



Solomon Islands Government

**Ministry of Mines, Energy and Rural
Electrification**

**Tina River Hydropower
Development Project (TRHDP)**

Community Development Plan



May 2017

Table of Contents

I. INTRODUCTION TO THE COMMUNITY DEVELOPMENT PLAN	6
II. PROJECT DESCRIPTION.....	10
A. THE PROJECT.....	10
B. COMPONENT 1 – HYDROPOWER FACILITY.....	10
C. COMPONENT 2 – ACCESS ROAD	13
D. COMPONENT 3 – TRANSMISSION LINE	14
E. COMPONENT 4 – TECHNICAL ASSISTANCE	14
F. COST ESTIMATE	15
G. IMPLEMENTATION SCHEDULE	15
III. DESCRIPTION OF THE SOCIO-CULTURAL ENVIRONMENT	16
A. SOCIAL IMPACT ASSESSMENT	16
1. Social Assessment Schedule and Location.....	16
2. Social Assessment Methods.....	18
B. SOCIAL ORGANIZATION.....	21
1. Key Contextual Factors	21
2. Settlement Patterns	22
3. The People of the Project Area	24
C. SOCIO-ECONOMIC PROFILE OF COMMUNITIES IN THE PROJECT AREA	30
1. Data Sources.....	30
2. Population	30
3. Population Trends	30
4. Sex and Age Structure.....	31
5. Ethnicity	32
i. Gender	32
D. LOCAL PEOPLES’ SOURCES OF LIVELIHOOD.....	34
1. Framework.....	34
2. Livelihood Strategies.....	34
3. Household Incomes and Expenditures	35
E. HUMAN CAPITAL	36
1. Work.....	36
2. Paid Employment.....	37

3.	Household Production and Self-Employment.....	38
4.	Occupations	40
5.	Education	41
6.	Health and Health Services	42
7.	Child Health.....	43
8.	Access to Health Services	43
9.	Household Nutrition	44
F.	PHYSICAL CAPITAL.....	45
1.	Household Equipment and Facilities.....	45
2.	Housing	46
3.	Infrastructure	47
G.	SOCIAL CAPITAL.....	50
1.	Wantoks.....	50
2.	Religion	51
H.	FINANCIAL CAPITAL	52
I.	NATURAL CAPITAL.....	52
1.	Introduction.....	52
2.	Land and Land Use.....	52
3.	Water Rights.....	54
4.	Crops	55
5.	Forest Resources.....	55
6.	Timber Extraction	56
7.	Hunting and Fishing	56
8.	The River	57
IV.	IMPACT ON COMMUNITIES IN THE PROJECT AREA	59
A.	IMPACT ON LANDOWNERS	59
1.	Overview.....	59
2.	Core Land.....	59
3.	Northern Infrastructure Corridor	60
B.	POTENTIAL SOCIO-ECONOMIC IMPACTS.....	61
1.	Potential Impact Causing Activities.....	61
2.	Types of Social Impacts	62

3.	Health, Safety and Wellbeing - Impacts and Mitigation	63
4.	Women - Impacts and Mitigation	65
5.	Women's Safety and Wellbeing	67
6.	Women's Work and Roles	67
7.	Minority and Vulnerable Groups	68
8.	Social Relations and Social Organisation – Impacts and Mitigation	69
9.	Local Customs and Way of Life – Impacts and Mitigation	70
10.	Livelihoods and Key Resources – Impacts and Mitigation	71
11.	Cultural Heritage – Impacts and Mitigation	79
12.	Potential Beneficial Social Impacts Identified by Community Members	81
V.	LAND ACQUISITION PROCESS FOR THE CORE LAND AND ASSOCIATED BENEFITS	
	86	
A.	THE LAND ACQUISITION PROCESS	86
1.	Overview	86
2.	Access Agreement	86
3.	Identification of the Core Land	87
4.	Identification of the Four Customary Landowners of the Core Land	87
5.	Process Agreement Negotiation with the Four Tribes	88
6.	Addition of the Fifth Tribe to the Process Agreement	88
7.	Terms of the Process Agreement - Compensation	88
8.	Terms of the Process Agreement – Benefits	89
9.	Mechanisms to Avoid Elite Capture	89
VI.	COMMUNITY BENEFIT SHARING	91
A.	Overview	91
B.	Introduction to Benefit Sharing in Hydropower Projects	91
C.	Two Phases of Benefit Sharing in the TRHDP	94
D.	Construction Phase: Community Benefit Sharing Pilot (CBSP)	94
1.	Overview	94
2.	Detailed Design of CBSP	94
3.	Component 1: Establishment of Community Benefit Sharing Fund (CBSF) and Community Capacity Building	95
4.	Component 2: Improving Community Infrastructure	96

5.	Component 3: Human Resource Development.....	98
6.	Component 4: Project Management, Monitoring and Evaluation, and Knowledge Dissemination	99
7.	Implementation Arrangements of CBSP	101
8.	Cost Estimate and Financing Plan of CBSP	102
E.	Operations Phase: Community Benefit Sharing Mechanism (CBSM)	103
1.	Overview.....	103
2.	Objective	103
3.	Targeted Communities	103
4.	Implementation Arrangements	103
5.	Activities to be financed.....	103
6.	Cost Estimate and Formula for Determining Benefit Share Payments	104
VII.	MONITORING AND EVALUATION OF CBSP AND CBSM.....	106
A.	Monitoring and Evaluation of the CBSP.....	106
1.	Monitoring and Evaluation Arrangements	106
2.	Financing.....	106
B.	Monitoring and Evaluation of the CBSM	106
1.	Monitoring and Evaluation Arrangements	106
2.	Financing.....	106
VIII.	COMMUNITY CONSULTATIONS AND GRIEVANCE REDRESS	107
A.	Community Consultations	107
B.	Principles of Grievance Redress	107
C.	Types of Grievances.....	108
D.	Grievance management approach.....	109
E.	Mechanism for dealing with grievances	109

I. INTRODUCTION TO THE COMMUNITY DEVELOPMENT PLAN

1. World Bank *OP 4.10 – Indigenous Peoples* provides that “*the Bank provides project financing only when free, prior and informed consultation results in broad community support to the project by the affected Indigenous Peoples.*” For the Tina River Hydropower Development Project (TRHDP, the Project), the Solomon Islands Government (SIG) initiated the free, prior and informed consultation process in 2010 during the early stages of the Project’s feasibility study. This process resulted in the identification of the land owners of the customary land that need to be acquired for the Project (i.e. Core Land tribes), and has also resulted in obtaining broad community support from indigenous peoples communities of the broader Malango and Bahomea tribal groups in and around the Core Land (i.e. project area communities). The land acquisition process is detailed in the Project’s Land Acquisition and Livelihood Restoration Plan (LALRP), and the free, prior and informed consultation process resulting in broad community support by the project area communities is described in the Assessment of Socio-Economic/Socio-Community Impacts section of the Environmental and Social Impact Assessment (ESIA).

2. For “*projects that are proposed for Bank financing and affect Indigenous Peoples*”, World Bank *OP 4.10 – Indigenous Peoples* requires the borrower to prepare an Indigenous Peoples Plan (IPP), but a separate IPP is not required “*when Indigenous Peoples are the sole or overwhelming majority of the direct project beneficiaries*” and that “*the elements of an IPP should be included in the overall project design*”. Given that the majority of the population in the Solomon Islands is regarded as indigenous peoples, the majority of the Project beneficiaries, who are the users of electricity benefiting from lower cost of electricity, are also regarded as indigenous peoples. A separate IPP, therefore, has not been prepared, but SIG prepared the Project to avoid physical relocation of indigenous peoples and also integrated “*culturally appropriate project benefits*” into the Project.

3. The objective of this Community Development Plan (CDP) is to describe the benefits that will be received by the project area communities as a result of the Tina River Hydropower Development Project (TRHDP), in particular, members of the Bahomea and Malango tribes, including the Core Land tribes, which are the indigenous, customary landowning groups in the project area. There are approximately 27 tribes within the Bahomea and Malango tribes that have been identified through various means throughout the feasibility studies and government inquiry into landowning groups, and which have been parties to an Access Agreement for project studies as well as a consultative body called the Landowner Council (LOC). There may be some variation over time in the number and names of tribes considered to be landowning tribes in the project area, as there has been during the land identification process, but the members of these tribes are the primary beneficiaries of the activities described in this Plan.

4. The benefits described in this Plan are distinct from the overall Project benefits which will be mainly in the form of lower cost electricity for all customers of Solomon Islands Electricity Authority (SIEA), nationwide. As such, the broader group of project beneficiaries comprises all current and future SIEA customers. Since the project area communities will be affected in various, and somewhat unpredictable, ways by the presence of project in their area, SIG aims to ensure that these communities, most of whom are not currently SIEA customers due to the lack of transmission lines in most of the project area, experience improvements in their lives as a result of hosting the Project.

5. The benefits described in this Plan should also be understood as distinct from the range of mitigation actions that are described in the two core project safeguard documents, the ESIA (including the Environmental and Social Management Plan: ESMP) and LALRP which specify actions required by various parties to mitigate temporary and permanent social and environment impacts, including compensation for acquired land and replacement of damaged or destroyed assets during construction. The benefits described in this Plan are above and beyond the requirements of impact mitigation and compensation.

6. There are two main beneficiary groupings (Core Land tribes and project area communities), and two main stages of benefit provision (during construction and during hydropower facility operation) that will be described in this Plan. Core Land tribes are members of 5 tribes whose land has been acquired for construction and operation of the hydropower facility and been granted specific benefits as part of the Process Agreements signed with SIG agreeing to acquisition of the land. Project area communities, as described above, are members of the broader group of approximately 27 tribes in the project area as well as other residents in the project area that may benefit from investments in the area who will benefit through the community benefit sharing mechanism.

7. As a part of the long period of ongoing consultations with project communities, from 2010 onward, a range of social and economic development needs have been identified, and mechanisms for addressing these needs have been discussed. This Plan will summarize the needs and development priorities of the project area communities, as captured primarily in the ESIA/ESMP, as well as the mechanisms which will be implemented to address these needs, during the full, 34-year period of the Power Purchase Agreement (PPA) between the soon-to-be-formed Project Company and the electricity off-taker, SIEA. The PPA period is inclusive of 4 years of construction and 30 years of hydropower facility operation. Such benefits are briefly summarized in the table below.

Beneficiary Group	Benefits during Construction	Benefits during Operations
Core Land Tribes (Roha, Buhu Garo, Kochiabolo, Viurulingi, Uluna-Sutahuri)	<p>Provided under the Process Agreements:</p> <ul style="list-style-type: none"> Return to tribal landowners of 50% ownership in the acquired land after the acquisition through the creation of the Tina Core Land Company (TCLC) - a joint venture company between SIG and the Core Land Tribes. TCLC to lease the Core Land to the Project Company during construction, whereas the lease will be distributed to each of the Core Land Tribe's Cooperatives (Tribal Cooperatives). Tribal Cooperatives will also be established for each of the 5 Core Land tribes to channel the land compensation, royalty and land 	<p>Provided under the Process Agreements:</p> <ul style="list-style-type: none"> The TCLC to lease the Core Land to the Project Company during operation, whereas the lease will be distributed to each of the Tribal Cooperatives. Ongoing payment of a revenue share (royalty) of 1.5% of the amount paid by SIEA under the PPA. Ongoing technical and capacity building support to the TCLC, Tribal Cooperatives and tribal members.

	<p>lease funds directly to each member of each core tribe, regardless of age or gender.</p> <ul style="list-style-type: none"> • Government will build the capacity of core tribal members to participate actively in these organizations and to invest and spend their funds wisely. 	
<p>Project Area Community members (including Core Land Tribes)</p>	<p>Through the Community Benefit Sharing Pilot (CBSP):</p> <ul style="list-style-type: none"> • Support to establish a benefit sharing fund to be ready for use during hydropower facility operations • Investments in high priority development activities identified through community consultations, including: <ul style="list-style-type: none"> ○ electricity grid extension up the access road to Tina Village, connecting Rate School and Konnga Health Center; ○ improved water supply and sanitation in public facilities and village centers in the Bahomea and Malango cultural area; and ○ job training to facilitate employment of community members in the construction of the hydropower facility, road and transmission line. 	<p>Through the Community Benefit Sharing Mechanism (CBSM):</p> <ul style="list-style-type: none"> • Regular payments over the 30-year operational period in association with PPA payments, averaging approximately US\$350,000 in nominal terms with a provision for escalation • Key elements of the CBSM subject to agreement through PPA negotiations <ul style="list-style-type: none"> ○ a minimum guaranteed amount to cover administrative and modest investment costs in the event of significant facility disruption; ○ a linkage between the annual financial transfers and hydropower facility operations, as a percentage of Project Company revenue, a value/levy based on each unit of electricity produced by the facility, or another method that links the financial benefits going to communities to the successful operations of the facility; ○ no cash payments to community members, but rather investments in development activities that benefit community members such as education, health, livelihood skills; ecotourism;

		<p>small-scale infrastructure; etc.;</p> <ul style="list-style-type: none"> ○ dedicated funds for administration to ensure high quality implementation, transparency and accountability in the use of resources, possibly to be managed by the Project Company or another suitable organization; and ○ use of a trust fund to hold benefit sharing funds for community development investments and fund administration, with trustees representing beneficiary communities and government.
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8. While financing for the community benefit sharing scheme will be linked to the operation of the hydropower facility, the CBSP during the construction period is expected to be approximately US\$2 million, and SIG has requested financing from the Japan Social Development Fund. The CBSM during the operation of the hydropower facility will have an annual “base component” of funds for benefit sharing which will be sufficient to finance administration of a community benefit sharing fund (CBSF) and to finance at least a modest amount of development activities, with a likely focus on education. A “variable component” of the annual benefit sharing calculation will be in addition to the “base component” and build the connection between the effective operation of the hydropower facility and the funds available for the community benefit sharing activities.

9. Community consultations, monitoring and grievance redress will vary across the different benefit streams. Process Agreement benefits will be monitored and support by the TRHDP Project Office (PO) in the Ministry of Mines, Energy and Rural Electrification (MMERE) at least through the end of the period of World Bank financing, to mid-2023. After this time, the Tribal Cooperatives should be operating effectively, and their working relationship with the Project Company should be effective. The PO will implement the activities during construction, maintaining active engagement with the beneficiary communities throughout implementation. As World Bank financing will only continue for one year after the commissioning of the hydropower facility, consultations, monitoring, and grievance redress will be financed through the administrative component of the CBSM. The procedures for these systems will be elaborated as part of the detailed design of the CBSM which will be financed during construction through the CBSP.

II. PROJECT DESCRIPTION

A. THE PROJECT

10. The hydropower facility (HFP) of the Tina River Hydropower Development Project (TRHDP, the Project) is located on the Tina River which is one of the two tributaries of the Ngalimbiu River which discharges to the east of Honiara into the Iron Bottom Sound. The Project's dam site is located in Malango Ward 20, Central Guadalcanal District approximately 20 km (direct distance) from Honiara. The water from the reservoir is conveyed through a headrace tunnel and a penstock to a powerhouse on the left bank. A short tailrace will discharge the water back into the Tina River, whereas the bypass section length is 5.7 km. An access road of 18.7 km will connect Kukum Highway to the HPF, and a transmission line to Lungga Power Station will evacuate the power from the HPF to the Honiara Electricity System (HES). Project location map is in **Figure 1**.

