road expansion; business centers (shops) and waste disposal dump sites.

The Waimanu catchment is an important catchment for Water Authority of Fiji, as it supplies water for the Tamavua and Waila water treatment plants from which it is redirected to the greater Suva area (Singh, 2017) with a population of 244,000 (UNHSP 2012).



**Figure 1: Map of leased lands showing anthropogenic pressures around in the Waimanu Catchment Area.**

## Rationale

The Waimanu Catchment is exposed to southeast trade winds, receiving an estimated 2,900 millimeters of annual rainfall with distinct dry/wet seasons. Wet and hot season is from November - April and the dry and cool season from May - October. Temperature ranges from 30<sup>0</sup> Celsius at noon to 13-20<sup>0</sup> Celsius at night in the cool months.

The geology of the Waimanu Catchment is identified as andesitic rocks of the Medrausucu volcanic merging with the Savura volcanic on the upper elevated areas with recent alluvium on the swamps that covers the riverbanks hence the rocks are mainly of the Savura volcanic group (Early and Middle Eocene) and the Verata sedimentary group (Pliocene) with Suva Marl. Dominant soils in the catchment include humic latosols with weakly developed A horizons, particularly the Lobau clay, Sote clay and Waimaro clay (Nainoca 1998). The topography of the catchment can be described by the upper and lower segments. The upper Waimanu Catchment consists of steep mountainous terrain with deep incised streams forming gullies of slopes more than 18<sup>0</sup>. Approximately 30-40% of the upper catchment consists of steep slopes (>18<sup>0</sup>). Slopes in the lower Waimanu Catchment range between 3-4 degrees.

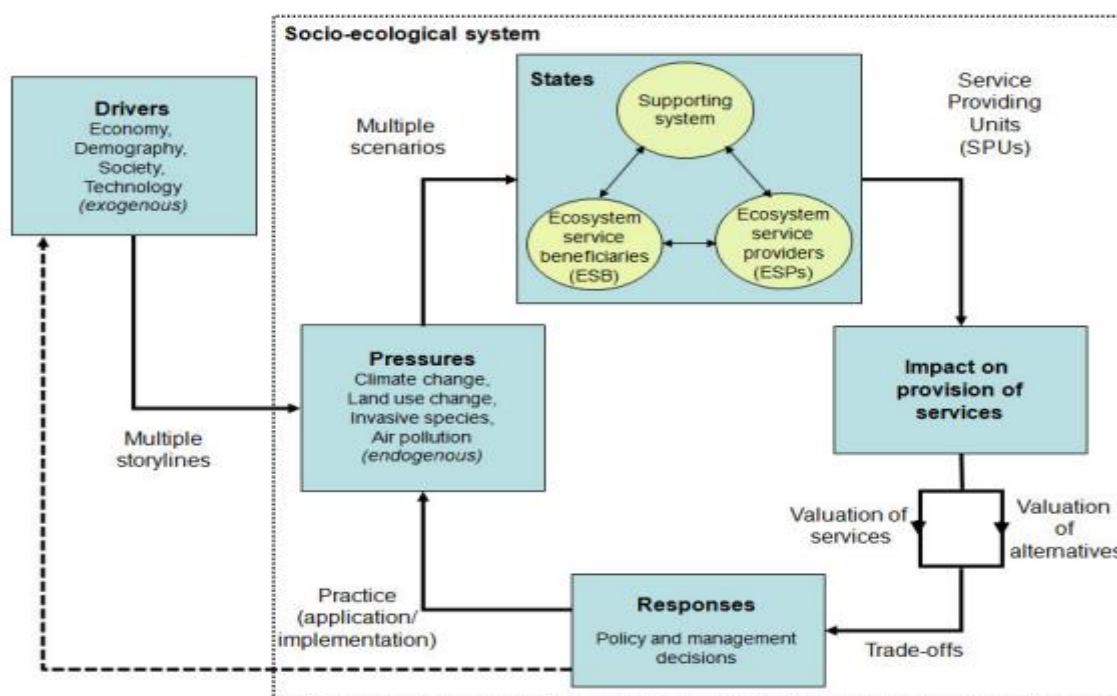
Approximately 75% of the Waimanu catchment remains heavily forested (Singh, 2017). The remaining area is used for agriculture, residential (villages), industry (sawmill, shopping center), and education (schools). Other land uses in the catchment include gravel extraction from river basin, a small quarry, waste disposal, timber harvesting and road expansion. With heavy reliance for water security servicing the City of Suva, healthy, provisioning services of the ecosystem is very important for Waimanu Catchment.

Using the lens of goods and services to assess what ecosystems can provide to maximize benefits for human wellbeing, the assessment will attempt to understand the intrinsic relationships of ecosystem services - nutrient cycling, soil formation and primary production and the processes of ecosystem services through provision, regulating and cultural aspects. Assessment will consider each key ecosystem service to identify the drivers, pressure, state, impact and response (DPSIR) mechanism that will reduce the pressure while improving management (Haines-Young and Potschin, 2010).

Considering DPSIR alone simplifies the complex interaction of negative interaction and responses that exists between different activities, economic and social mechanisms (Rounsevell and Dawson, 2008). See Figure 2. Valuation of potential positive impacts on the above would thus provide opportunities to assess trade-off and select the most suitable response strategy (Figure 3). Integrating ecosystem services and impact on human wellbeing with DPSIR ensures a more holistic approach (Haines-Young and Potschin 2010, Keble et.al. 2013).

Given the limitation in time, coupled with COVID 19 restrictions/conditions in Fiji, this assignment will focus on desktop assessment to collate information that will inform the Rapid Resource Assessment and Diagnostic Analysis which will provide information that sheds light on the DPSIR framework outlined in Figure 2. However, inability to meet face to face with key stakeholders limits our ability to assess the full range of ecosystem services nor the ability to fully appreciate possible tradeoffs in valuation of benefits that will make impactful responses. It will not be possible to complete the Ecosystem Economic valuation

of the Waimanu Catchment. However, the assignment will consider the building blocks of economic valuation through assessing the Freshwater Health Index.



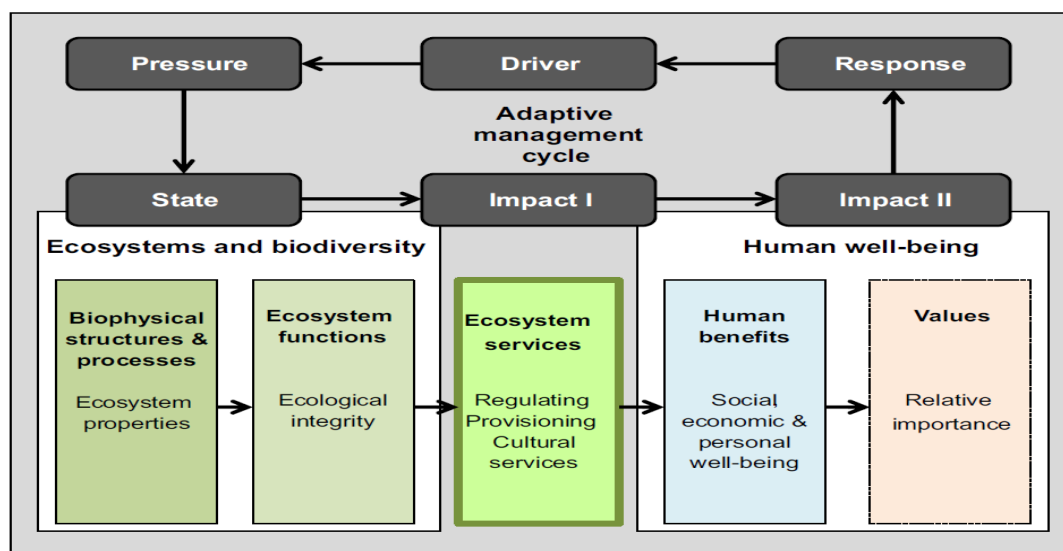
**Figure 2: Drivers, Pressure, State, Impact, Response (DPSIR) framework (Rounsevell and Dawson, 2008)**