11. TRHDP will consist of four components:

- **Component 1 - Hydropower Facility (HPF)** with an installed capacity of 15 MW (with an extra bay to expand capacity to 20 MW when demand increases) to be developed and operated by the Project Company under a 34-year concession on a build-own-operate-transfer (BOOT) basis. The power off-taker will be the Solomon Islands Electricity Authority (SIEA);
- **Component 2 - Access Road** of 18.7 km to be developed between Kukum Highway and the HPF site;
- **Component 3 - Transmission Line** to be developed by SIEA to evacuate electricity from the HPF to the HES; and
- **Component 4 - Technical Assistance** to the Solomon Islands Government (SIG) to monitor and support project implementation and ensure social and environmental safeguard risk mitigation including the sound execution of the Environmental and Social Management Plan (ESMP) as well as the Land Acquisition and Livelihood Restoration Plan (LALRP).

B. COMPONENT 1 – HYDROPOWER FACILITY

12. The HPF will be implemented on a BOOT basis by the Project Company (PC) to be established jointly by three shareholders, Korea Water Resources Corporation (K-Water), Hyundai Engineering Co., Ltd. (HEC), and SIG through its main public investment vehicle, the Investment Corporation of Solomon Islands (ICSI). The PC will enter into a 34-year PPA (including 4-year construction period) with SIEA for the sale of net available generation capacity.

13. Component 1 costs include the PC's cost of construction, development costs, interest during construction, working capital and contingencies. Asian Development Bank (ADB), Economic Development Cooperation Fund (EDCF), International Renewable Energy Agency/Abu Dhabi Fund for Development (IRENA/ADFD) and Green Climate Fund (GCF) will provide concessional financing to SIG which will on-lend the proceeds to the PC. SIG's equity share will be financed by IDA.

**ESIA for the Tina River
Hydropower Development Project**

Project layout and Study areas

Solomon Islands Government
Ministry of Mines and Energy
and Rural Electrification
Tina River Hydropower
Development Project

SOLOMON ISLANDS

Honiara

Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster

LEGEND :

- Main villages nearby the Project access road or quarries
- Dam
- Powerhouse
- Access road (Black Post road)
- Access road option 7C
- Quarry
- Chainage (according to Entura, 2010)

Study areas

- Impacted area
- Downstream area
- Upper catchment
- Upper catchment sampling area
- Tina catchment limit
- Toni River catchment
- River courses (1976)
- Road to Honiara
- Option 7C reservoir

May 2015
Source: BRL
Background map: Scan 50 (1976)

0 0.5 1 2 3 km

14. The salient features of HPF is provided in **Table 1** and the layout of the HPF scheme is in **Figure 2**.

Table 1: Salient Features of HPF

Item	Description
River Basin	Ngalimbiu River
River	Tina River
Catchment Area at Dam Site	125 km ²
Average River Discharge at Dam Site	13.1 m ³ /s
Dam Type	Roller-compacted concrete (RCC)
Dam Height	72 m from foundation
Dam Crest Length	207 m
Dam Volume	199,000 m ³
Full Supply Level (FSL)	175 m above sea level
Reservoir Length	2.6 km
Reservoir Area at FSL	30 ha
Reservoir Volume – Active Storage	1.42 million m ³
Reservoir Volume – Dead Storage	3.25 million m ³
Headrace Tunnel Length	3.3 km
Penstock Length	116 m
Tailrace Length	16 m
Design Discharge	18 m ³ /s for 3 units (24 m ³ /s when 4 th unit added)
Gross Head	102 m
Installed Capacity	5 MW x 3 nos. (with extra bay to add 5 MW)
Annual Energy	78.35 GWh per annum
Net GHG Emissions Reduction	49,500 tCO ₂ eq/year or 2.48 million tCO ₂ eq over the 50-year project life (based on Bank's <i>Guidance Note: Greenhouse Gas Accounting for Energy Investment Operations</i>)
River Bypass Section Length	5.7 km
Environmental Flow	1.0 m ³ /s

Source: Tina River Hydropower Development Project – Feasibility Study prepared by SIG (executed by Entura).

[illegible]

C. COMPONENT 2 – ACCESS ROAD

15. The access road construction will be constructed by the main EPC contractor and will be entirely grant financed. The access road will connect the existing Kukum Highway along the northern coast of Honiara with the HPF, and is divided into two lots:

- **Lot 1.** Upgrading of 13.2 km of existing gravel Black Post Road from Black Post Junction of the Kukum Highway to Managikiki Village.
- **Lot 2.** Greenfield development of 5.5 km road from Managikiki Village to the HPF facility including spurs to the powerhouse, dam, quarry site, etc.

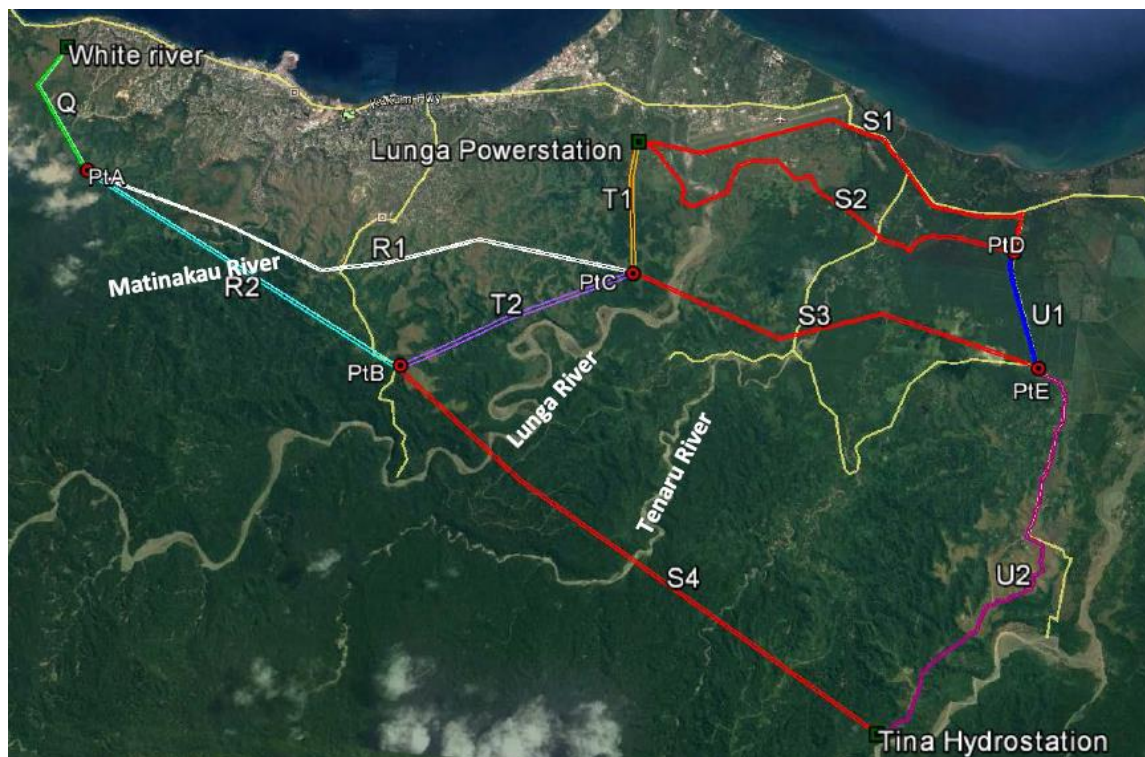
16. Design parameters have been established separately for Lot 1 and Lot 2. In particular, Lot 1, which will be used also by the local communities will be constructed as a 2-lane road of 6.0 m width, while Lot 2, used exclusive by construction vehicles during construction period, will be a 1-lane road of 4.0 m width with a passing bay at 500 m intervals. The access road will be a gravel road except for steep gradient sections in Lot 2 which will be paved.

17. While the construction of the access road is included in the EPC contract under Component 1, it is presented as a separate component because its cost is ring-fenced and would be fully financed by grants from the Australia-Pacific Islands Partnership Trust Funds (APIP TF) of the Government of Australia (GOA) and GCF. Such arrangement is required in order to keep the PPA tariff at a level acceptable to SIEA, and also because a major segment of the access road is a public investment which also brings benefit to the mobility and well-being of the local communities.

D. COMPONENT 3 – TRANSMISSION LINE

18. The 66 kV transmission line will be developed and operated by SIEA. In **Figure 3**, below, SIEA's preferred route is U2+S3+R1+Q (approximately 34.0 km) to White River and tee-off to Lungga Power Station through route T1 (2.7 km). As the transmission line will be significantly longer than the Feasibility Study route of approximately 22.5 km, and the line to White River is not essential for the evacuation of power from the HPF, the Project will finance only the line to Lungga Power Station (sections U2+S3+T1 = 21.6 km), while SIEA will later self-finance the line to White River (sections R1+Q).

Figure 3: Transmission Line Route Options



Source: Tina-Honiara 66 kV Transmission Line - Detailed Concept Design Report, SIEA (executed by Entura).

E. COMPONENT 4 – TECHNICAL ASSISTANCE

19. The technical assistance is aimed at supporting the Project Office (PO) under the Ministry of Mines, Energy and Rural Electrification (MMERE) implement the Project through financing of (i) the Dam Safety Advisory Panel (DSAP) comprising experts on dam, geology, seismology and hydrology/sedimentology; and (ii) environment and social experts; as well as (iii) an independent environmental and social monitoring agent on the implementation of the environmental and social management plan, and the gender action plan; and (iv) an NGO to engage with landowning tribes in the upper catchment to support the first stages of establishing a protected area, up to the point of preparing a Protected Area Management Plan and Budget, if communities members are interested and committed in doing so. It will also support the day-to-day project management of the MMERE PO.

F. COST ESTIMATE

20. Due to the inherent high cost environment of the Solomon Islands, further exacerbated by the complex technical conditions to develop a major hydropower plant, financing costs associated with commercial loans would have made the Project financially unviable. The Solomon Islands Government (SIG) has, therefore, mobilized significant concessional financing for the project to reduce the cost of financing. The impact of concessional financing is expected to lower the PPA tariff to nearly half of the level compared to if the Project was financed by commercial debt. Total project cost is currently estimated at USD\$240 million, including all of the project components described above.

G. IMPLEMENTATION SCHEDULE

21. The parties to implementation of Components 1 and 2 are in the process of negotiating the PPA and other project documents. It is expected that the project documents will be finally agreed by October 2017. Based on this assumption, the HPF is expected to be commissioned by mid-2022. The transmission line (Component 3) should be completed by end-2021. The technical assistance (Component 4) will commence as soon as the IDA funding is approved, signed and declared effective, and continue until closing of the IDA implementation in June 2023.

III. DESCRIPTION OF THE SOCIO-CULTURAL ENVIRONMENT

A. SOCIAL IMPACT ASSESSMENT

22. A social impact assessment was conducted as part of the Environmental and Social Impact Assessment (ESIA). The following sections are drawn from the social assessment for the purpose of describing the target beneficiaries of the CDP as well as their socio-cultural history and current conditions. Further details can be found in the ESIA itself.

1. Social Assessment Schedule and Location

23. Field surveys were carried out from 29 August to 25 September 2013. The village field work schedule and locations are provided in **Table 3** and **Figure 4**. The program of fieldwork was developed with the aim to concentrate most of the fieldwork effort on the indigenous communities likely to be most directly affected by the proposed development options, while also allowing time and resources for input to be provided by communities, and stakeholders, not likely to be immediately or directly affected by the project's construction or operation.

Table 3: Village Field Work Schedule and Locations

Date	Core Venue	Target hamlets/stakeholders	Grouping	Ward
2-Sep-13	Marava	Marava, Vatupaua, Rate CHS, Ngongoti	Bahomea	Malango
3-Sep-13	Haimane,	Vuramali, Haimane, Horohutu 2, Katihana	Bahomea	Malango
4-Sep-13	Tina	Tina, Valebebe, Valebarik, Valemaota, Tahurasa	Bahomea	Malango
5-Sep-13	Antioch	Antioch, Valesala, Komeo	Bahomea	Malango
9-Sep-13	Senge	Senge, Koropa, Choro	Bahomea upstream	Malango
10-Sep-13	Pachuki	Habusi, Pachuki, Veraloka	Bahomea	Malango
11-Sep-13	Office	Fieldwork team & assistants		
12-Sep-13	Verakuji	Mangakiki, Verakuji	Bahomea	Malango
13-Sep-13	Namopila	Namopila, Komureo, Valekocha, Vatunadi	Bahomea	Malango
17-Sep-13	Mataruka Ado	Malango (Mataruka 1, 2, 3, & 4) Belaha communities	Bahomea	Malango
18-Sep-13	Vera'ande Horohutu 1	Vera'ande, Verakweli, Niumahata, Horohutu 1(settlers)	Settlers	West Ghaobata
19-Sep-13	Ravu	Ravu area hamlets (Ghaobata plains communities)	Ghaobata – downstream	West Ghaobata
20-Sep-13	Verakabikabi Old Selwyn	Settler communities, lower roadside Ghaobata plains communities	Settlers Ghaobata – downstream	West Ghaobata West Ghaobata
23-Sep-13	Honiara	Team workshop with assistants & project team		
24-Sep-13	Honiara	Institutional stakeholders	Government and NGOs	

Source: Tina River Hydropower Development Project – Environmental and Social Impact Assessment, SIG

2. Social Assessment Methods

24. The social scope for the assessment, as specified by the study terms of reference (TOR), covered:

- the above geographical areas, and within them the:
 - a. Teha speaking customary landowning residents, including leaders, general public, groups, kinship groups, women, and youth.
 - b. The "settler" residents (that is, people originating from elsewhere in Guadalcanal, but residing locally as "guests" of the landowners.
- users of the Tina River in general.
- other stakeholders, including customary landowners who do not regularly reside within the project area, and environmental and community NGOs.

25. To ensure that the various stakeholders specified in the TOR were covered by the fieldwork investigations, the Tina River catchment area was divided into four areas or zones, based on the proposed project, - each with a different set of issues to be investigated, as follows:

- Any communities located in the Direct Impact Area, that is, the lands required for the construction and operation of the proposed dam, storage reservoir, headrace tunnel, and powerhouse, as well as any borrow areas, set down areas, and yards, etc (Core Area) and any communities located in the 50 metre wide access road and transmission line corridor (Infrastructure Corridor). No communities or residences were identified in this area or in the Upstream Area above the reservoir.
- The people and communities likely to be mainly affected by changes in the river water quality, volume, or availability during the construction or operation of the hydro scheme – downstream of the power station site. This area was designated as the Downstream Area. Within this group, the Senge Community are the villages located closest to the Direct Impact Area.
- The people and communities likely to be mainly affected by modifications to, and use of, the existing or new access road/s, and transmission line corridor but who are not located within the Direct Impact Area. These areas were designated as the Infrastructure Area.
- The people and communities who use or have ownership rights to land and resources in the project area and downstream, but do not necessarily reside in the Tina-Ngalimbiu River valley. These were designated as belonging to the Wider Impact Area (WIA).