Recognizing the importance of water quantity and quality while noting the importance of land use for local farming communities against the larger national interest in water security (drinking water), the Freshwater Health Index will trigger conversation about the appropriate indicators to measure management effectiveness overtime based on current adverse situations in the Waimanu Catchment. Despite decades of research and interest in assessing sustainability of freshwater systems, no clear approach is available to transparently assess tradeoffs in a rigorous manner. The Freshwater Health Index aims to address this gap and provides a tool that can diagnose how social, hydrological and ecological systems interact to provide critical ecosystem services.

The Freshwater Health Index is a web-based tool that measures system health by making clear connections between freshwater ecosystems, the benefits they provide to people and the governance system in place. There are three main components to the freshwater health index including (1) ecosystem vitality; (2) ecosystem services and (3) governance and stakeholder. Each of these components is assessed with a suite of measurable indicators that are aggregated into an index. Evaluation of the indicators requires hydrologic and water allocation models, ecosystem service models, valuation techniques and stakeholder surveys. Developed by Conservation International, the Freshwater Index synthesized global social and ecological data that support better understanding of the interface between habitat protection, ecosystem services and human development.

Outcomes from the Rapid Resource Assessment and the Diagnostic Analysis will inform the pressure and state of ecosystems and biodiversity while the Freshwater Health Index provides insight on ecosystem services through the lens of regulating, provisioning and

cultural services with respect to human wellbeing (Figure 3). The Index will provide a snapshot of current conditions and can be used in the future to assess impacts of land use change, infrastructure development, climate change, helping to highlight tradeoffs and synergies. “Responses” identified in the Diagnostic Analysis will form the foundation of the Waimanu Integrated Management Plan. Delegated at the 2014 World Parks Congress identified key issues that can maximize contribution of forest protected areas to water services including (1) knowledge and capacity building; (2) valuation; (3) policy framework; (4) pricing policy; (5) water security; (6) partnership; and (7) learning lessons learnt from successful catchment management (Dudley et.al. 2016).



**Figure 3: Integrated Framework for Ecosystem Service Provision (Haines-Young, Potschin 2010)**

## Scope of the consultancy

### **Objective**

There are two main body of works associated with the two consultancies on Waimanu Catchment including:

- the development of a rapid resource assessment and undertake diagnostic analysis that will provide information for ecosystem goods and services through the application of Freshwater Health Index of Waimanu Catchment.
- develop an integrated management plan for Waimanu Catchment, in addition to documenting lessons learnt and a power-point presentation to capture key elements of these objectives.

### **Expected outputs**

The deliverable of these consultancy is aligned and condensed into the following.

- Rapid Resource Assessment for Waimanu Catchment.
- Waimanu Diagnostic and Ecosystem Goods and Services Analysis.
- Waimanu Catchment Integrated Management Plan.
- PowerPoint presentation highlighting key learning from (1)-(3) above.

Unfortunately, there may not be a Lessons Learnt Report as there will be no technical field work or workshop undertaken during this consultancy.

## **Overall approach and methodology**

The approach taken is aligned to the SPC guidelines on “Developing an Island Diagnostic Analysis” however the island diagnostic analysis will be applied at catchment level but the same process will be adopted as closely as possible including (1) collection and analysis of published information; (2) identification and prioritization of problems; (3) determination of impacts of each priority problem; (4) analysis of immediate, underlying and root causes for each problem that will lead to (5) development of strategic options for catchment management. The above process is aligned to the DPSIR framework outlined in Figure 2 & 3.

The biggest challenge lies in the limitation of COVID-19 national restrictions in Fiji.

From the offset, it is understood that Waimanu Catchment is an important source of water for the greater Suva area. Preliminary assessment also notes that water management in Fiji continues to be fragmented, notably between surface water (Water Authority of Fiji, Ministry of Waterways, Ministry of Agriculture and Ministry of Environment) and groundwater (Mineral Resource Department). With formulation and enactment of Land and Water Resources Management Bill 2016 the management and conservation of water and land now lies with the Land and Resources Planning Division of the Ministry of Agriculture. The team will focus on detailed assessment on review of policy, legal and regulation related to water tenure, quality and quantity in order to appreciate relevant indicators and improved management strategies. Assessment of existing policy, laws and regulations pertaining to water management is subcontracted to Mr. Ulai Baya through budget line item, Professional Services under the first consultancy agreement.

Close collaboration is anticipated with the Ministry of Environment, Ministry of Waterways, Ministry of iTaukei Affairs, Ministry of Agriculture, iTaukei Lands Trust Board and Water Authority of Fiji will ensure collation of appropriate information to support the expected deliverables. It is envisaged that these agencies may provide proxies for key stakeholders and represent the interest of land users within the Waimanu Catchment.

Potential policy responses identified in the Diagnostic Analysis will be discussed and verified with the above stakeholders to ensure practicality of the responses and pillars of the Waimanu Catchment Integrated Management Plan.

Although face-to-face meetings will be limited, we hope to capitalize on virtual platforms. Hence, we anticipate holding virtual calls with all organizations above to discuss and better understand the status and challenges of resource management in Waimanu Catchment. This assessment will focus on understanding the current status of biophysical structures, processes and functions of ecosystem and biodiversity of the Waimanu Catchment. water on commercial use, resource conflict, use of rivers and other sources, impacts of upstream industries, catchment areas and landowner’s demands are on the increase as it is readily becoming apparent that current legislative instruments are in urgent need of revision and updating.



Information and assessments outlined in the Waimanu Diagnostic Analysis will be used to develop the Waimanu Integrated Catchment Plan - the key deliverable under the second consultancy agreement.

An outline of the sequence of tasks associated with this consultancy is listed in Table 1.

**Table 1: Tasks and methods planned under this consultancy**

TOR outputs	TEEB steps	Detail description of work required	Methodology to adopt	Outcome
1. Agreement for consultancy to prepare a Rapid Resource Assessment, Diagnostic Analysis and Ecosystem Goods and Services valuation for the Waimanu Catchment in Fiji				
1.Rapid Resource Assessment	Specify and agree on key policy issues with stakeholders Identify the most relevant ecosystem services	Describe project site, policies, legal framework and national plans related to the site Identify synergies with IW R2R indicators to determine relevance to impact on provision of services and impact on response to management decisions	Desktop assessment, literature review Review of all relevant Policy, Legal and Regulation pertaining to key ecosystem services - land use and water	Report – Rapid Resource Analysis
2.Diagnostic Analysis	Interpret information gathered in (1) above and define drivers and pressures to ecosystem and biodiversity	Develop Diagnostic Analysis <sup>1</sup> Identify and outline the pros and cons of policy options/opportunities to address threats and issues in Diagnostic Analysis	Desktop assessment, literature review Virtual interview with key stakeholders – Ministry of iTaukei Affairs, iTaukei Lands Trust Board, Ministry of Agriculture, Water Authority of Fiji	Report: Diagnostic and Ecosystem Goods & Services Analysis for Waimanu Catchment
3.Economic Valuation	Assess and value ecosystem	Consolidate key indicators for freshwater management Undertake virtual survey for Freshwater Health Index Identify management priorities and data needs Research and outline relevant next steps to complete ecosystem goods and services valuation	Virtual survey Verify results Virtual validation call	PowerPoint presentation containing highlights and key results for (1, (2) and (3)
2. Agreement for Consultancy to Prepare a Waimanu Catchment Integrated Management Plan as the basis for crafting a Ridge to Reef Participatory Management Planning Guide for Fiji				