26. These various groupings are generally consistent with the communities' geographical distance from the Core Area. Groups 1 to 3 could also be affected by loss of access to livelihoods and resources upstream of the proposed dam, and by the potential presence of a construction workforce. All groups could benefit from employment or contracting opportunities during construction and operation of the scheme.

27. Using this classification, the villages and hamlets in each of the different project impact areas were identified, as shown in **Table 4**.

Table 4: Classification of Tina Catchment Settlements by Potential Project Impact

Impact area	Customary landowning communities	Non-customary communities
Direct Impact Area (DIA) and Upstream Area Settlements	<i>None.</i>	
Downstream Area Settlements	<p><i>In Bahomea district:</i></p> <p><i>Senge Community (proximate to the reduced flow reach):</i> Choro, Koropa, Senge</p> <p><i>Other Bahomea:</i> Habusi, Pachuki, Namopila, Komureo, Vatunadi, Tahaurasa, Tina, Valebebe 1 & 2, Vuramali, Haimane, Valebariki, Horohutu2</p> <p><i>In Ghaobata area (plains):</i> Popolo 1 & 2, Old Selwyn, Ngalimera, Selaghogoro, Pokasou, Siroigha, Kadavu, Ravu area, villages on Tenakaro Road, and riverside road to Tetere between main road and the mouth of Ngalimbiu River .</p>	<p>Horohutu1 New Birao</p> <p>GPPOL village,</p>
Infrastructure Area settlements	<p><i>Bahomea District</i> Mangakiki/Verakuji, Pachuki, Marava area, Vera'ande/Grassy</p>	Verakabikabi, Namanu area
Wider Impact Area (WIA) settlements	<p><i>In Malango district</i> Communities of Malango area and Belaha area</p>	

Source: Tina River Hydropower Development Project – Environmental and Social Impact Assessment, SIG

28. The social studies in the communities consisted of the following:

- Structured community workshops designed to collect information in each village area about a) the local way of life, social organization, history of settlement, resources, and livelihoods, and b) views on potential project impacts. Each meeting brought together several associated hamlets. The meetings typically took approximately 4 hours and followed a standard format. Discussions were conducted in Solomon Islands pidgin and occasionally in the local indigenous language (Teha), and were aided by the use of large format maps, printed satellite imagery, and sketched diagrams. Where necessary, additional explanation of the hydro scheme components and operation (as known at the time) was provided by the team. Attendance sheets were completed for each meeting. Fifteen such village workshops were held covering the residents of 40 villages and hamlets. Total attendance was at least 511 men, woman, youths, and children.
- A questionnaire survey of a random selection of female householders from each of the hamlets represented at the community meeting. This questionnaire covered household nutrition, health, gender and age division of labour, resources and income, and anticipated project impacts. Approximately 50 such interviews were conducted, each taking approximately 30 minutes.

- Individual interviews with village and tribal chiefs and older men about sacred and important cultural sites and issues. These were conducted by the team's national cultural impact specialist.
- Where time permitted, transect walks were carried out through village and garden areas, complemented by photography and recording.

29. The social baseline studies were carried out by both on-site social surveys and bibliographical data. Photographs in **Figures 5 and 6** illustrate engagement activities at three of the villages located within the project area. The methods used to undertake the social surveys are presented in the following sections.

Figure 5: Discussions at Verakambikambi Village



Source: Tina River Hydropower Development Project – Environmental and Social Impact Assessment, SIG

Figure 6: Discussion at Segue and Tina Village



Source: Tina River Hydropower Development Project – Environmental and Social Impact Assessment, SIG

30. The members of these communities were given the opportunity to inform the ESIA team of their specific communities' interests, and concerns regarding the construction and operation

impacts of the proposed hydropower project. These were recorded on a white board, and detailed notes were also made. The responses to the questions and the concerns raised are detailed in the ESIA Annex 15.

B. SOCIAL ORGANIZATION

1. Key Contextual Factors

31. Based on a review of reports and other secondary information, and fieldwork conducted in Guadalcanal, the following points seem to be crucial considerations for the planning of the TRHDP and the social assessment:

- the system of clan-based customary collective land ownership, coupled with shifting settlement patterns and leadership, and inter-tribal marriage, gives rise to complex claims and conflicts over resource and land rights;
- lack of services and infrastructure, underdevelopment, isolation, and poverty in Guale indigenous rural communities despite their proximity to Honiara;
- the historic settlement, agricultural development, and alienation of large areas of the Guadalcanal plains by colonial administrators and corporations, and their use of migrant labour from Malaita;
- the post-World War II development of Honiara as the modern day capital of the Solomon Islands with its associated multi-island and multi ethnic population located on Guadalcanal, and its on-going sprawl onto adjacent Guale customary land;
- on-going large-scale and unsustainable logging of Guadalcanal's indigenous forests by foreign logging companies with high level political patronage, that provides little apparent material benefit to the majority of indigenous land owners;
- the establishment of the Gold Ridge mine, with on-going grievances regarding distribution of benefits and royalties;
- the recent history of Guale rising up against the central government, the cause of which was a sense of inequity in the distribution of benefits and costs of development, and the associated violent conflict between indigenous people and "settlers" from Malaita, and other islands and regions. This ethnic tension, and associated civil unrest, was present in the project area and has abated under the authority of the Regional Assistance Mission to Solomon Islands (RAMSI), but has not necessarily been resolved¹.

32. At the local level, Pacific Horizon Consulting Group (PHCG) note the following are also important to the context for the TRHDP:

- The emergence of the Project Office as the primary identity for the TRHDP, rather than MMERE and its officials.

¹ For example, during the ESIA fieldwork in September 2013, a group of intoxicated Malango youths from the Tina village area attacked a Weather Coast settler and destroyed their roadside stall/shop at the corner of the Namanu Road in the hope of evicting them. Some of the settlers are occupying "alienated"/government land.

- The emergence of various groups and organizations for interacting with the Project and government, including the Bahomea House of Chiefs, the Malango House of Chiefs, the more recently formed Tina River Hydro Landowner Council (with 27 representative groups “purporting to represent a district clan within the Ghaobata and Malango areas”), along with area-based groupings of villages within the project affected area (e.g., the Upper River Catchment Community centered on Namopila)

2. Settlement Patterns

33. The TRHDP study area consists of over 30 villages and hamlets (listed in Table 4) of mainly indigenous people originating from the central Guadalcanal mountain lands, and several official “settler” villages made up of people originating from South Guadalcanal/Weather Coast.

34. The Bahomea villages and their component hamlets are mainly distributed adjacent to the Ngalimbiu River and lower-mid sections of the Tina River, and are often only hundreds of meters apart. In some cases it is hard to distinguish where one hamlet ends and another begins (e.g. Antioch and Valesala). Most hamlets in the study area are connected together by walking tracks and in some cases by dirt roads, which are prone to becoming impassable during wet weather. In recent years, settlements have been established along the main Bahomea access road and logging track that run up the ridge that marks the left side of the Tina Valley.

35. Settlements range in size from two-house hamlets with one extended family, up to villages with dozens of houses and over a hundred residents. These larger villages tend to be arranged around a village square/green with a substantial church, and perhaps a meeting-house and other facilities. The details of the various villages are provided in subsequent sections.

36. Roughan et al (2011) and Entura (2012) both provide a history of the settlement of the Tina River area, and while the accounts differ in some respects, they agree on the following key aspects:

- the present-day indigenous inhabitants of Malango Ward, and in particular the proposed project area, are closely related and have common ancestors.
- the originating communities lay at the base of Mount Popomanaseu, and were variously named Sasahakama, Belana, Tuhurutolu, and Malukuna.
- Since World War II and the establishment of Honiara city, there have been successive waves (or chains) of migration down from the villages of the central mountains to the foothills to the north, so that people could be closer to modern services and employment, to be safer from landslides and other natural disasters, and to protect clan lands from intrusion inland by squatters and others.
- In these moves, people from different originating Malango villages stayed together and settled in different areas. The people from Belana and Tuhurutolu settled in the Tina river/Bahomea area. The people from Malukuna settled in the Malango area, and people from Sasahakama settled in the Gold Ridge area and on the Toni River.
- There has been some subsequent movement from the north back up the main ridges of Malango Ward, as areas have been opened up by logging roads, and possibly to avoid exposure to ethnic conflict.

- Mixed in with the indigenous Malango-speaking communities are more recent arrivals of people from the Weather Coast who sought refuge locally from natural disasters, poverty, and conflict, and who moved to find employment in the plantations and foreign owned resource industries.
- Since the 1980s there has also been unauthorised settlement on Malango lands by migrants from Malaita, and elsewhere that were drawn to Honiara for employment.
- The ethnic tensions of the late 1990s and early 2000's displaced the non-indigenous settlers, including many hundreds working in the (now GPPOL) palm plantation, and squatters, resulting in a major reduction in the population of the Malango and West Ghaobata wards.
- With the subsidence of the ethnic tensions, people from the Weather Coast have returned to the Bahomea area, and squatters are again moving onto the government and alienated lands within Malango Ward.

37. At present, the mountainous interior of Malango Ward is essentially unpopulated, apart from periodic expeditions by the traditional owners for hunting and camping, and to reconnect with customary 'homelands'. The indigenous people of the Tina River area are, therefore, aware of the locations of their key originating villages and important cultural sites. Since membership of particular clans is claimed through kinship connection with people from successive historic settlements and originating places, knowledge of such places is crucially important for establishing identity and land and resource rights.

38. Original migrants from these upland villages can be still found among the older residents of the TRHDP study area, and they have knowledge of the sequence of migration and village creation within the Tina catchment. A number of stories of such movements were recorded during the social impact assessment fieldwork.

39. Traditionally, Guadalcanal villages were periodically moved so they could be located closer to newly cleared gardens, to move away from bad spiritual influences, or because of natural disasters. Such natural disasters feature prominently in the history of settlement of the Tina River Valley. Cyclone Namu, which hit the region in 1986, is probably the most significant event in terms of destruction and relocation of villages. Settlers from the Weather Coast also came north as refugees from floods, earthquakes, and landslides. Some of the early upland settlement areas of the Malango people were also badly affected by natural disasters². Nowadays, various factors encourage villages to be permanently located, such as the building of permanent churches and houses using more durable building materials, the availability of services, roads and other infrastructure, and perennial cash crops. Reasons for relocation given by villagers who participated in the community workshops include:

- as resettlement after landslides, flooding and cyclones, especially Cyclone Namu in 1986;
- better access to employment and, therefore, the opportunity to improve living standards;

² Note that in early April 2014, subsequent to the ESIA fieldwork and reporting, a major flood in north and central Guadalcanal appears to have damaged the villages of Habusi, Pachuki and Namophila. The local effects of the flood are unknown.

- better access to services and facilities, including health, education, transport, markets, and churches;
- to get better access to quality gardening land;
- over-crowding and shortage of resources, for example, land for a house or water supply;
- to escape influence of the Moro Movement;
- to provide greater protection to clan land, especially from migrant labour squatters; and
- family disagreements or feuds.

40. Internal migration and the formation of new village communities are only possible because of kinship networks and clan membership, which provides access to land and livelihoods throughout the Bahomea/Malango area.

41. Downstream of the Tina River, where the Ngalmibu River joins the Guadalcanal plains, there are larger villages and hamlets made up of the indigenous coastal people, referred to as the Ghaobata. The plains and coastal area also contain hamlets of settlers from elsewhere, including “squatters” who have (re) occupied “vacant” marginal, or abandoned plantation land on the plains, which had been vacated during the Ethnic Tensions. The current makeup of the squatter hamlets is said to be predominantly Malaitan peoples drawn to the Honiara area for work, but this was not confirmed. It is clear from village discussions that the Bahomea and Ghaobata peoples regard the presence of these non-indigenous outsiders as a threat to their land and resource rights, and is an ongoing potential source of conflict.

3. The People of the Project Area

a) *Language Group*

42. The indigenous people of the TRHDP area are often referred to as the Malango, and speak the Malango language (also known as Teha). They are hill peoples who once occupied hamlets around the central mountains of Guadalcanal, including Mt Popomanaseu, the highest point in the Solomon Islands. Up to the 1950s or so, the hill people of central-north Guadalcanal largely lived in isolated hamlets, rather than centralized larger villages that are evident today.

43. According to Lynch, Ross, & Crowley (2002), the Malango language belongs in the Bugotu–Gela–Guadalcanal family of languages within the overall Southeast Solomonian group, itself part of the Oceanic group within the larger Malayo-Polynesian set of languages. Other languages in Guadalcanal family of languages are Birao, Ghari, and Talise. According to Ethnologue (the Internet reference site for the world’s languages), in 1999 there were an estimated 4,140 native speakers of Malango/Teha. The downstream neighbours of the Bahomea-Malango people of the Tina River valley, the Ghaobata people, are indigenous speakers of the Longgu language.

44. The Malango people are largely resident in the modern-day administrative Malango Ward of central-northern Guadalcanal, and have a population of 10,500, 95% of whom are Melanesian. The proposed TRHDP lies within the Bahomea district, and is centered on the Tina River and associated ridge/s running from the mountainous interior north towards the Guadalcanal Plains. The people of Bahomea district are kinsmen of the peoples of Malango to the west, and to those

of the Gold Ridge area to the east. The Ghaobata people live on the plains, and are largely located in two administrative Wards – West Ghaobata and East Ghaobata. The Ngalmibiu River runs through West Ghaobata Ward to the sea.

b) Kinship and Tribal Structure

45. Guadalcanal societies are known for their matrilineal descent systems, that is, where descent and inheritance are traced through the mother's line. Normally in matrilineal systems women marry outside their own kin group into a nearby community and reside with their husband's people after marriage. A woman's sons take up land from their mother's brother upon reaching adulthood. Adoption may also be used to provide matrilineages with heirs to land (Schoeffel, Fitzgerald et al, 1994). The most common pattern is for marriage partners to be chosen from a different clan, so in matrilineal systems one may not marry one's mother's kin, because they are members of the same descent group as oneself. However, one might be able to marry one's father's kin, since they are not of one's own descent group. Several matrilineal kinship systems are found on Guadalcanal.

46. Hogbin, in his 1930s studies of Guadalcanal societies³, found that that the hill tribes of North Central Guadalcanal (Including the Malango people) are organized into a pair of exogenous matrilineal moieties, each with their respective custom origin stories. These moieties are known as the Manulava ⁴(the eagle or “big bird”) and Manukiki (the hawk, or “small bird”). Every indigenous person belongs to one or other of these moieties. Hogbin also records that each moiety consists of a number of matrilineal clans/sub-tribes each of which carries the name of a different species of bird, and each clan has primary rights over blocks of land scattered /patch-worked across the tribal landscape, “with no piece of ground un-owned” (1964:17). That is, land and resource ownership is based on clan membership. This remains the situation today among the Malango people of the TRHDP area. In their review of the “Indigenous Terrain”, Roughan et al (2011) confirmed that the matrilineal clans (mamata) of the study area “are the sole authorities vested with authority over territory” (p. 29).

47. Previous studies have noted that regardless of the decent system, in the Solomon Islands women tend to move to their husband's village after marriage (known as virilocal residence). In a matrilineal descent system, this means that women will be living away from their own land, which will be under the control of their brothers. As people living in villages where they are not members of its land-owning groups, they are, therefore, outsiders when it comes to local-level decision-making, particularly about land and resource use⁵. Women are far more likely to be in this situation than men. This tends to be the case in the communities of the TRHDP area, although there is a degree of variation in marital residence.

48. **Figure 7** represents the kinship structure of Malango society as revealed by an informant in the Bahomea area. Note that terminology varies for the types of groupings at different levels, and there is a range of spelling for names of the different groups/units. This diagram suggests that there are 29 clans within the Tribe, though the exact number is contentious. For example,

³ For example, Hogbin, I. 1964 *A Guadalcanal society: the kaoka speakers*. London, Holt, Rinehart and Winston.

⁴ Known to the Malango/Teha speaking people of the Project area *Manukama*

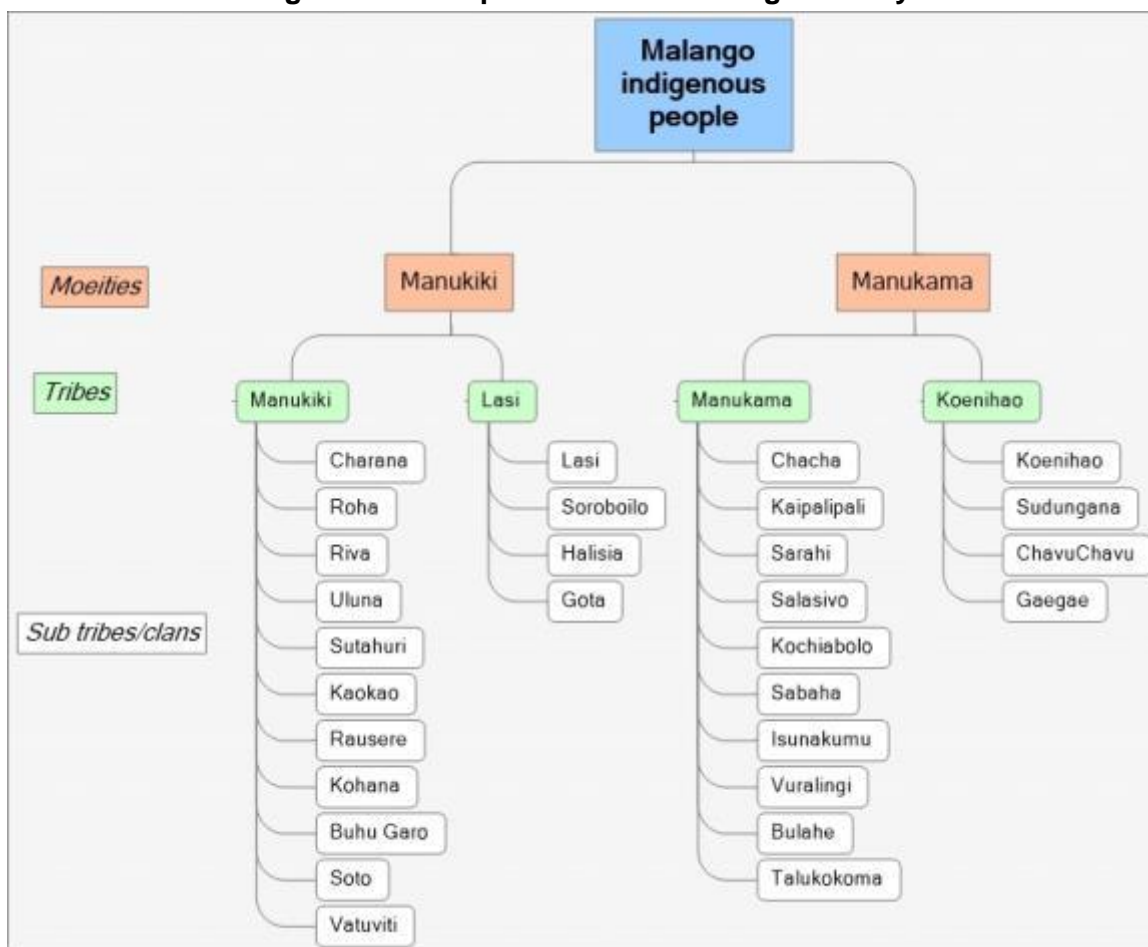
⁵ Schoeffel, P., Fitzgerald, G, and Loveridge, A. 1994. Solomon Islands Forestry Inventory Project Working paper 19: Forest utilisation in the Solomon Islands: social aspects and issues

Roughan et al (2011), in their work on indigenous terrain mapping, identified 13 named clans in Bahomea, and 14 in Malango (27 in all), along with their chiefly representatives.

49. In 2010, SIG, through intermediaries, identified 27 tribal sub groups as having a stake in the TRHDP, and they became signatories to the original access agreement with SIG to allow the project feasibility studies to proceed. Subsequently, in consultation with local leaders, the TRHDP PO identified 10 “communities” and their component villages, along with the list of clans found in each community - giving a total of 21 locally resident clans.

50. Not all of the clans identified by our informant are present in the project area, or necessarily represented by either of the Houses of Chiefs (HOCs) as described in project documents. Further clarification on clans in the area is provided by the ‘land identification’ process undertaken by the Bahomea Land Identification Committee comprised of Bahomea story tellers, a Paramount Chief, a church leader and tribal chiefs (TRHDP, 2013).

Figure 7: Kinship Structure of Malango Society



Source: Tina River Hydropower Development Project – Environmental and Social Impact Assessment, SIG

51. According to Hogbin (1964), the tribes occupying the northern and eastern coastal area of Guadalcanal, between Point Cruz and Longgu, including the Ghaobata people who neighbour the project area, are divided into five exogamous matrilineal tribes named Hambata, Lasi Naokama, Thimbo, and Thonggo. Of these, Hogbin noted in the 1960s that:

The chief importance of the clan organisation is its application to land rights... Land is cut into named blocks of varying acreage, some 2 or 3, others 50 or 60 acres large. These are grouped into series each of which is bound up with a clan. By virtue of his birth into a clan, an individual acquires the inalienable right to select sites for his house and cultivation on the territory of that clan (1964:5- emphasis added).

52. Roughan et al (2011)⁶ suggest that the tribal structure of the people of the Bahomea area is similar to that for the Ghaobata and other coastal people. They suggest there are 5 named tribes (or kema) in the project area, that is, Lathi, Thimbo, Negama, Thongo, and Gaobata (also known as Garavu and Hambata), and these are divided into land owning and rights-holding subunits called mamata (clans). However, this is not quite consistent with what local informants have suggested is the situation for the Malango people, and what Hogbin noted during his anthropological studies.

c) Local Communities

53. As noted above, the TRHDP PO identified various “communities” and their associated clans. The basis for “community”, which according to Roughan et al (2011), is one of the key elements of the cultural landscape and is dynamic. However, the available information indicates that there is a mix of clans present in any particular village or geographical community. In practice, Guadalcanal communities are dynamic, and sometimes ephemeral.

54. As noted above, new villages are formed in response to the need for services, as a new start after natural disasters, resource scarcity and availability, spiritual threat, and internal conflict. Overlapping with communities of place, communities of interest may be formed or dissolve according to peoples’ affiliation with particular interest or group (e.g., religion or issues-based grouping). Again, overlapping with both place and interest, communities of identity are based around kinship and ethnic affiliation, which can shift or be reinvented over time, e.g., the assertion of an “Isatabu” (indigenous Guadalcanal) identity by the Moro movement in the post-war period, at the time of independence in the 1970s, and during The Ethnic Tensions.

55. From the social assessment fieldwork data it would seem that the groupings are based on a combination of geographical location, kinship, and religious affiliation, although this is not entirely consistent. For example, Senge Village is said to be associated with Namopila Village, but in practice the families located at Senge are closely related to those at Marava, from whom they split in the 1970s, or so. The extended family at Koropa (founded in 2003) is closely affiliated to Namopila through kinship.

56. During the fieldwork, it was common to hear people say that all of the people in the Malango area are related to one another, and that “we are all really one family”. It is not clear, however, to what extent these bonds extend to resource or residential rights.

57. **Table 5** lists the communities in the TRHDP study area and their tribal affiliations.

Table 5: Communities in the Study Area and Their Tribal Affiliations

⁶ in the PHCG “Indigenous Terrain Mapping Report” prepared for the project

Communities	Villages	Est. Pop. 2010	Paramount Chiefs	Subtribe / clan Chiefs	Village leaders/ chiefs	Sub tribes/clans In the community
Namopila community	Namopila, Choro, Senge, Habusi, Pachuki, Komureo,	300+			5	Sutahuri, Kaokao, Uluna, Koenihao, Kochiabolo, Sabaha
Antioch community	Antioch, Valesala, Valekocha, Vatunandi	150+		3	2	Kochiabolo, Lasi, Kaipalipali, Kaokao, Charana, Roha, Koenihao, Sutahuri, Uluna
Verakuchi community	Mangakiki, Verakuji, Hanilake	200+		3	3	Kochiabolo, Charana, Kaipalipali, Roha, Sarahi
Tina community	Tina, Valebarik, Valebebe, Tahurasa, Valemaota,	300+	1	6	3	Sarahi, Riva, Chavuchavu, Rausere, Sudungana,
Marava community	Marava, Ngongati, Rate CHS, Vera'ande, Verakwele, New Mahata	200+		1	3	Charana, Kochiabolo, Kaipalipali, Sabaha
Katihana community	Katihana	150+	1	*	2	Chavuchavu, Uluna, Kaokao, Halisia, Rausere, Chacha, Kochiabolo
Vuramali community	Vuramali	100+	1	1	2	Kochiabolo, Koenihao, Charana, Uluna, Soroboilo, Salasivo
Haimane community	Haimane	150+	1		2	Koenihao, Lango, Sutahuri, Uluna
Horohotu	Horohutu 2 & 3, Valele'e	100+			2	Chavuchavu, Salasivo, Kaipalipali, Charana, Sarahi, Koenihao
Settler communities	Horohutu 1, Verakabikabi, New Birao, Namanu, Vatupaua	120+			4	from Guadalcanal Weather Coast clans

Source: Tina River Hydropower Development Project – Environmental and Social Impact Assessment, SIG

d) Political Organizations

58. The Malango people are divided into two administrative groups: the Bahomea House of Chiefs (BHOC) and the Malango. According to a local informant (a member of the Bahomea House of Chiefs) the BHOC is a legally constituted body, and consists of the four Paramount (tribal) Chiefs plus the subtribe/clan chiefs and local village chiefs, along with other representatives and elected officers. The chairman is elected by and from the members. The Houses of Chiefs seem to exist primarily to determine resource and land rights, resolve disputes, settle matters of custom and breaches thereof, and to represent local indigenous people in dealings with outside organisations. Houses of Chiefs are a relatively new institution, and while their internal governance is unregulated modern government has given them a role in providing an initial determination of land disputes under the Local Courts Act.

59. Much has been written about the process by which leaders⁷ emerge from within Melanesian societies. As elsewhere, local leaders /chiefs do not acquire their positions or authority by inheritance, although they do draw on their relationships with kin, neighbours, and fellow churchmen and with other networks (i.e., local social capital) to build a base for leadership. Despite fieldwork and the available project reports, it is unclear how the leaders are selected within the Bahomea area. From observation, clan leaders appear mainly to be elderly males who have the best knowledge of the history and customs of their clan, including the land and resources to which they have primary rights. This is crucial, since the clan is the primary land-owning group. Village leaders /chiefs appear often to be younger and show more of the characteristics of “Big Men”, i.e., they appear to have above average ability, seem able to organise and sponsor projects and events, are active in various economic and church activities and can rally both human networks and natural resources for economic and sociocultural purposes. For example, a paramount chief is also the Pastor of the South Seas Evangelical Church (SSEC) church at Tina Village; the village chief at Verakuchi is the sponsor/funder of the new local SSEC church; and a chief at Marava was the sponsor/funder of a new pre-school at Verakuchi.

60. More traditional “big men” activities still occur in local communities. For example, a traditional pig feast gathering took place in September 2013 at Habusi, which involved large numbers of local people and featured the distribution of pigs and other produce among the participating clans and communities.

61. Regarding modern politics and leadership, Malango Ward is a political unit of the Guadalcanal Provincial Government, and is currently represented on the Provincial Assembly by Mr. Amaziah Robo. It also lies within the national Parliament’s Central Guadalcanal constituency, currently represented by Hon. Peter Shanel Agovaka.

e) *Village and Community Organizations*

62. Kinship is the most important basis for community formation and action among the people of the TRHDP area. After kinship, church membership is the next most important. As noted, villages in the TRHDP area are often made up of several related hamlets, and sometimes these have different religious affiliations. As observed above, local clan and village leaders may also be religious leaders.

63. Some villages have formally structured administrations. For example, at Marava, which has a population of 180 or so, there is a central community board which has six committees covering different areas of community life and development, including: education and training; women, children and youth; culture tourism; health and sanitation; agriculture and forestry; and projects.

64. There are also five church groups represented locally, and each church has its own groups, such as a woman’s groups, sports groups, singing bands, and youth clubs. Also located at Marava is a community house belonging to the Malango Council of Women (MCOW), one of a network of groups organised by the Guadalcanal provincial government. MCOW has a woman’s community house which is used as a meeting and educational centre.

⁷ most often referred to as “big men”.

C. SOCIO-ECONOMIC PROFILE OF COMMUNITIES IN THE PROJECT AREA

1. Data Sources

65. The most reliable data for assembling a profile of communities associated with a proposed development usually comes from an official Census of population and dwellings. However this is not always available. For the most part, the only statistical data that are available for constructing a profile of the TRHDP study area are population estimates for the various villages, made by local chiefs for the TRHDP PO, and those data gathered in the community workshops and from householder interviews conducted by the ESIA field team.

2. Population

66. The communities potentially affected by the TRHDP all fall within the Malango and West Ghaobata Wards. Previous local estimates put the population of the TRHDP area at approximately 2000, with half of these having “direct access” to the Tina/Ngalimbu River (Entura, 2012:32). The counts made during the ESIA fieldwork put the Bahomea/Tina population at about 1800, divided among approximately 362 households.