<sup>1</sup> [https://www.pacific-r2r.org/sites/default/files/2020-08/IW\\_R2R\\_National\\_Pilot\\_Project\\_Area\\_Diagnostic\\_Workshop\\_Report\\_template.pdf](https://www.pacific-r2r.org/sites/default/files/2020-08/IW_R2R_National_Pilot_Project_Area_Diagnostic_Workshop_Report_template.pdf)

4. Waimanu Catchment Integrated Management Plan	Develop management plan using results from (1-3) above	Consolidate information on DPSIR and Freshwater Health Index to identify priority management regime Identify indicators aligned to SPC R2R Develop Monitoring Plan associated with the Waimanu Catchment Integrated Management Plan	Desk-top Virtual meetings	Waimanu Catchment Integrated Management Plan
Guideline on Participatory Catchment Integrated Management and Implementation Plan	Using best standard, develop a guideline on integrated catchment management and implementation plan	use WCS guideline on Ecosystem Based Management Planning in Fiji and compare with other best standards from GEF5 R2R across PIC to develop guideline for participatory catchment management and implementation plan	Desk-top Virtual	Guideline line on Participatory Catchment Integrated Management and Implementation Plan  Lessons Learnt  PowerPoint presentation for (4) and (5)

The team from Conservation International assigned to undertake the above tasks are consistent with the Expression of Interest. Given limitation in field work, we proposed to subcontract the following individuals:

- Mr. Ulai Baya – to review policies, laws and regulations supporting resource management in the Waimanu Catchment. Mr. Baya is specifically tasked to review Policy, Laws, Regulations. See Annex 1 for Terms of Reference. This subcontract is under the first contract.
- Mr. Marika Tuiwawa – to review the flora/fauna biodiversity segment of the Rapid Resource Assessment. This will be budgeted from the realigned budget under Fieldwork/Travel/Meeting. The original plan was to undertake field work assigned in collaboration with Mr. Tuiwawa under Fieldwork/Travel/Meeting. See Annex 2 for Terms of Reference. This subcontract is under the first contract.
- Ms. Bhindya Rashmi – to review the freshwater species annotation for the Waimanu Catchment using the same rationale as in (b) above. See Annex 3 for Terms of Reference. This subcontract is under the first contract.
- Ms. Aliti Vunisea - to pull together key issues from the Rapid Resource Assessment and the Diagnostic Analysis and in collaboration with CI team to develop the Waimanu Catchment Integrated Management Plan. See Annex 4 for Terms of Reference. This subcontract is under the second contract.

## Schedule of activities

The consultancy work is anticipated to align the two contracts and outlined below.

**Table 2: Work Plan for Consultancy**

TOR outputs	Activity	MONTH			Deadline	
		June	July	AUG		
1. Agreement for consultancy to prepare a Rapid Resource Assessment, Diagnostic Analysis and Ecosystem Goods and Services valuation for the Waimanu Catchment in Fiji						
1.Rapid Resource Assessment	Specify and agree on key policy issues with stakeholders				15 August 2021	
	Identify the most relevant ecosystem services					
2.Diagnostic Analysis	Define information needs and select appropriate methods					
	Identify and outline the pros and cons of policy options					
3.Ecosystem Goods and Services	Assess freshwater health index and Impact/Responses to Drivers and Pressures					
	Review, refine and report. PowerPoint Presentation					
2. Agreement for Consultancy to Prepare a Waimanu Catchment Integrated Management Plan as the basis for crafting a Ridge to Reef Participatory Management Planning Guide for Fiji						
4. Waimanu Catchment Integrated Management Plan	Develop management plan using results from (1-3) above Develop a guideline line on Participatory Catchment Integrated Management and Implementation Plan Review, refine and report. PowerPoint Presentation					20 August 2021

**Payment Schedule**

In view of the workflow outlined in Table 2, we propose a revised payment schedule as follows:

Outputs	Due date	Review from Donor	Invoice
Output 1 Inception Report (Both contracts 1 & 2)	26 July 2021	05/08/21	10% (both contracts)
Outputs 2-4 (Contract 1 -RRA)	15 August 2021	20/8/21	60% (contract 1)
Output 2-4 (Contract 2 – Management Plan)	20 August 2021	27/8/21	60% (contract 2)

## Current status of contract implementation

The Rapid Resource Assessment is near completion. Extracts of key information are listed in Annex 5. At the same time, the template of the GEF-R2R Island Diagnostic Analysis is being populated and applied to the Waimanu context.

Work has also commenced to verify relevant indicators under the Freshwater Health Index in preparation for the virtual survey and assessment. Although we anticipate that the sample size will be low, we will ensure that it is representative of key users of resources in the Waimanu Catchment.

It is anticipated that both - Rapid Resource Assessment and Diagnostic Analysis will be completed by the end of July 2021.

## Issues and challenges

The biggest challenge to successfully complete the consultancy is associated with the current restrictions under the COVID-19.

Given that there will likely be no workshop or face-to-face meeting nor field work; the following adjustment in the budget line item is requested. The rationale and proposed alternative use of the budget line under the contract “Agreement for consultancy to prepare a rapid resource assessment, diagnostic analysis & ecosystem goods and services valuation for the Waimanu Catchment in Fiji” is listed below.

Budget	Approved Amount	Proposed Changes	Rationale
Agreement for consultancy to prepare a Rapid Resource Assessment, Diagnostic Analysis and Ecosystem Goods and Services valuation for the Waimanu Catchment in Fiji			
Personnel	\$19,814	No changes	
Professional Services	\$7,500	Add \$10,400 from Field Work/Travel and Meeting	Subcontract Mr. Tuiwawa to review Rapid Resource Assessment focusing on flora/fauna biodiversity Subcontract Ms. Bindhya to review Rapid Resource Assessment focusing on diversity and abundance of freshwater species
Field Work/Travel and Meeting	\$10,400	To allocate this amount in Professional Services	Support desk top assessment of experts to assess species/habitat types in Waimanu Catchment
Equipment/Field Supplies	\$2,765	No changes	This will be used on purchase of data for key stakeholders to facilitate virtual communication
Project Administration Cost	\$2,435	No changes	
Indirect Cost	\$7,085	No changes	
<b>TOTAL</b>	<b>\$49,999</b>	<b>No changes</b>	
Agreement for Consultancy to Prepare a Waimanu Catchment Integrated Management Plan as the basis for crafting a Ridge to Reef Participatory Management Planning Guide for Fiji			

no changes proposed	to any line	budget	
Personnel	\$16,818	No changes	
Professional Services	\$15,000	Add \$4,000 from Field Work/Travel and Meeting	sub-contract copy editors (to be determined) to polish final reports under the two contracts
Field Work/Travel and Meeting	\$4,000	To allocate this amount in Professional Services	
Equipment/Field Supplies	\$2,067	No changes	This will be used on purchase of data for key stakeholders to facilitate virtual communication
Project Administration Cost	\$2,435	No changes	
Indirect Cost	\$7,086	No changes	
<b>TOTAL</b>	<b>\$49,000</b>	<b>No changes</b>	

## Recommendations

Given the current restriction in movement due to COVID-19, desktop analysis will be the main method adopted for the consultancy. At the same time virtual communication will be embarked upon with key stakeholders.