67. The villages of the project area have an average population of approximately 56 people, and an average of 11 households. Settlement sizes vary from 4 persons for Choro (the isolated occupation site in the upper Tina River), to 219 for the settler community of Verakabikabi. Nearly half the surveyed settlements had 5 households or fewer, and only 11 of the 32 villages had 20 households or more. The largest indigenous villages (with 100 people or more) are Tina, Antioch, Valebebe, Haimane, Mangakiki, and Marava. Komeo near Antioch, was abandoned at the time of the survey, while the settlement at Choro appeared to be occupied sporadically by an elderly couple, and seems mainly used as a shelter during times of garden cultivation of clan lands in the upper Tina River catchment.

68. The average household size in the TRHDP area is 5 persons, compared with 5.9 for the whole of Malango Ward in 2009. Households of the Senge Community average 5.1 persons, 4.6 in the other Bahomea downstream villages, and 5.6 in the households in the infrastructure impacts area. Based on the limited data available, the downstream Ghaobata households are of a similar size to those in the Bahomea area and to the rest of West Ghaobata Ward. In 2009, Solomon Islands households had an average of 5.3 persons.

69. While having a significantly larger population than its coastal neighbours, at 19 persons per km² Malango Ward has a low settlement density compared to West Ghaobata (60 persons per km²) – reflecting the very different terrain of each group of people. West Ghaobata and East Ghaobata wards have the highest settlement densities of all wards in Guadalcanal Province.

3. Population Trends

70. Little reliable data is available from which to determine population trends for the TRHDP area. Even where village level figures from 1986 are available, it is almost impossible to interpret the data without access to the census boundary maps of the time.

71. From the available data, it seems that Tina village has about the same population as in 1986, Marava's population has trebled, Horohutu 2 has almost doubled, and Vera'ande has decreased by more than half. The populations of the Weather Coast settler communities of Horohutu 1 and Verakabikabi have increased after having been significantly depopulated during the Ethnic Tensions. Verakabikabi appears to be about 4 times larger than in 1986. This may be because the villagers, being settlers residing in the area under a customary arrangement with the local indigenous chiefs, do not have their own local land rights outside of this area, which might enable them to spread out and establish new hamlets.

72. On a broader scale, census counts for Malango Ward show the socially disruptive depopulation effects of the Ethnic Tensions, and the post-tension rapid repopulation and growth: that is, from 6,094 people in 1986, to 4,105 in 1999 at the height of the tensions, and 10,532 in 2009. The population of Malango Ward is now 2.5 larger than it was in 1999. Over the same 10-year period, the population of neighbouring West Ghaobata (downstream of Bahomea) went from 2,601 to 4,962, making it almost twice the size it was in 1999.

73. By comparison, the population of Guadalcanal Province (excluding Honiara City) increased by 55% between 1999 and 2009, while the population of the Solomon Islands as a whole increased by 26%. Guadalcanal Province has the fastest growing population of all the provinces. Natural growth is high due to high birth rates and declining death rates, but this has been obscured in recent years by internal migration.

74. Fraenkel (2004), drawing on results of the 1999 census, records that 4,098 people (or 16.7% of the population at the time) were evicted or fled from Malango Ward and became displaced persons in 1998-99, as a result of the Guale uprising. In West Ghaobata 2,808 people were displaced (11.4% of the population), and in East Ghaobata 1,549 people (6.5% of the population were displaced). Most of those driven out the district were Malaitan and fled initially to Honiara.

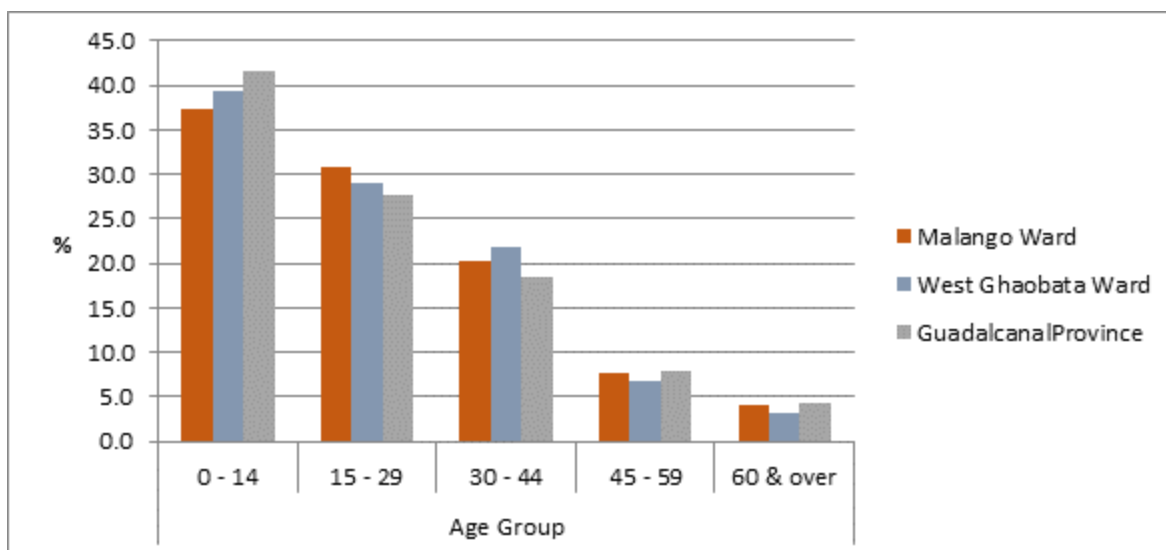
75. The project is therefore taking place in a local context of considerable former social disruption and post-conflict population growth – with its associated demand for residential and garden land, natural resources, and social services.

4. Sex and Age Structure

76. **Figure 8** shows the age structure of the population of the relevant wards compared with Guadalcanal Province in 2009. The populations of Malango and West Ghaobata have very similar age structures and are generally consistent with the rest of the Province. That is, they have very large proportions and numbers of infants and young children (aged 0-14 years), and very few elderly people, the latter of which are the repositories of traditional knowledge and customs. The high proportion of children is consistent with observations in the villages surveyed for this study, where the large number of potentially vulnerable teenage mothers and infants is very evident. However, there is some evidence that the Malango population is aging. For example in 2009, 37% of the population was aged 14 and under, compared with 45% in 1986.

77. Across each of the groups in the Malango and West Ghaobata ward populations, males outnumber females. Males make up 53% of the total Malango population, and 52% of West Ghaobata. In Malango Ward the gender imbalance is most evident in the 45-59 year old group, and may reflect a greater longevity among local males, compared with women.

Figure 8: Age Structure of Malango Population, 2009



Source: Tina River Hydropower Development Project – Environmental and Social Impact Assessment, SIG

5. Ethnicity

78. The population of Malango Ward is 95.4% Melanesian, although the available census data does not distinguish between people who are from Malango, and those from elsewhere in the Solomon Islands. This compares with 97.8% Melanesian in West Ghaobata, and 98.5% for Guadalcanal as a whole.

79. As noted elsewhere, there are groups of Weather Coast settlers residing legitimately in the Tina-Ngalimbiu area. In these cases, the settlers have formal customary agreements with the land owning clan and its chiefs. Through exchanges of pigs, produce and custom money (chupu), they have been granted rights to use local land for residences and gardens, but ownership is retained by the customary landowning clan. These agreements reportedly need to be renewed periodically. One of the challenges for the customary landowning peoples of North-central Guadalcanal, since the 1970s, has been the unsanctioned occupation of their land by people from Malaita and elsewhere, who have come to Guadalcanal to work in the city, in the plantations, and the resource extraction industries.

80. The main ethnic minorities in Malango Ward are Polynesians and Micronesians (relocated Gilbertese), possibly associated with the St Joseph's boarding school at Tenaru, and with settlements along the main road and/or close to Henderson.

i. Gender

81. The Solomon Islands national census report of 2009 identifies the total number of women as 251,415 out of a total population of 515,870 - or just over 48.4% (Census Report: 2009).

82. Women play the very important roles in Solomon Islands society, as mothers, gardeners, sellers of garden products, caretakers of children, and implementers of household chores. In traditional Guadalcanal society, women used to play an important role with respect to land tenure, land management and access to land, and had an impact on wider decision-making in local

communities. Women interviewed as part of the social survey, noted that in today's contemporary society, their interests and roles in dealing with land issues, have become marginalised. These communities, like those of other matrilineal societies "recognize women as legitimate landowners, but there is need for legal recognition through legislation as stated in the Land and Titles Act 1969" (Maetala 2008:39).

83. During field studies, women's views on issues affecting them and their responsibilities in the communities as leaders of families and women's groups, were recorded (**Figure 9**). Since it was not possible to interview women who belong to the Moro Movement, only those women leaders who belong to different Church groups were interviewed. Even though their views and decisions may be heard during community meetings, either on traditional, contemporary or religious issues, they are often not prioritized.

84. Regardless, it was interesting and worthwhile to hear about their responsibilities as women, and their views on the Project. During discussions, they were able to speak their minds freely concerning the possible impacts they feel the Project will have on their lifestyle, work, and the use of the water from the river. In addition to using the river for transporting timber and other materials from upstream, and obtaining gravel and sand for building houses, local people use the riverbank for drying their laundry. In other locations, there are special places where children are taken for picnics or camping trips during special events, such as the end of the year when children start their school holidays, or for Sunday School weekend outings.

85. Even though the communities visited appeared to want the Project to proceed, some women, especially those who are leaders and members of Church groups, expressed some reservations regarding the Project. This is because the river plays an important role in their way of life either every day or occasionally. Some women did not provide an opinion during the meetings because they still did not know what the effects of the Project might be, and because the type and magnitude of the Project is new to the country and, particularly, their region.

86. Since women are the ones mostly involved in looking after the welfare of the children and, in some cases the whole family, they wanted to ensure that the Project must not interfere with their normal lifestyle. For example, they commented that, presently, they have the freedom to move freely along the river without any fears. However, according to them, free movement will be restricted because no one knows how safe the dam will be when it is completed. Their fear is based on their experience with a huge volume of water, which destroyed some of the communities along the riverbank during Cyclone Namu in 1986.

Figure 9: Women at Verakuji and Marava



Source: Tina River Hydropower Development Project – Environmental and Social Impact Assessment, SIG

D. LOCAL PEOPLES' SOURCES OF LIVELIHOOD

1. Framework

87. The proposed TRHDP could have a significant effect on local people's livelihoods. Therefore, both the ESIA and householder surveys gathered background information on current livelihoods in each of the communities. This is presented below in terms of the elements of the Department for International Development's (DFID) 'sustainable livelihoods framework': that is, the range of livelihood strategies employed by local people, the livelihood capitals they deploy or utilize, the various constraining and enabling factors at play, and the various risks and vulnerabilities that people must manage to obtain the things they need to make a living, are outlined.

2. Livelihood Strategies

88. The main livelihood goals of the people and households of the project area appear to be daily food security, and protection of the family from risks of climate and loss of resources. With a paucity of financial capital, local people use a range of strategies, including a mix of the following:

- traditional garden cultivation and gathering of staple foods for subsistence needs, combined with occasional hunting
- Cash-earning activities to raise money to pay for imported food, shop goods, school fees, technology, community obligations, and household needs. Such activities typically include one or several of the following:
 - a. household-scale cash crop production, with the produce sold in the central market in Honiara
 - b. small-scale timber milling for local and Honiara markets

- c. local day laboring, for example in timber milling, garden clearing, house building, etc.
- d. running a small home-based business, such as home baking, natural materials handicrafts, a local shop-canteen selling small items, vehicle hire, etc.
- e. full or part time employment for a government agency or large company – typically the Gold Ridge Mining Company (GRMC) (when operational), GPPOL, Earthmovers Logging Company, market gardens.
- f. Fishery at the River mouth.

89. These strategies, therefore, mostly rely on having good access to:

- local natural capital such as land, forests, river, gravel and forest products
- household human capital, including traditional and formal skills and knowledge, and labour power
- physical capital in the form of tools, equipment, and transport infrastructure, and social capital in the form of assistance from neighbours, relatives, and fellow church members.

3. Household Incomes and Expenditures

90. The 2006 National Household Income and Expenditure Survey (HIES) calculated that 56% of all income to rural households in the Solomon Islands (and to households in Guadalcanal province) comes from home production of goods and services. That is, they are produced by the household and predominantly consumed by the same household. Next most important for Guadalcanal households is self-employment (13.5% cf 9% nationally), and wages and salaries (12%, both provincially and nationally).

91. People in the TRHDP area rely on both cash and non-cash income and, increasingly, they are being drawn into the cash economy to meet their needs. Most households have some level of subsistence production, though the current annual value of this subsistence production is not known.

92. The survey of householders in the project area indicates that the average weekly cash income for households is approximately SBD 870 ⁸, and the median income is SBD 500. However, the range of weekly cash incomes as reported to the social team is very wide, ranging from SBD 100 to SBD 6000.

93. In addition to income generating activities of various kinds, some members of the communities of the project area received periodic payments of royalties from the Gold Ridge Mine when it was operational and/or receive royalties from logging on customary land. This tends to be treated as windfall income and is used to purchase major items, if possible. Hence, it is not surprising that only a weak correlation was found between the number of appliances and pieces of equipment that a household owns, and the weekly income of that household.

⁸ Approximately \$121 US.

94. No data on local household expenditure were collected in the social survey. National data from the 2006 HIES indicates that average annual household expenditure in rural areas of Solomon Islands was SBD 23,366 for an average household of 6.0 persons, giving an average per capita expenditure of SBD 3,894. On average, 66% of this expenditure was on food, 11% on housing, 5% on transport, and 14.5% on miscellaneous goods and services.

E. HUMAN CAPITAL

1. Work

95. The Solomon Islands Census gathers information for each person aged 12 and over on whether they worked during the previous week, and the “type of work/activity they usually do”. Respondents are offered a choice of one of the following:

- Work for pay as an employee of government or private sector, as an employer, or as self-employed;
- Producing goods for sale;
- Producing goods for own consumption;
- Voluntary work; and
- Unpaid family work.

96. The implied assumption in the Census question is that people have one main or dominant kind of “work”, rather than being involved in perhaps equally important multiple activities. Taking the data for Malango Ward at face value, almost 35% of the 4,266 people of working age recorded in the 2009 census for Malango Ward were in paid employment, 10% were self-employed or employing other people, and a further 15% were producing goods for sale, for example, garden produce. This implies that 59% or so were engaged in the cash economy in some way.

97. The level of participation in the cash economy among people in West Ghaobata is similar (55%), but somewhat higher than for Guadalcanal as a whole (41%).

98. The 2009 census records that only 17% in Malango, and 24% in West Ghaobata, were engaged principally in subsistence food production, which is low in comparison to the whole of Guadalcanal province (38%). Malango and West Ghaobata may be at an advantage compared to other rural residents of Guadalcanal, since they are both located relatively close to Honiara city. Honiara has an active labour market and several large produce markets, including the Honiara central market, where most produce is sold and bought.

99. Importantly, the Census data show that there is a major difference in work between males and females in Malango Ward. For example, in 2009 only 471 of the 1,872 (i.e., 25%) involved in paid jobs were woman, whereas women made up 64% of those engaged in subsistence production, 53% of those producing goods for sale, and 72% of those doing unpaid family work. Apart from income from selling small volumes of cash food crops, home baking, and craft items locally and at the Honiara market, women typically have little direct access to cash.