Key stakeholders include the Ministry of Environment, Ministry of Waterways, Ministry of iTaukei Affairs, Ministry of Agriculture, iTaukei Lands Trust Board and Water Authority of Fiji will ensure collation of appropriate information to support the expected deliverables. It is envisaged that these agencies may provide proxies for key stakeholders and represent the interest of land users within the Waimanu Catchment.

Diverge from the original plan submitted in the Expression of Interest is imperative given the current COVID-19 restrictions:

1. Undertake assessment of ecosystem goods and services through the lens of Freshwater Health Index and clearly articulate steps and processes to advance ecosystem management and decision making for improved management that will reduce pressures and drivers.
2. Under the first contract (Agreement for consultancy to prepare a Rapid Resource Assessment, Diagnostic Analysis and Ecosystem Goods and Services valuation for the Waimanu Catchment in Fiji), it is suggested to Realign budget line from Fieldwork/Travel and Meeting to Professional Services to enable the engagement of “subject experts” such as botanists and freshwater species experts. Available information in these areas are scarce hence professional knowledge and judgement is critical given that no field work will be possible.

Approval to subcontract four experts as follows:

- Mr. Ulai Baya – to review policies, laws and regulations supporting resource management in the Waimanu Catchment. This is budgeted under Professional Services as this is an area where we lack at the CI team.
- Mr. Marika Tuiwawa – to review the flora/fauna biodiversity segment of the Rapid Resource Assessment. This will be budgeted from the realigned budget under Fieldwork/Travel/Meeting.
- Ms. Bhindya Rashmi – to review the freshwater species annotation for the Waimanu Catchment using the same rationale as in (b) above.
- Ms. Aliti Vunisea - to support the development of the Waimanu Catchment Integrated Management Plan and implementation guideline.

## Reference

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**Annexes 1 – TERMS OF REFERENCE CONSULTANCY SERVICES FOR LEGISLATIVE AND POLICY REVIEW OF WATER CATCHMENT MANAGEMENT**

**Annexes 2 – TERMS OF REFERENCE CONSULTANCY SERVICES FOR FLORA AND VEGETATION REVIEW AND ANALYSIS OF WAIMANU WATER CATCHMENT**

**Annexes 3 – TERMS OF REFERENCE FOR PRODUCING A FRESHWATER INVERTEBRATE REVIEW AND ANALYSIS OF WAIMANU CATCHMENT**

**Annexes 4 – CONSULTANCY SERVICES FOR DEVELOPING DRAFT CATCHMENT & IMPLEMENTATION GUIDELINE FOR WAIMANU CATCHMENT**

**Annexes 5 – Key information only**

**ANNEX 1**  
**TERMS OF REFERENCE**

**FOR**

**CONSULTANCY SERVICES FOR LEGISLATIVE AND POLICY REVIEW  
OF WATER CATCHMENT MANAGEMENT**

**FOR**

**FIJI**

**25<sup>th</sup> JULY 2021**



## **1 PURPOSE**

To conduct legislative and policy review of water catchment management in Fiji.

## **2 BACKGROUND**

Fiji IW R2R project is a sub project of the regional SPC R2R project pursuant to Memorandum of Agreement between SPC and Fiji government through the Ministry of Environment to deliver specific outputs and achieve mainstreamed R2R approach. Fiji's R2R IW project will focus on testing and enhancing integrated management of a series of forested watersheds to protect land, water, forest and biodiversity resources, maintain carbon stock, and protect coastal mangrove and coral reef marine protected areas (MPA).

Fiji IW R2R project demonstration site is the Waimanu catchment located in the Namosi - Naitasiri topography and is one of three rivers draining large amounts of fresh water into the Rewa River and into the sea. Fresh water from the upper Wainibuku, Wainimala and Waibau rivers flows into the Waimanu River, which in turn flows directly into the Rewa River and Delta. The Waimanu River is situated in an ideal central location to be a major source of drinking water.

One of the key project benefits is the development and adoption of a Waimanu Catchment Management Plan that connects effective management of water, land, forest and coastal ecosystems using the Ridge to Reef approach. Key elements of the plan which are useful for up-scaling for future investments includes rapid resource assessment, diagnostic analysis, and ecosystem goods and services to attain the key information to devise of the management, implementation plan and guideline for Waimanu catchment.

## **3 RATIONALE OF THE ASSIGNMENT**

It is envisaged that this assignment will assist the Conservation International Fiji Program in identifying areas whereby effective implementation and management of catchment can be implemented in accordance with current legislation and policies.

#### **4 OBJECTIVES OF THE ASSIGNMENT**

To conduct a thorough legislative and policy review of catchment management for Fiji.

#### **5 SCOPE OF WORK**

Whilst the consultant is at liberty to propose his/her own activities that would adequately result in the expected deliverables in Section 7, the following activities are expected to form the core of this assignment:

**Activity 1** In close consultation with key stakeholders, iTaukei Land Trust Board, relevant government Ministries, and all key stakeholders, review all the legal, policy and operation guidelines that are crucial in supporting the proposed catchment management in Fiji.

**Activity 2:** Review the important environmental and social related issues that are common in the local context as defined through in depth consultation with multiple stakeholders and define how best catchment management work can be conducted.

**Activity 3.** Conduct an in-depth review on the policy and laws in the context of catchment management and provide legal guidance on how to support sustainable development and implementation of integrated catchment management work for Fiji.

Activity 4. Contribute the above findings into the Waimanu Catchment Diagnostic Analysis.

#### **6 KEY DELIVERABLES, TIMELINE AND PAYMENT SCHEDULE**

The consultant shall provide the following deliverables, with the final deliverable submitted to Conservation International. The suggested timeline for each deliverable and the schedule of payment is shown below.

<b>Deliverables</b>	<b>Estimated completion date</b>	<b>Payment</b>
Situation analysis report	30 July 2021	50%

Finalized Diagnostic Report with the PLR integrated into the final deliverable	06 August 2021	50%
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a. Fee for Services. In consideration of Service Provider's performance of the Services during the Period of Performance, CI shall pay Service Provider an amount equal to **FJD 7,500.00** which is (\$750.00 per day for 10 working days). This fee is subject to **5% provisional tax** deduction payable to Fiji Revenue & Customs Services.

b. Payment Terms.

Payment shall be made in accordance with the following payment milestones:

- (1) FJD3,750.00 upon completion of deliverable No.1
- (2) FJD3,750.00 upon completion and CI's acceptance deliverable No.2

c. Period of Performance

The Performance Start Date is July 26 2021. The Performance End Date is August 30, 2021.

## 7 COMPETENCIES OF PROSPECTIVE SERVICE PROVIDER

- Competent with land and natural resources legal framework, broad knowledge on policy and legal framework for Fiji.
- Strong reporting, communication, documentation and presentation skills
- Demonstration of strong analytical and research skills
- Good team work.

## 8 ADMINISTRATION

The Consultant may be an individual, firm or company or consortium of companies and should be able to assume duties in July, 2021.

## 9 PROCUREMENT

The process for selecting the qualified and preferred Consultant will be based on the

Procurement Policy of the DBSA. A closed procurement process will be used with documented records of the selected consultants who will be sent the request for proposals and those who will respond.

## **10 APPLICATION PROCESS**

Interested consultants should submit the following documents to demonstrate their qualifications, experience and skills:

- CV of each team member (if more than one)
- An expression of interest in the scope of work as per the TOR including (1) highlighting relevant work experience which s/he brings into the consultancy process with clear examples and competences; (2) a draft timeline for completion of the scope of work; (3) a budget to undertake the work. Note that CI will organise and cover the costs associated with travel to the field site and to conduct the consultations so these should not be included in the costing.

**ANNEX 2**

**TERMS OF REFERENCE**

**FOR**

**CONSULTANCY SERVICES FOR FLORA AND VEGETATION REVIEW  
AND ANALYSIS OF WAIMANU WATER CATCHMENT**

**25<sup>th</sup> JULY 2021**

## **1 PURPOSE**

To conduct thorough flora and vegetation review and analysis for Waimanu Catchment.

## **2 BACKGROUND**

Fiji IW R2R project is a sub project of the regional SPC R2R project pursuant to Memorandum of Agreement between SPC and Fiji government through the Ministry of Environment to deliver specific outputs and achieve mainstreamed R2R approach. Fiji's R2R IW project will focus on testing and enhancing integrated management of a series of forested watersheds to protect land, water, forest and biodiversity resources, maintain carbon stock, and protect coastal mangrove and coral reef marine protected areas (MPA).

Fiji IW R2R project demonstration site is the Waimanu catchment located in the Namosi - Naitasiri topography and is one of three rivers draining large amounts of fresh water into the Rewa River and into the sea. Fresh water from the upper Wainibuku, Wainimala and Waibau rivers flows into the Waimanu River, which in turn flows directly into the Rewa River and Delta. The Waimanu River is situated in an ideal central location to be a major source of drinking water.

One of the key project benefits is the development and adoption of a Waimanu Catchment Management Plan that connects effective management of water, land, forest and coastal ecosystems using the Ridge to Reef approach. Key elements of the plan which are useful for up-scaling for future investments includes rapid resource assessment, diagnostic analysis, and ecosystem goods and services to attain the key information to devise of the management, implementation plan and guideline for Waimanu catchment.

## **3 RATIONALE OF THE ASSIGNMENT**

It is envisaged that this assignment will assist the Conservational International Fiji Program in identifying species of plants, threatened status and vegetation in the Waimanu water catchment.

#### **4 OBJECTIVES OF THE ASSIGNMENT**

To conduct a thorough review of habitat types and plant (species) diversity in Waimanu Catchment.

#### **5 SCOPE OF WORK**

Whilst the consultant is at liberty to propose his/her own activities that would adequately result in the expected deliverables in Section 7, the following activities are expected to form the core of this assignment:

**Activity 1** Conduct an in-depth review on any flora and vegetation studies conducted in the Waimanu catchment through available literature.

**Activity 2:** Produce a report of key habitat types, plant species, their threatened status, and conservation measures in the Waimanu Catchment.

1. Quantification (where possible) and narrative description of various flora species and vegetation found in the Waimanu catchment.
2. Identify threats to species and vegetation in the Waimanu catchment.,
3. Provide recommendations of actions to improve the conditions of the Waimanu catchment.

#### **6 KEY DELIVERABLES, TIMELINE AND PAYMENT SCHEDULE**

The consultant shall provide the following deliverables, with the final deliverable submitted to Conservation International. The suggested timeline for each deliverable and the schedule of payment is shown below.

<b>Deliverables</b>	<b>Estimated completion date</b>	<b>Payment</b>
Situation analysis report	30 July 2021	50%
Finalized Diagnostic Report with the PLR integrated into the final deliverable	06 August 2021	50%

**7. a. Fee for Services.** In consideration of Service Provider's performance of the Services during the Period of Performance, CI shall pay Service Provider an amount equal to **FJD 5200.00** which is (\$650.00 per day for 8 working days). This fee is subject to **5% provisional tax** deduction payable to Fiji Revenue & Customs Services.

**b. Payment Terms.**

Payment shall be made in accordance with the following payment milestones:

- (1) FJD2,600.00 upon completion of deliverable No.1
- (2) FJD2,600.00 upon completion and CI's acceptance deliverable No.2

**c. Period of Performance**

The Performance Start Date is July 26 2021. The Performance End Date is August 30, 2021.

**8. COMPETENCIES OF PROSPECTIVE SERVICE PROVIDER**

- Expert knowledge of flora and vegetation for Fiji , broad knowledge on environment and natural resources work for Fiji.
- Strong reporting, communication, documentation and presentation skills
- Demonstration of strong analytical and research skills.

**9. ADMINISTRATION**

The Consultant may be an individual, firm or company or consortium of companies and should be able to assume duties in July 2021.

**10. PROCUREMENT**

The process for selecting the qualified and preferred Consultant will be based on the Procurement Policy of the DBSA. A closed procurement process will be used with documented records of the selected consultants who will be sent the request for proposals and those who will respond.



## **9. APPLICATION PROCESS**

Interested consultants should submit the following documents to demonstrate their qualifications, experience and skills:

- CV of each team member (if more than one)
- An expression of interest in the scope of work as per the TOR including (1) highlighting relevant work experience which s/he brings into the consultancy process with clear examples and competences; (2) a draft timeline for completion of the scope of work; (3) a budget to undertake the work. Note that CI will organise and cover the costs associated with travel to the field site and to conduct the consultations so these should not be included in the costing.

**ANNEX 3**

**TERMS OF REFERENCE**

**FOR**

**CONSULTANCY SERVICES FOR PRODUCING**

**A FRESHWATER INVERTEBRATE REVIEW AND ANALYSIS OF  
WAIMANU CATCHMENT**

**25 July 2021**

## **1 PURPOSE**

To produce a freshwater invertebrate report for the Waimanu Catchment.

## **2 BACKGROUND**

Fiji IW R2R project is a sub project of the regional SPC R2R project pursuant to Memorandum of Agreement between SPC and Fiji government through the Ministry of Environment to deliver specific outputs and achieve mainstreamed R2R approach. Fiji's R2R IW project will focus on testing and enhancing integrated management of a series of forested watersheds to protect land, water, forest and biodiversity resources, maintain carbon stock, and protect coastal mangrove and coral reef marine protected areas (MPA).

Fiji IW R2R project demonstration site is the Waimanu catchment located in the Namosi - Naitasiri topography and is one of three rivers draining large amounts of fresh water into the Rewa River and into the sea. Fresh water from the upper Wainibuku, Wainimala and Waibau rivers flows into the Waimanu River, which in turn flows directly into the Rewa River and Delta. The Waimanu River is situated in an ideal central location to be a major source of drinking water.

One of the key project benefits is the development and adoption of a Waimanu Catchment Management Plan that connects effective management of water, land, forest and coastal ecosystems using the Ridge to Reef approach. Key elements of the plan which are useful for up-scaling for future investments includes rapid resource assessment, diagnostic analysis, and ecosystem goods and services to attain the key information to devise of the management, implementation plan and guideline for Waimanu catchment.

## **3 RATIONALE OF THE ASSIGNMENT**

It is envisaged that this assignment will assist the Conservational International Fiji Program in quantifying and evaluating the freshwater ecosystem Waimanu Catchment.