2. Paid Employment

100. The village workshops attempted to gather information on the extent of paid employment in the communities of the TRHDP area as shown in **Table 6**.

Table 6: Employment in the Communities of TRHDP Area

Community & affiliation	Villages/ hamlets	In paid employment	Types/sources of paid employment	Main types of self- employment
Downstream Area - Senge Community				
Senge community	Senge Choro Koropa	1?	Public service	Chainsaw timber milling, ecotourism, market gardening
Total		1?		
Downstream Area – Other Bahomea				
Pachuki community	Pachuki Habusi	2	GRML, Earthmovers	Timber milling, market gardening, livestock, equipment hire
Namopila comm.	Namopila Komureo Vatunadi Valekocha	0		Timber milling, market gardening, gravel extraction
Antioch community	Antioch Valesala Kolanji Komeo	11	Public service, Earthmovers, GRML, GPPOL, church	Timber milling, firewood, market gardening, crafts, bush food marketing
Tina community	Tina Valebarik Valebebe Tahurasa Valemaota	20	GRML, GPPOL, Public Service,	Timber milling, market gardening,
Vuramali comm.	Vuramali Haimane Horohotu 2 Vuvamali	15	GRML, Public service, CBSI, Ports Company, Fisheries,	Timber milling, market gardening, copra, cocoa, canteen, handcrafts,
Horohutu (settlers) Settlers	Horohotu 1	12	GPPOL, GRML, NGO, public service, logging company	Vehicle hire, market gardening,
Total		60+		
Infrastructure impacts area				
Verakuji community	Verakuji Mangakiki	6		

Community & affiliation	Villages/ hamlets	In paid employment	Types/sources of paid employment	Main types of self-employment
			Public service, GRML, Earthmovers, Church,	Timber milling, market gardening, bush products marketing, vehicle hire
Marava community	Marava Ngongoti Vatupaua Rate school	4	GRML	Timber milling & marketing, handicrafts, market gardening, canteen, firewood
Vera'ande community	Vera'ande Verakweli New Mahata	19	GRML, GPPOL, QQQ farms,	Timber milling, market gardening, bakery, bush products,
Verakabikabi (settlers)	Verakabikabi		GRML,	Gold panning (artisanal mining), market gardening, vehicle hire
Total		29+		
Downstream Ghaobata communities				

Source: Tina River Hydropower Development Project – Environmental and Social Impact Assessment, SIG

3. Household Production and Self-Employment

101. The importance of multiple activities as a livelihoods strategy among the people of the greater TRHDP area is evident in the 2009, Census data on “household money earning activities” (see **Table 7**). For example, while 646 Malango residents said in 2009 that their main economic activity was producing goods for sale, 77% of households reported that they earned some money from the production and sale of crops and/or other products, such as vegetables and fruits, betel and other edible nuts, coconuts and related products, cocoa, cut flowers and wild plants, milled timber, and craft items. Compared with their Ghaobata neighbours, the people of Malango are more involved in the production of flowers and timber but much less involved in coconut products and cocoa. This reflects the accessibility to Ghaobata people of established (and perhaps abandoned) commercial plantations on the Guadalcanal plains, downstream of the Tina River.

102. The 2006 HIES reported that of the Guadalcanal households that were involved in some kind of self-employment, 34% were producing root crops for sale, 31% were producing other vegetables and fruits, 6% were doing livestock farming, 6% were catching and selling fish, 5% were in handicraft production, and 16% were engaged in some other kind of self-employment or small business activity.

Table 7: Households Earning Cash from Sale of Produce, 2009

	Number of households			Percentage of households		
	Guadalcanal Province	Malango Ward	West Ghaobata ward	Guadalcanal Province	Malango Ward	West Ghaobata Ward
Food crops	12088	1110	686	70.4%	63.5%	70.3%
Coco./Copra	4518	50	203	26.3%	2.9%	20.8%
Betel Nut	7574	152	215	44.1%	8.7%	22.0%
Cocoa	6392	309	280	37.2%	17.7%	28.7%
Tobacco	1045	35	5	6.1%	2.0%	0.5%
Timber	569	52	6	3.3%	3.0%	0.6%
Flowers	1428	189	52	8.3%	10.8%	5.3%
Other products	816	78	11	4.8%	4.5%	1.1%
none	1977	401	157	11.5%	22.9%	16.1%
Households involved	15186	1348	819	88.5%	77.1%	83.9%
Total households	17163	1749	976			

Source: Tina River Hydropower Development Project – Environmental and Social Impact Assessment, SIG

103. In our householder survey, 100% of the respondents indicated their household grew crops of some kind for home consumption, while 70% said they grew or collected produce for sale. This is reasonably consistent with the 2009 Census findings for Malango Ward.

104. Women of the study area tend to group together to make the weekly trip to Honiara to sell their produce, and to make any necessary household purchases. Different villages seem to favour different days for marketing, though Saturday seems to be the busiest day for the Honiara Central Market. Transport typically costs at least SBD \$50 per person each way, plus a market stall fee.

105. Relatively few respondents mentioned producing and selling betel nut and tobacco, despite there being an apparent abundance of betel nut in the villages of the study area, and plenty of betel nut chewers. Many indigenous village households are involved in some capacity in sawn timber production.

106. In his guide to Solomon Island food crops, French (2011) describes the diversity of crops produced in local gardens, and notes that having a range of cultivated and wild foods available is a proven food security strategy in an uncertain environment. **Table 8** reveals that the variety of food produce offered for sale is greater than reportedly produced for home consumption. With home consumption there is a much greater emphasis on staples such as root crops, banana, and cooking vegetables, whereas the cash crops are more likely to include salad (green leaf) vegetables and exotic items. This suggests that there is an established pattern of growing specifically for the market and targeting more high-value food products. Importantly, some domestically and commercially important green vegetables are collected from wetland areas

adjacent to the Tina River, and in some cases areas that may be required for the Hydro development.

Table 8: Crops produced for consumption and for sale by the surveyed households

Product	% of households growing for consumption	% of households growing for sale
Banana	90%	31%
Kasava (Manihot esculenta)	74%	19%
Kumara (Ipomoea batatas)	69%	26%
Beans	57%	31%
Cabbage	57%	19%
Tomato	55%	24%
sugar cane	50%	10%
slippery cabbage (Abelmoschus manihot)	43%	14%
taro (Colocasia sp)	38%	7%
yam (Dioscorea sp.)	38%	10%
Eggplant	36%	14%
Capsicum	29%	17%
pana-yam	23%	7%
potato (Solanum sp)	17%	14%
Pumpkin	17%	10%
Shallot	14%	12%
Pawpaw	12%	14%
Garlic	12%	7%
Pineapple	7%	-
Chinese cabbage (Brassica rapa var.)	9%	9%
Cucumber	7%	7%
Coconut	7%	7%
lemons/citrus	5%	2%
kangkong (Ipomoea aquatic)	5%	0%
betelnut (Areca catechu)	2%	5%
Melon	2%	2%
cutnut (Barringtonia procera)	2%	2%
Corn	2%	2%
Cocoa		5%
jackfruit (Artocarpus heterophyllus)		2%
sago palm (Metroxylon sp)		2%

Source: Tina River Hydropower Development Project – Environmental and Social Impact Assessment, SIG

4. Occupations

107. Among the 1,872 paid workers in Malango Ward in 2009, the most important occupations are crafts and trades (20%), service and sales (19%), professions (15%), and plant and machinery operation (13%). By comparison the most important occupational groups among those in West Ghaobata are elementary workers or labourers (34%), followed by skilled agricultural and fishing work (23%) – both probably associated with employment at GPPOL, and other nearby plantation operations. No occupational data is available at the village level.

5. Education

108. Formal education provides a means of building “human capital”, and especially the skills and knowledge necessary to participate effectively in the modern economy and society.

109. Nowadays, all children in Solomon Islands are expected to at least attend primary school where it is available. Primary school in Solomon Islands is free, but not compulsory. In the project area and nearby, schools are provided by both central government and by established churches.

110. Government statistics indicate that the majority of Solomon Islands children attend school between ages 8 and 13, after which attendance rates decline. Nation-wide, 64.5% of rural children aged 6-12 attend school. In general, the levels of female and male educational attainment in rural communities in Solomon Islands are similar.

111. Census data on educational participation and achievement is only available for the whole of Guadalcanal Province. These data suggests that there are problems of poor school attendance by primary school aged children. For example, in 2009 only 69% of 5-9 years olds were attending school or preschool, 85% of 10-14 year olds were attending, and 61% of 15-19 year olds were attending some kind of schooling/or training. School attendance reportedly falls off from age 13 onwards. The main differences between boys and girls in educational participation emerges in the 15 and over age group, possibly due to the relatively high cost of high school fees for ordinary rural families, which means families favour advancement of sons over daughters in the education system.

112. From observation in the villages of the TRHDP area, school attendance is relatively low. Interviewees indicated that this was due to the labour needs of the household, low accessibility of the local schools due to lack of school transport, and poor attendance by teachers due to low salaries and/or failure of the government to regularly pay the teachers’ salaries. Some local villagers volunteered that their young people/teenagers had poor literacy skills, and were not easily employable as a result. This, in turn, leads to early marriage and child bearing among girls, and antisocial activities among boys.

113. At present, there are approximately seven schools within the TRHDP area. Local people aspire to have greater access to schools to make it easier and safer for their children to get an education. As a result, communities sometimes use church buildings as alternative classrooms, or resort to building their own classroom using local materials. For example, in Valesala/Antioch, the community has a barely serviceable building that houses the kindergarten as well as Grades 1-3. However, a new permanent building, located at the intersection of Antioch and Valesala villages, was under construction and will take students from Grades 4-6. This new permanent building, like that constructed at Rate, was being funded by the Ministry of Education as part of a bundle of benefits provided to local communities through the TRHDP planning process. Construction was being done by a builder from the local community. The new school classrooms at Valesala will eliminate the need for local children to walk several kilometers to Rate School. However, high school students will still need to attend Rate Community High School. There is also a school run by the Seventh Day Adventist Church at Namanu.

114. Children who want to attend higher levels of secondary school often need to leave the area and attend boarding school. The closest such school is at Tenaru (St Josephs). Selwyn College was formerly located near the river in West Ghaobata, but was relocated to West Guadalcanal following massive damage by Cyclone Namu. Tertiary level trade training is available in Henderson at the Don Bosco academy, and in Honiara.

115. Kindergartens are located at Marava, Ngongoti and Valesala. These take children aged 3 to 5 years old, and are run by local community groups with volunteer help. At the time the social surveys were being conducted, a new community kindergarten was nearing completion at Verakuji. Students from the downstream communities such as Ravu, Popolo, the GPPOL workers village, and other plains communities adjacent to the Ngalimbiu River, attend Ngalimbiu Primary and the High School at Nguvia.

6. Health and Health Services

116. Health and wellbeing underpin personal human capital and one's ability to secure the means of existence, and to participate fully in one's society. Depending on location, Solomon Islanders face significant threats to their health and wellbeing, especially:

- diseases associated with the environment and unimproved living conditions, such as: malaria, pneumonia, diarrhea, asthma, and skin diseases; and
- increasingly common diseases and conditions associated with inadequate or modern diets, nutrition, and lifestyle, such as: diabetes, high blood pressure, anemia, (in children) wasting and malnutrition, stress, and problems of protein deficiency.

117. Based on village workshops and interviews with local people, the principle diseases of concern to residents of the project area are malaria, pneumonia, diarrhea, stress, flu and other respiratory conditions, diabetes, and STDs. Hernia seems to be a problem, especially among men, and is put down to the physically demanding types of work and carrying of heavy loads (e.g., timber). In several village workshops people reported incidences of gonorrhea and dengue fever. Cuts and fractures to limbs appear to be relatively common and relate to peoples' living environment and their way of life, though no data is available on the incidence of serious injuries.

118. In some communities, people reported that malaria and diarrhea cases are slowly reducing, but pneumonia incidence appears to be increasing. Some of the improvements in sanitation related illnesses have resulted from environmental and sanitation improvement drives within communities (e.g., Tina Village). Respiratory conditions appear to be common among both children and adults, and may be associated with cooking over open wood fires in closed spaces, and with damp living conditions.

119. The people who live in the vicinity of the Tina River are constantly interacting with it in the course of their daily lives, especially women and children. Several of the villages in the project area (e.g., Koropa, Choro, Habusi, and Vuramali) are located on the right bank of the Tina/Ngalimbiu River and their residents have to ford the river to access most facilities, and to catch transport to Honiara. This can sometimes be very dangerous, since river conditions are subject to change, sometimes rapidly. Consequently there are occasional drownings or near drownings of children, reportedly about one every two years. The rainy season also brings the threat of major destructive floods which, in the past, have caused many deaths.

120. The overall rate of accidents and accidental deaths in the communities of the project area is not known.

121. For women, the main diseases and health issues for which they most often suffer include stress giving birth to premature babies, miscarriage, or death of either the mother, or baby, or both, during the time of delivery. Since there are no health facilities, including no clinics nearby

any of these villages, death may occur when women encounter such problems. The other hardship women currently encounter is the lack of easy access to transportation to take them to the clinics in Honiara or the Central Referral Hospital at No. 9 (downtown Honiara) if they encounter problems when giving birth.

122. According to women, the main causes of stress are husbands spending all the money on alcohol and other women, husbands becoming involved in extramarital affairs, husbands not contributing enough to support the needs at home, young people taking drugs, disobeying their mothers, not doing well in schools and unwanted pregnancy among young girls.

123. According to the ESIA Scoping Report, in Pachuki, Habusi, Namopila, Tina Village and Antioch, the most common ailments reported were pneumonia, malaria and an observed high incidence of skin conditions, especially among children (Entura, 2012).

7. Child Health

124. In the 2007 Demographic and Health Survey (DHS), the most common health issues for young children in rural Guadalcanal were associated with poor nutrition and hygiene. These include anemia (55%), stunting of growth (34% nationally), and diarrhea. Poor nutritional status is related to maternal malnutrition, low birth weight, inadequate breastfeeding and weaning diets, and childhood diseases. For children under five years of age, 17% were reported to have had a fever in the two weeks preceding the survey, with children aged 6 to 23 months being the most vulnerable. On Guadalcanal, only 46% of those children who were reported to have had a fever were taken to a health facility for treatment. This is the lowest level of treatment of all of the provinces. In the two weeks preceding the survey, nationally 9% of all children aged less than five years were reported to have had diarrhoea. However, 93% received some form of treatment. Poor children's health and lack of access to healthcare represent significant threats to the future availability of human capital for rural Guadalcanal communities.