## **4 OBJECTIVES OF THE ASSIGNMENT**

1. To undertake extensive literature review freshwater invertebrate found in the Waimanu catchment.

2. To compile a report on freshwater invertebrate found in the Waimanu catchment.

## 5 SCOPE OF WORK

Whilst the consultant is at liberty to propose his/her own activities that would adequately result in the expected deliverables in Section 7, the following activities are expected to form the core of this assignment:

**Activity 1:** Conduct a thorough literature review of freshwater invertebrate found in the Waimanu catchment.

**Activity 2.** Compile report on freshwater invertebrate of Waimanu catchment.

1. Quantification and narrative description of various invertebrate species found in the Waimanu catchment based on desk top assessment,
2. Identify indicator species for the status of Waimanu catchment.,
3. Provide recommendations of actions to improve health of freshwater ecosystems for Waimanu Catchment.

## 6 KEY DELIVERABLES, TIMELINE AND PAYMENT SCHEDULE

The consultant shall provide the following deliverables, with the final deliverable submitted to Conservation International no later than 6 weeks after the field visit. The suggested timeline for each deliverable and the schedule of payment is shown below.

No	Activity	Estimated Completion date	Payment
1	Situation analysis report of freshwater invertebrate report of Waimanu catchment.	30 July	50%
2	Finalized Diagnostic Report with the PLR integrated into the final deliverable	06 August	50%

- 7 a. Fee for Services. In consideration of Service Provider's performance of the Services during the Period of Performance, CI shall pay Service Provider an amount equal to **FJD 5200.00** which is (\$650.00 per day for 8 working days). This

fee is subject to **5% provisional tax** deduction payable to Fiji Revenue & Customs Services.

b. Payment Terms.

Payment shall be made in accordance with the following payment milestones:

(1) FJD2,600.00 upon completion of deliverable No.1

(2) FJD2,600.00 upon completion and CI's acceptance deliverable No.2

c. Period of Performance

The Performance Start Date is July 26 2021. The Performance End Date is August 30, 2021.

## **8 COMPETENCIES OF PROSPECTIVE SERVICE PROVIDER**

- At least 8 years of work experience in freshwater invertebrate taxa survey in Fiji and the region.
- Proven experience and solid understanding in water quality analysis freshwater related work.
- Degree/honours/PhD in the field of freshwater invertebrate or appropriately related field.
- Strong reporting, communication, documentation and presentation skills
- Demonstration of strong analytical and research skills.

## **9 ADMINISTRATION**

The Consultant may be an individual, firm or company or consortium of companies and should be able to assume duties in **July 2021**.

## **10 PROCUREMENT**

The process for selecting the qualified and preferred Consultant will be based on the Procurement Policy of the DBSA. A closed procurement process will be used with documented records of the selected consultants who will be sent the request for proposals and those who will respond.

## **11 APPLICATION PROCESS**

Interested consultants should submit the following documents to demonstrate their

qualifications, experience and skills:

- CV of each team member (if more than one)
- An expression of interest in the scope of work as per the TOR including (1) highlighting relevant work experience which s/he brings into the consultancy process with clear examples and competences; (2) a draft timeline for completion of the scope of work; (3) a budget to undertake the work. Note that CI will organise and cover the costs associated with travel to the field site and to conduct the consultations so these should not be included in the costing.

**ANNEX 4**

**TERMS OF REFERENCE**

**FOR**

**CONSULTANCY SERVICES FOR DEVELOPING DRAFT CATCHMENT  
& IMPLEMENTATION GUIDELINE**

**FOR**

**WAIMANU CATCHMENT INTEGRATED MANAGEMENT PLAN**

**25<sup>th</sup> JULY 2021**

## **1 PURPOSE**

To develop a participatory catchment management and implementation plan and guideline on participatory catchment management and implementation plan for the Waimanu Catchment Integrated Management Plan.

## **2 BACKGROUND**

Fiji IW R2R project is a sub project of the regional SPC R2R project pursuant to Memorandum of Agreement between SPC and Fiji government through the Ministry of Environment to deliver specific outputs and achieve mainstreamed R2R approach. Fiji's R2R IW project will focus on testing and enhancing integrated management of a series of forested watersheds to protect land, water, forest and biodiversity resources, maintain carbon stock, and protect coastal mangrove and coral reef marine protected areas (MPA).

Fiji IW R2R project demonstration site is the Waimanu Catchment located in the Namosi - Naitasiri topography and is one of three rivers draining large amounts of fresh water into the Rewa River and into the sea. Fresh water from the upper Wainibuku, Wainimala and Waibau rivers flows into the Waimanu River, which in turn flows directly into the Rewa River and Delta. The Waimanu River is situated in an ideal central location to be a major source of drinking water.

One of the key project benefits is the development and adoption of a Waimanu Catchment Integrated Management Plan that connects effective management of water, land, forest and coastal ecosystems using the Ridge to Reef approach. Key elements of the plan which are useful for up-scaling for future investments includes rapid resource assessment, diagnostic analysis, and ecosystem goods and services to attain the key information to devise of the management, implementation plan and guideline for Waimanu Catchment Integrated Management Plan.

## **3 RATIONALE OF THE ASSIGNMENT**

It is envisaged that this assignment will assist the Conservational International Fiji Program in developing a integrated catchment management plan and implementation guideline.



#### **4 OBJECTIVES OF THE ASSIGNMENT**

1. To develop a draft Waimanu Catchment Integrated Management Plan.
2. To develop a participatory catchment management and implementation guideline together with lessons learnt report.

The proposed scope of work will be based on the rapid resource assessment, diagnostic analysis and ecosystem good and service work conducted by Conservation International Fiji Program.

#### **5 SCOPE OF WORK**

Whilst the consultant is at liberty to propose his/her own activities that would adequately result in the expected deliverables in Section 7, the following activities are expected to form the core of this assignment:

##### **Activity 1:** Develop a draft Waimanu Catchment Integrated Management Plan

- I. Draw on outcomes of the Waimanu Rapid Resource Assessment and Diagnostic Analysis to conduct a participatory watershed/catchment management planning workshop where possible or through other available means.
- II. Consolidate and conduct analysis of data for the development of draft catchment management plan.
- III. Finalise approval on the draft catchment management plan from relevant stakeholders.
- IV. Submit final draft of catchment management plan to CI for review and submission to MoE & Regional Project Coordinating Unit (RPCU)-SPC for approval.

**Activity 2:** To develop a guideline on the participatory integrated catchment management and implementation plan for Waimanu Catchment Integrated Management Plan.

- I. Using the Wildlife Conservation Society guideline on Ecosystem-Based Management Planning in Fiji, develop a guideline on participatory catchment and implementation plan and to be reviewed for validation.

- II. Finalize guideline of participatory catchment management and implementation plan and endorsed.
- III. Submit final version of the guideline on participatory catchment management and implementation plan to MoE and Regional Project Coordinating Unit (RPCU)-SPC for approval

**Activity 3.** Develop a lesson learnt report based on technical fieldwork, surveys, valuations and diagnostic analyses consultations, and preparation of the integrated catchment management plan.

## **6 KEY DELIVERABLES, TIMELINE AND PAYMENT SCHEDULE**

The consultant shall provide the following deliverables, with the final deliverable submitted to Conservation International no later than 6 weeks after the field visit. The suggested timeline for each deliverable and the schedule of payment is shown below.

<b>Deliverables</b>	<b>Estimated completion date</b>	<b>Payment</b>
1.Draft integrated catchment management plan.	06 August 2021	50%
2.Draft guideline on participatory catchment management and implementation plan	13 August 2021	25%
3.Lessons learnt report and Powerpoint	20 August 2021	25%

**7. a. Fee for Services.** In consideration of Service Provider's performance of the Services during the Period of Performance, CI shall pay Service Provider an amount

equal to **FJD 13,000.00** which is (\$650.00 per day for 20 working days). This fee is subject to **5% provisional tax** deduction payable to Fiji Revenue & Customs Services.

b. Payment Terms.

Payment shall be made in accordance with the following payment milestones:

- (1) FJD6,500.00 upon completion of deliverable No.1
- (2) FJD3,250.00 upon completion and CI's acceptance deliverable No.2

c. Period of Performance

The Performance Start Date is July 26 2021. The Performance End Date is August 30, 2021.

## **7 COMPETENCIES OF PROSPECTIVE SERVICE PROVIDER**

- At least 10 years of work experience in developing results-based monitoring and evaluation framework, tools and templates in development co-operation programmes.
- Proven experience and solid understanding of the agricultural with focus on livelihoods and community resource management is required.
- Degree/honours/PhD in the field of social sciences or socio-economic development management or appropriately related field.
- Strong reporting, communication, documentation and presentation skills
- Demonstration of strong analytical and research skills.

## **8 ADMINISTRATION**

The Consultant may be an individual, firm or company or consortium of companies and should be able to assume duties in January 2018.

## **9 PROCUREMENT**

The process for selecting the qualified and preferred Consultant will be based on the Procurement Policy of the DBSA. A closed procurement process will be used with documented records of the selected consultants who will be sent the request for

proposals and those who will respond.

## **10 APPLICATION PROCESS**

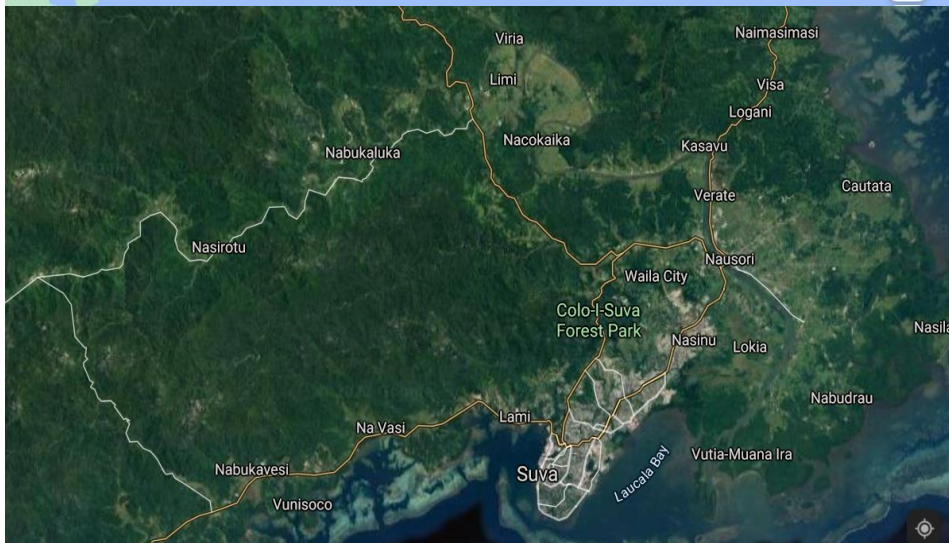
Interested consultants should submit the following documents to demonstrate their qualifications, experience and skills:

- CV of each team member (if more than one)
- An expression of interest in the scope of work as per the TOR including (1) highlighting relevant work experience which s/he brings into the consultancy process with clear examples and competences; (2) a draft timeline for completion of the scope of work; (3) a budget to undertake the work. Note that CI will organise and cover the costs associated with travel to the field site and to conduct the consultations so these should not be included in the costing.

## Annexes 5 – Key information only

Describe project site, policies, legal framework, and national plans related to the site

- PROJECT SITE



### 1.AREA

Located in the province of Naitasiri on the south-eastern part of Viti Levu covering a total 199 km<sup>2</sup> catchment area.

Lower Waimanu catchment is located between the Waimanu pump station and the Waila pump station with a catchment area of <20km<sup>2</sup>. Its land use characteristic is very different to the upper

Waimanu catchment. Surrounded by threat characteristics of a quarry, secondary school (ACS – Adi Cakabau School), two service stations, two small shopping centers, three villages and poultry abattoir. Upper Waimanu catchment is located next to a gravel extraction site that is west from the Waibau station downstream to the Waia pumping station.

## 2. WEATHER

Exposed to the trade winds, up to 2,900 millimeters (114 inches) of rain fall per year, of which more than 270 mm (10.6 in) fall per month from December to April.

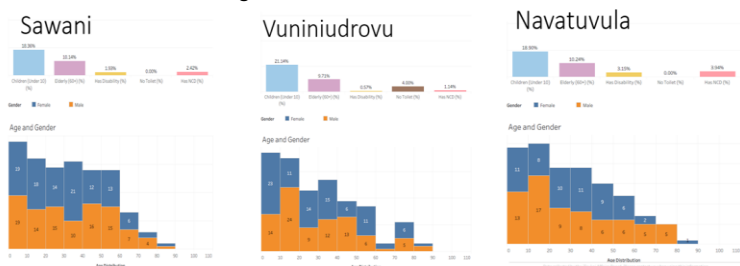
When it rains more than one day out of two, however, it rains on average around every second day even in the least rainy months, with a minimum of 120 mm (4.7 in) in July.

- Daytime temperatures around 30 °C (86 °F) from January to March, drop to 26/27 °C (79/81 °F) from May to October.
- Night-time temperatures drop slightly, from 23 °C to 20 °C (73 °F to 68 °F). The coolest months, at night, the temperature can sometimes go down to 12/13 °C (54/55 °F), so it can get quite cool.

## 3. POPULATION

- Relatively more settlements with housing population located towards the lower catchment area – population comprises smallholding farms, villages, large boarding school (ACS), formal and informal residences along Princess's Road.
- Exact population according to the 2017 census is estimated at less than 28, 981 counts of the entire rural community in the province of Naitasiri. Specifically, approximated 13,000 people living along the Waimanu river catchment.
- Three main villages located within the boundaries of the lower catchment:
  - Sawani village in the district of Naitasiri
  - Vuniniudrovu village in the district Naitasiri:
    - 77 women, 61 men, total of 138 individuals recorded.
    - Recorded households unknown.
    - The main water source for drinking, cooking, bathing, and toilet use is through the use of the PWD pipeline. The river is sometimes from the river as it is the main source for bathing.
    - Village has a village rubbish pit and an individual household rubbish dumping area, for only a few households, to manage its waste; there are no village dumping sites nor rubbish trucks.
    - Food wastes are placed into the village dumping area by some villagers, while the majority use it for manure, food for pets and other breeding animals, nor do they separate it from other waste.
    - Cans and plastic waste are either buried, burnt, or used to litter the village compound.
    - Wastewater flow through village: there is access to drainage for water to flow through; there is a more or less good flow of water and proper drainage of water to flow through the village that all collectively ends up at the edge of the village and the main Waimanu river.
    - Water ditch: channel from water ditch is channeled out either to the river or the drain outlet at the urban center of the village. Sanitary waste source is close to the river.
    - Village cleanliness: village ground, background and center are surrounded by vegetation and are kept clean. There is a footpath in the center of the village. The road towards the plantation is littered.
    - Main livestock: Main livestock is chicken (not fenced), pigs and cows which are fenced for management.