8. Access to Health Services

125. The accessibility of health services is a significant issue for communities of the project area. This is particularly problematic in cases of accidents, complications of childbirth, and child diarrhea and fever. The national 2007 DHS showed that in rural areas only 37% of children less than five years of age with diarrhea in the previous two weeks had access to oral rehydration, and 58% had been taken to a health facility. The incidence of seeking health support for sick children in the project area is not known, although it is not likely to be any better than elsewhere, since the majority of the residents of the project area have to travel considerable distances over rough roads, often on foot, to attend the basic provincial government provided health clinic at Namanu or the health post at GPPOL (Gorou health post). Even when they are able to attend the clinic, local people may not be able to obtain the drugs or treatment necessary. The main national hospital ("Number 9") in Honiara is not easily accessible by local communities.

126. Local villagers consider health services within and adjacent to the project area to be inadequate. Given the prevalence of illness and disease, there is clearly a need for a nursing station or a part-time attended health outpost in the Tina River area, possibly at Rate or Antioch.

9. Household Nutrition

127. The householder survey included a 24-hour meal recall, for which respondents were asked to recall what they had eaten during the previous 24-hour period. It showed that over the previous 24 hours all the surveyed households in the TRHDP area had eaten breakfast, 90% had eaten lunch of some sort, and 97% had eaten an evening meal. The details of the foods eaten are provided in Annex 6 of the ESIA.

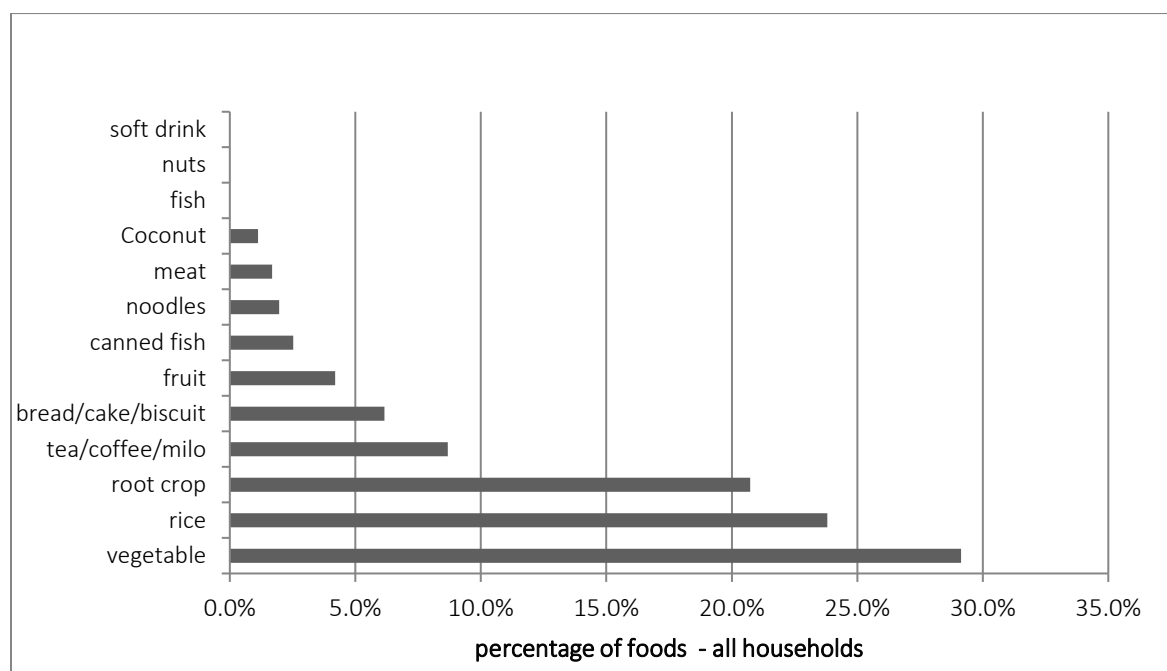
128. Rice is taking over as a staple food of the Solomon Islands, and for those people of the TRHDP area who can afford it, it is displacing traditional root crops in their diet:

129. 43% of households eat rice as part of their breakfast, 41% in their midday meal, and 77% in their evening meal.

130. 36% of households eat root crops as part of their morning meal, 42% in their midday meal, and 50% in the evening. These include mainly kumara, cassava, and potato, and occasionally taro or yam.

131. **Figure 10** presents the overall picture of foods eaten by households in the project area. Local diets consist primarily of rice and/or root crops, and are eaten with a variety of vegetables, especially green leaves and ferns that are collectively referred to as “cabbage”. The main source of protein is canned tuna (domestically produced), and occasionally pork or fresh fish. Meat or fish was eaten in only 12% of meals, mainly in the evening meal. Fruit, mainly banana and pawpaw, is generally eaten at breakfast and as a snack food. While not a major feature, instant noodles are an increasing component of local households’ diets, and are commonly found in local canteen shops.

Figure 10: Foods Consumed over 24 hours



Source: Tina River Hydropower Development Project – Environmental and Social Impact Assessment, SIG

132. Based on the limited information available, it appears that the diets of Ghaobata people are generally similar to the people of Bahomea, although, as coastal people, they have greater access to and knowledge of seafood.

133. Given that subsistence gardening is still the main source for root crops and vegetables for local households in the TRHDP area, changes in work/employment and access to horticultural land and areas where wild foods can be found will have a direct effect on diets and householders' nutritional status. Past commercial scale logging is reported by local villagers to have had a negative effect on the availability of wild foods, both plant and animal. Also, green leafed food-plants and ferns that are collected from wetlands, and moist areas located adjacent to streams and the river, are negatively affected by drought and floods.

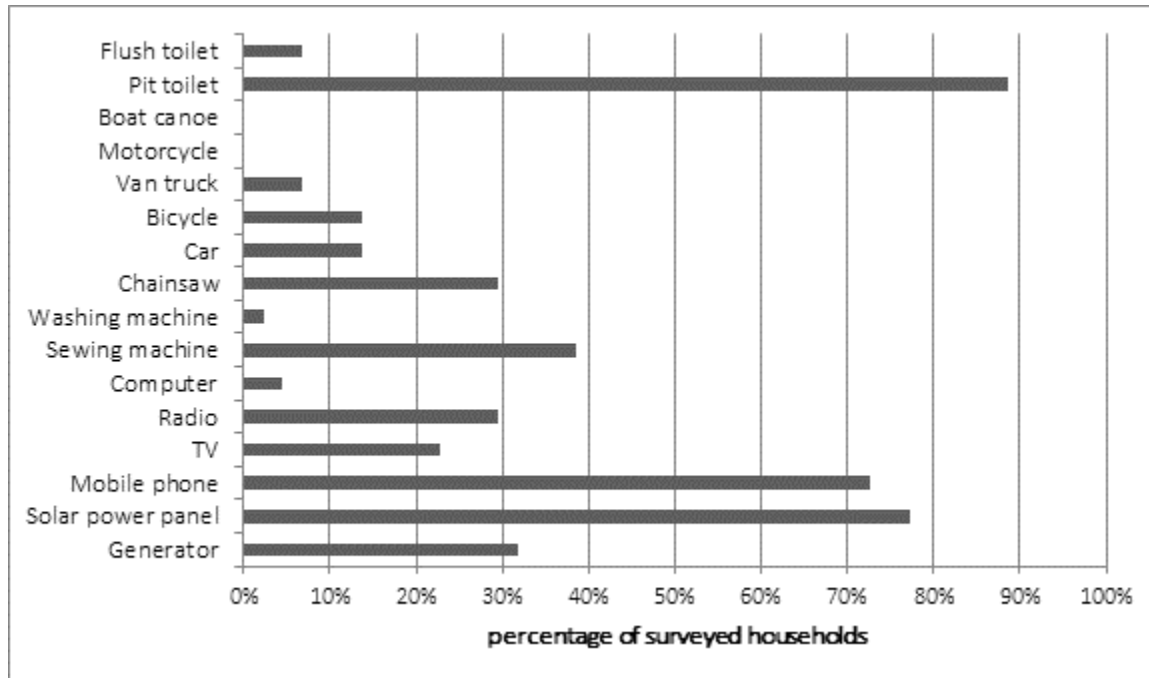
134. While not recorded as part of the household diets, homegrown tobacco smoking and beer drinking are common among males, and betel nut chewing is common to both males and females. The area is known for its high quality betelnuts, which fetch good prices in the Honiara market.

F. PHYSICAL CAPITAL

1. Household Equipment and Facilities

135. Data was gathered in the TRHDP area household survey on the goods and equipment owned by the household as presented in **Figure 11**.

Figure 11: Household Physical Capital



Source: Tina River Hydropower Development Project – Environmental and Social Impact Assessment, SIG

136. Regarding the use of toilets, the vast majority of households rely on pit latrines or simply going into the bush. People cite this as one of the reasons for the relatively high incidence of diarrhea, especially among children.

137. In terms of transport equipment, very few people have their own motor vehicle: 14% reported they had a car and 7% a van or truck, but this appears to be somewhat high given that there are entire villages that have no vehicles. Therefore, the results may be due to sampling bias in the survey.

138. The majority of households have a small solar panel that makes it possible to have a mobile phone. This, in turn, facilitates communication both within the area and with town-based services, suppliers, and family members, and represents a major change for residents of the project area, especially since telephones were completely absent prior to mobile communications technology. Having a solar panel also enables a household to have lighting, albeit at very low power, and small appliances such as a television set, a radio and a computer. However, ownership of each of these items is relatively low. Approximately a third of households report that they have a generator but, again, based on direct observation, this appears to be somewhat high. Generators are typically used for events, such as church and community meetings, rather than for everyday use.

139. Nowadays, a chainsaw is one of the most important items of physical capital a household within the project area can possess. A chainsaw enables the owner, providing they have resource ownership rights in the area, to fell trees in the forest and, with the addition of a frame, break them down into merchantable timber according to customer need. As noted previously in relation to income, timber milling appears to have become the most important source of income for local households. Being able to produce timber also enables local people to build more durable, modern style houses. However, chainsaws are expensive to buy and, therefore, tend to be owned by people who have access to capital, perhaps derived from logging or mining royalties. Marketing of timber also requires having access to a truck, which few local villagers do. At present, those producing timber rely on timber merchants and hire vehicles to come out from Honiara to collect the materials.

140. Just less than 40% of households have sewing machines, which are mostly hand powered. These enable women to make clothes and handcrafts for home use and for sale. While not included in the survey, it is apparent that households in the project area lack refrigerators, and, therefore, are unable to store perishable foods, such as meat.

141. In general, the data indicate that local people lack significant equipment for supporting their livelihoods, in particular, motor vehicles able to transport goods and produce to Honiara for sale. Day to day domestic work could also be made significantly easier with reliable access to power from the main electricity grid, sufficient to run a washing machine, water pump, cooling fan, refrigerator, and household lighting.

2. Housing

142. Local people of the project area live in extended family households, accommodated in several leaf houses depending on household size. Several types of local houses are evident in the villages of the project area:

- traditional one or two room “leaf houses” made of woven plant material walls, wooden poles, and dirt floors, and sago palm thatched roofs. In some cases these houses are

raised on wooden poles. These houses are almost completely made of local materials collected from the forest. They appear to be declining in number.

- traditional style thatched houses with dirt floors or raised on piles, with floors and walls made of sawn timber. These houses are also made of local materials, and appear to be the most common style.
- larger permanent houses with multiple rooms, made of sawn timber, with concrete piles and corrugated iron roofs. Some examples include balconies. These houses incorporate both local and imported materials. It appears that these are a relatively recent introduction into the project area.

143. The 2009 census recorded 1749 dwellings in Malango ward and 976 in West Ghaobata. Most contained a single household, although 49 of those in Malango ward and 204 in West Ghaobata contained two or more households. This suggests a shortage of housing in the lower part of the catchment.

144. The Census also records the material used in houses. For the most part Malango houses are constructed of wood or leaf material walls, wooden floors, and leaf-thatch (sago palm) or corrugated iron roofs. This is consistent with field observations made in the project area. Houses in West Ghaobata are generally similar, though they tend to have concrete, rather than wooden, floors.

145. Malango houses are slightly above average in size for the province, with an average 2.5 rooms each, compared with 2.2 in West Ghaobata and the Province as a whole.

3. Infrastructure

a) Roads

146. Physical capital includes local infrastructure. Roads and bush tracks are the most important infrastructure in the project area. These are vital for people and communities to be able to access natural resources, to transport people, goods, and produce to the marketplace, to access services within and outside the area, and to bring home the goods they need. The roads in the area have become vital for people's livelihoods. There are regular minibus services from Honiara right through the project area, wherever there are adequate roads, and they appear to be well patronised. People from the Senge, Pachuki, and Namopila areas who wish to travel to Honiara must ascend out of the river valley along bush tracks. Most villagers in the Tina area have to walk out to the main road to catch the bus.

147. Unfortunately, all of the local roads are unsealed, lack an adequate or durable surface, are inadequately drained, poorly formed, and badly located in some places. The main road from Black Post (GPPOL plantation) to Marava is a government road, and is only infrequently maintained. Consequently, it is very hard on vehicle undercarriages and suspension problems are common. During periods of heavy rain the roads become deeply rutted, and sometimes impassable. The village side roads are generally poor, and mostly require a 4WD vehicle, and a lot of driving skill. The road from Marava to Mangakiki appears to have been formed as a logging road and is now only maintained as far as Verakuji. Beyond this point, it has reverted to an overgrown track and is not used by local vehicles. The road has a number of culverts that appear to be deteriorating and are likely to fail in the future. In some places, run-off from the roads during heavy rain pollutes local streams and water supplies.

148. In 2013, some attempts were by the Project to improve the surface of sections of the main Bahomea/Tina Road, as part of its initial development efforts in the area. However, a more serious effort is required. Upgrading of the main road into the area and preparation for the project development was due to begin in October-November 2013, involving correcting creating a proper alignment, improving drainage, and creating a more durable carriageway. If adequately rebuilt, the new road will contribute positively to local people's livelihoods, way of life, and general wellbeing.

b) Water Supply and Use

149. Despite reports of many promises made by politicians and various agencies, the landowner and settler communities of the project area, and downstream Ghaobata, still have no formal water supplies or water treatment systems, and there is no water or sewerage infrastructure in the villages. This is seen locally as seriously unjust, given that in the nearby capital city of Honiara these services are available to most residents. Popolo/Old Selwyn has a borehole and infrastructure for water conveyance throughout the village, but this is currently inoperative. Several villages in the project area have their own fresh water wells (see **Figure 12**), but most people rely on the Tina River.