- Navatuvula village in the district Vuna:
  - 111 women, 111 men, a total of 222 individuals recorded.
  - Recorded 47 households.
  - The main water source for drinking, cooking, bathing, and toilet use is sourced through the village pipeline.
  - Village has a village rubbish pit and individual household rubbish dumping area to manage its waste and currently does not have a village dumping site nor rubbish trucks.
  - Food waste is used as manure and food for pets and other breeding animals; cans and plastic waste are either buried, burnt, or recycled.
  - Wastewater flows through the village: there is a more or less good flow of water and proper drainage of water to flow through the village that all collectively ends up at the edge of the village and the main Waimanu river.
  - Water ditch: main access is through the use of pipes and cement that is channeled out either to the river or the drain outlet at the urban center of the village. Sanitary waste source is kept far from the village and river.
  - Village cleanliness: village ground is surrounded by vegetation, with the background and center of village and road towards the plantation kept clean
  - Main livestock: Main livestock is chicken, cow, horse and pigs which is fenced for management.



Demographic status of the three villages in Waidamu Catchment

#### 4. ETHNIC GROUPS

The population in the Waimanu area is primarily of the two main group: i-Taukei (x%); Indo-Fijians (x%) and the others (x%).

#### 5. LANGUAGES

Communities are known to communicate under the three main official languages: English, Fijian (i-Taukei) and Fiji Hindi.

#### 6. TRANSPORTATION

- The main highway, Princess's Road, is located less than 1km from the lower catchment end and branches to form the tarsil backroad running parallel to the main Waimanu river
- Main mode of transportation: bus, private vehicles, trucks, other road vehicles, watercrafts (motorboats).

#### 7. DEVELOPMENT

- Gravel Extraction & Dredging
- Farming & Agricultural practices
- Waimanu Quarry
- Deforestation
- Large School compound
- Road expansion

- Business centers
- Waste Disposal dump site

#### 8. FLORA & FAUNA

- Information within the Waimanu catchment is completely lacking in documentation and literature.
- Information outside the Waimanu catchment area is tabulated below.

Organization/Authors	Site	Project	Assessment
Gunnar Keppel, Jone Cawani Navuso, A. Naikatini, Nunia T. Thomas, Isaac A. Rounds, Tamara A. Osborne, Nemani Batinamu, and Eliko Senivasa	Savura	Pacific- Asia Biodiversity Transect Network (PABITRA) (Fiji) Landscape transect	Vegetation Flora Mammals Herpetofauna Freshwater invertebrates
University of the South Pacific	Colo i Suva	The Queen's Commonwealth Canopy	Freshwater vertebrate and invertebrates Terrestrial insects Birds and Mammals Plants
Birdlife International	Savura, Waimanu	Important Birds Areas Fiji	Important Bird Areas of Fiji

**Commented [1]:** we will need to describe what these reports say in the Diagnosis Report - Senilolia a commentary about the number of species etc.

#### 9. TOPOGRAPHY

- Upper Waimanu catchment:
  - Steep, mountainous topography with deeply incised streams
  - 30-40% catchment is steep land (slopes > 18°) while much of the remaining catchment area is rolling and hilly land (slopes 3- 18°)
- Lower Waimanu catchment:
  - Waila slope in the range of 3-4°. The steep terrain contributes to landslide and erosion in the catchment. The sediments and soils are washed during heavy rainfall events, increasing the turbidity of water. Furthermore, agricultural activities on steep areas further aggravates erosion in the catchment (Singh, 2017).

#### 10. SOIL

- The soil type humic latosols, highly weathered soils with weakly developed A horizons dominates in the catchment, especially the Lobau clay with some Sote clay and Waimaro clay occurring around the Waibau area (Nainoca, 1998).

#### 11. GEOLOGY

- The general geology of the Waimanu- Tamavua locality including the site can be described from the geology map of Fiji as largely andesitic rocks of the Medrausucu volcanic merging with Savura volcanic on the upper elevated areas with recent alluvium on the swamps that covers the riverbanks.
- The rocks are mainly volcanic rocks in the catchment. It is composed mainly of the Savura volcanic group (Early and Middle Eocene) and Verata sedimentary group (Pliocene) with Suva Marl. Alluvium is found at the frequently inundated area where the Waimanu joins the Waimanu River (Nainoca, 1998)
- The Savura Volcanic group composed of andesitic to rhydacitic flows, breccias and colcaniclastic sediments with minor basalts flows and intrusions. While the lower part of Wainimala Group consists of volcanic breccia and volcanic conglomerate and the upper part consists of lutite, sandstone, reef limestone and volcanoclastic rocks. Hence the rocks of Wainimala Group were altered to various extents and covered unconformably by the Medrausucu Group.
- The lower riverbanks have recent alluvial deposits as top cover underlined by the volcanic rocks exposed on some of the steep sloped surrounding the river.



- The Waimanu catchment has varying geology. The Tuvatu Greywacke, Namalevu Conglomerate and Veisari Sandstone formations dominate the upper catchment geology (Singh, 2017).

Describe policies, legal framework, national plans related to the site

Legislation	Focus	Mandate	Year
<b>Land Conservation and Improvement Ordinance</b>	Land	Conservation orders relating to soil conservation practices in agriculture, to prevention of overgrazing, to protection of vegetation cover, and to the prohibition of the land use of land damaging sledges	1953
<b>Rivers &amp; Streams Act, 1985</b>	Rivers and streams	Regulation of water rights and use. Landowner, town, village and inhabitants neighboring the river have right for using river and have indemnified water rights to river water.	1985
<b>Drainage Act</b>	Drainage	Mandates the Controlling Authority to establish Drainage Area	1985
<b>Irrigation Act</b>	Drainage	Mandates the jurisdiction minister to assign a Commissioner for Irrigation, who designates Irrigation Area and has responsibility for maintenance of irrigated institution and irrigated agriculture	1985
<b>Town Planning Act (Cap.139) and Subdivision of Land Act (Cap.140)</b>	Land	Regulates all lands and building developments, land subdivision, on-site operations and activities defined as development under the Act. It extends to all town planning areas, both urban and rural as well as islands where developments have taken plan, excluding proclaimed villages, village reserves and native reserves.	1973
<b>Town Planning General Provisions</b>	Land	Outlines the requirements for building developments in flood areas. According to the Act, no building shall have the floor level of any habitable room lower than 6.0meters relative to Mean Sea Level	1998
<b>Environmental Management Act</b>	Environment	Provides legal framework for Environmental Impact Assessment, EIA and comprehensive management practice for natural resources, waste management and anti-pollution measures. Competent authority of this law is the Department of Environment, DOE For regulation of this law, Environment Management (EIA Process) Regulations 2007 and Environment Management (Waste Disposal & Recycling) Regulations 2007 were established in January. 2008 and many sorts of procedures about environmental management were prescribed. DOE had	2005

		prepared Environmental Impact Assessment Guidelines in 2008 and revised second edition in 2012	
<b>Fiji Forest Policy</b>	Forests and catchments	Conservation of biodiversity, water catchments and soil fertility	2007
<b>Fiji Rural Land use Policy</b>	Soil and water	Protection of soil and water	2002
<b>WAF Promulgation</b>	Water supply	Managing water and sewerage systems	2007
<b>Land and Water Resource Management Bill</b>	Land and Water Resources	Land resources management. Drinking water catchments covered indirectly by some of its provision/	2016