Figure 12: Covered village wells at Vera'ande- for washing & laundry



Source: Tina River Hydropower Development Project – Environmental and Social Impact Assessment, SIG

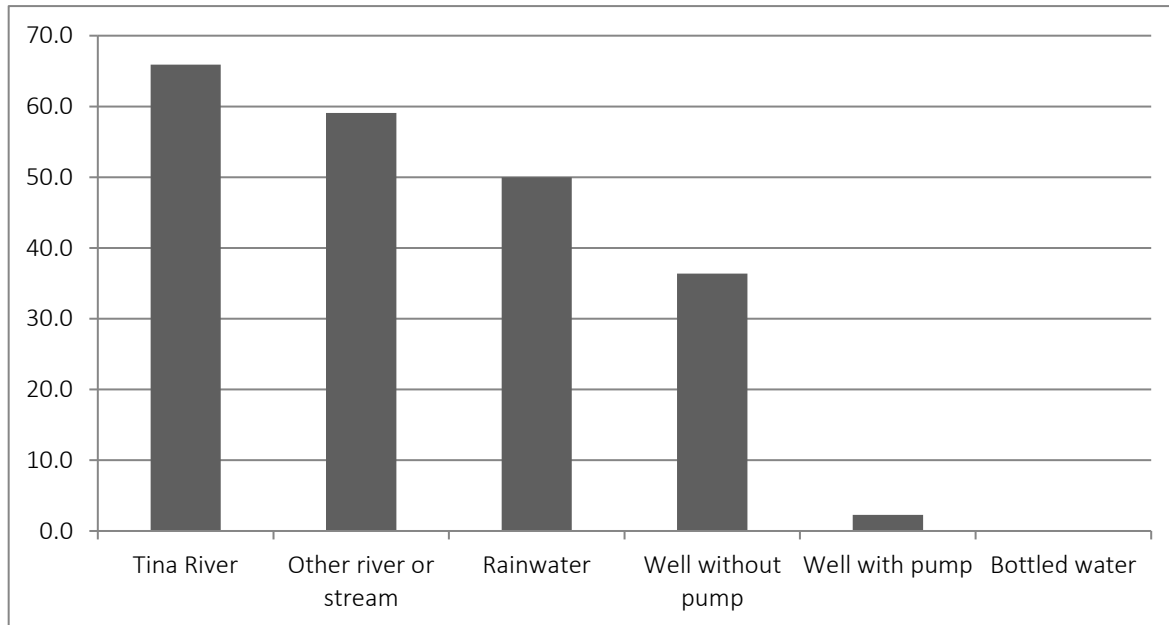
150. Lack of formal water supply systems is not uncommon in Malango Ward. With respect to drinking water, in 2009 the Census recorded that 38% (i.e. 525) of all Malango houses relied on rivers and streams, and 27% relied on a communal standpipe/well, while only 6% had metered supply from the Solomon Islands Water Authority (SIWA). However, in West Ghaobata 35% of houses had a metered supply, 29% had a communal standpipe, and 23% relied on rivers and streams. For washing water, 57% of houses in Malango Ward (i.e., 1004 houses) in 2009 used rivers and lakes, 17% used a well without a pump, 11% used a well with a pump, and 7% used a private piped supply. The pattern is quite different in West Ghaobata where only 20% use rivers and lakes, 44% used wells, and 26% used either a community standpipe or a shared piped system.

151. The village workshops and the household survey both enquired into local water supplies. **Figure 13** presents the household survey findings. Households typically listed two sources of freshwater for drinking and cooking, typically the Tina River or an adjacent stream, and rainwater. Half the respondents said that their household used rainwater. However, there were relatively few rainwater tanks in evidence throughout the villages. Another 39% of households said that they obtained their water from a local well.

152. Those who take their drinking water from the river use a natural filtration method for ensuring clean water: they dig a hole in the gravel and sand immediately beside the river channel, and water seeps through the sand into the whole from where it is collected. At Senge and the other upstream communities, people take their water directly from the river channel without filtering it. During wet periods or flood events when the rivers and streams are high and discoloured, most villagers collect and store water in anticipation of such conditions, and also collect rainwater in buckets and basins. Only 2% of householders in the survey reported that they used any kind of treatment for their drinking water. This suggests that, generally, the Tina River is of sufficient quality to drink, and most do. As the main source of water for households located in the vicinity, local people and communities are extremely vulnerable to any significant changes in the quality of the water in the Tina River.

153. Hevalao (2013) has surveyed village water sources in the project area, and provides details of the locations, flow rates and conditions of the Nembo source and Mangakiki, the Rate source for the villages of the Tina River area, and the Antioch source for Antioch and Valesala. In some cases villages have installed small dams and piping to make it easier to access the water.

Figure 13: Main sources of drinking and cooking water in the surveyed households



Source: Tina River Hydropower Development Project – Environmental and Social Impact Assessment, SIG

154. At Mangakiki, Marava, and Verakabikabi, householders have to walk some distance, sometimes up and down steep hills, to fetch water from local springs or small streams. Several sources are used at Mangakiki, and some villages further down in the valley have proposed that

these could be the basis of a piped supply in the valley. Villages at Vera'ande have several wells close by which are used for different purposes. Villages located on the downstream flood plains tend to have greater access to wells and communal taps, and generally don't use the Ngalmibiu River for drinking water.

155. The majority (i.e. 73%) of the surveyed households in the project area do their laundry in the Tina River and 77% use it for bathing.

156. The people of Malango Ward clearly are at a disadvantage compared with their neighbours, with respect to both drinking water supply and washing water. This disadvantage in lack of basic infrastructure and service availability, which is exacerbated by the additional labour required for collecting water, and in poorer sanitation and health.

c) Sewerage

157. The lack of sewerage infrastructure and basic toilet facilities in the villages of the project area has been previously discussed. The reliance on pit latrines is common throughout Malango Ward, according to the Census. In 2009 45% of households in Malango used private or shared pit latrines, 13% used a private water seal toilet, 11% had their own flush toilet and 24% had "other" or no toilet facilities, that is, they use the bush. The pattern in West Ghaobata is slightly different, where 29% used a pit latrine, 30% used a private or shared flush toilet, and 33% had other or no facilities, i.e., they use the beach, sea, or bush.

d) Energy for cooking and lighting

158. While the 2009 census recorded that 12% of houses in Malango were connected to the main electricity grid, there is no such electricity supply to the villages in the project area, notwithstanding that this is very much desired by local people. For lighting, the Census records that the vast majority (77%) use kerosene lamps and a small proportion (4%) use solar/PV power. Cooking is almost exclusively done using wood fires (90% of households), with a minority of 8% using gas from compressed gas cylinders. In West Ghaobata, Popolo village was connected to the main electricity supply grid that also serves Honiara, but the overhead power lines were stolen during the period of Ethnic Tension. Other villages in West Ghaobata are connected to the main electricity supply. The 2009 Census records that 27% of houses were connected to the main electricity grid. However, the majority of households still rely on kerosene lamps for lighting, and almost every household (i.e., 96%) cooks using heat produced from burning wood or coconut shells.

G. SOCIAL CAPITAL

1. Wantoks

159. Within the project area, kinship or family connection is the most important form of relationship for accessing the resources necessary for life. As mentioned, the indigenous people in the project area see themselves as being part of a 'family', with a special identity, language, culture and environment. Local people generally live quite close to their extended family members and are able to call upon them to assist with a wide range of tasks necessary to achieve their livelihoods. Likewise they are expected to contribute to other members of the family, clan and community. Those connected by kinship and who are members of the same community are often referred to as "Wantoks", and there are strong customary mutual social obligations associated

with this relationship. In the project area, it is common for people to call upon relatives and neighbours to help with major tasks such as clearing land for cultivation, house building, transporting produce materials and goods, and assisting in special events such as traditional clan pig feasts. Those who aspire to leadership, draw heavily on their available social capital for the resources and support necessary to succeed.

160. In addition to kinship and membership in the same community, people use connections with former boarding school mates, workmates, and sports team members to gain access to livelihoods resources that they need.

2. Religion

161. The second most important basis for social relationships is through membership of the same church.

162. Most people in villages of the project area are Christians, and actively practice their religion. In some cases, people are also affiliated with the Moro/Gaena'alu movement. Religious affiliation is a very important basis for community formation and for providing social capital for local livelihoods and activities. The main religious or denominational groups in the communities along the Tina River are the South Sea Evangelical Church, Roman Catholic, Anglican/Church of Melanesia, Seventh Day Adventist, Assemblies of God, Bible Way and the Baptist Church. There are also smaller churches such as the Church of the Living Word and Christian Mission Fellowship that are located in communities in the downstream areas. Several villages also have followers of the Moro Movement, centered mainly on Koropa and Namopila. There are twelve Church buildings across the various communities, varying in size, style, and construction.

163. Church buildings are usually located at one end of the village compound, acting as an "anchor site" and important meeting place for a village. They are also the most substantial buildings in the village, and represent considerable investment by the community, in terms of natural resources and materials, labour, and cash. Apart from kinship and clan affiliation, church membership is the main basis for social organisation and action.

164. Ward-level 2009 Census data show that the South Seas Evangelical Church (SSEC) has the greatest number of adherents in Malango Ward (33%), followed equally by the Church of Melanesia (Anglican) and the Roman Catholic Church (approximately 20% each), and then the Seventh Day Adventist Church (SDA) with 16% of the population. In West Ghaobata Ward, the predominant religion is the Church of Melanesia (with 52% of the population) followed by the Catholic Church (18%). Taken as a whole, Guadalcanal is predominantly Catholic (36%) and Anglican (23%), followed by the SSEC and the SDA.

165. As noted earlier, day-to-day activities often involve church membership, and along with sports groups, church groups make up the majority of social organisations in the villages of the TRHDP area. The surveyed villages typically have church-focused mothers' clubs and youth groups, Sunday school, and a local soccer, netball or volleyball team. All the larger villages have a church building, and in some cases the church is supported or led by a paid clergyman, religious instructor, and/or youth worker. These churches are also the conduit for church-based aid project work by overseas religious organisations, such as World Vision, Charitas, and others.

166. Additional details regarding religion, and the Moro Movement, are provided in the Cultural Heritage sections.

H. FINANCIAL CAPITAL

167. In the context of livelihoods, financial capital refers to the stocks and flows of money or equivalent assets. This includes credit that might be available to the household.

168. It is clear from the general profile of incomes, work, and other livelihoods assets that the people of the project area are not well endowed with financial capital, although they may have periods where they receive relatively large payments of money from the sale of goods and from royalties. There are no data available on the extent to which local people have bank accounts, loans, or access to credit. Land tenure data from the 2009 Census for Malango Ward suggests that bank mortgages are rare, since 42% of householders were listed as having freehold ownership of their homes, 39% were leasing from a customary or a private owner, 7% were leasing from government, and 12% had some other arrangements.

169. With customary collective land ownership, and high levels of self-employment and subsistence, it is difficult for indigenous people to get loans for business or other developments from the commercial banks. It is, therefore, easy to see how selling off logging or mineral rights on one's customary land to foreign companies may be tempting for those wanting to accumulate a block of financial capital. This seems to be the main means by which capital accumulation among indigenous people has occurred, and why logging and mineral exploration appear an appealing alternative for people of the project area and the wider Malango Ward.

I. NATURAL CAPITAL

1. Introduction

170. Natural capital refers to all the "goods and services" of the natural environment that people use for their livelihoods. This includes materials and goods that are used directly (e.g., wild foods, and fresh water) or require processing or preparation before they can be used (e.g., forest trees, minerals, and wildlife). In the context of the TRHDP, the most important natural resources for local indigenous people are the land, forests, rivers and streams, sunlight and the cycles of the seasons.

2. Land and Land Use

a) Land Ownership and Occupation

171. As described earlier, land is central to the Malango people's identity, wellbeing, and culture. Prior to the colonial period the land, including the forests and the living things within them, provided all of the peoples' physical needs, i.e., food, drink, shelter, weapons, fuel, decoration, and medicine, and the materials required to transform or process products from the land. In modern times, this total dependence on the land and environment has been weakened through participation in the wider economy, including the use of imported food, materials, and technology.

172. Simultaneously, the land and its resources have been opened up to outsiders and multinational interests for large-scale exploitation. For example, much of the accessible area in

Malango Ward has been logged over time, by a number of different companies⁹. This has generated royalty payments for some of the indigenous landowners, and provided roads, but the scale of the forest destruction has meant negative impacts on traditional subsistence uses of the land and forest. Commonly mentioned problems include erosion and sedimentation of streams and rivers, unnecessary destruction of important resources such as sago palm, medicinal plants and food trees, introduction of unwanted exotic plants and animals (e.g., the invasive Giant African Snail), and disturbance to or loss of wildlife habitat, which among other things, has displaced wild pigs into villages garden areas.

173. To the indigenous people, no land is un-owned or is not connected with a clan, even if it does not appear to be occupied or utilised. The most important land to local indigenous people is the land that belongs to their particular clan, and the clan can have land in many locations. Sometimes the land is shared with other clans, for example, upland forest where people hunt and gather wild foods and materials. Within the tribal and clan domain, several types of land are particularly important:

- gardening land with soil and conditions suitable for sustained production of a range of crops for both household consumption and for sale in the market;
- well-drained safe flat areas for villages, houses, churches, meeting areas, and recreation, and which have access to fresh water;
- forest land for obtaining both timber and non-timber products (such as thatching, posts, vines, canes, materials for cordage, medicinal plants, decorative plants, fruits, nuts, edible leaves and roots), and for hunting wildlife;
- land that has been formerly occupied and been a home to clan members; and
- land which may contain important cultural sites, graves, or signs of occupation (such as planted food trees).

174. Full rights to occupy land and use its resources are acquired from membership of one's mother's clan, the matrilineal clan being the land-owning unit in Malango society. As Roughan et al (2011) have outlined in relation to the "indigenous terrain", clan ownership of particular blocks of land or whole areas depends on having knowledge of the history of that land, its use, and the location of culturally important sites and features to be able prove the connection to others. This knowledge tends to reside with the oldest members of the clan. Over time this knowledge can become lost or uncertain, especially if the knowledge holders and their descendants relocate to other areas, or become deceased, as has occurred throughout Bahomea and Malango.

175. Since the vast majority of local people occupy, and use unregistered, customarily owned land, it is not always clear today which parts of the landscape belong to which sub-tribe or clan. Hence, there may be claims and counterclaims over particular areas, especially if there are material benefits to be had in the form of royalties or compensation.

176. With respect to the land in the upper catchment that may be occupied for a hydroelectric dam site and water storage reservoir, it appears that many Malango speaking clans may feel they

⁹ In mid-late 2013, Earthmovers Ltd, who are based at Foxwood on the Guadalcanal plains, were operating elsewhere in Malango Ward, and were seeking to return to Bahomea for more logging. In 2011, Pacific Timbers were logging on the ridges above Choro.

have a land ownership or land use right over the potential project area since all originate from the hinterland at the top of each of the river catchments of central North Guadalcanal. At the time of this report, detailed clan ownership was being investigated by the clan leaders of Bahomea¹⁰.

177. As noted previously, land use rights may be obtained by outsiders, through customary arrangements with the traditional land owning clan, involving the presentation of shell money and pigs. In this way, the original settlers from the Weather Coast were able to take up residence at Verakabikabi. Such arrangement has to be re-established or reinforced when there is a change of leadership among the landowners.

b) Garden Land

178. Attempts were made in the village workshops and the household survey to gather information about the location and size of peoples' garden lands. However, this proved to be difficult. Based on field observations, most garden land is located within relatively close distance to the village, typically within 10-15 minutes walk. Proximity is important for protecting crops from wild pigs and theft, and for convenience. In some cases people cultivate gardens some distance away from their residence, usually in areas and villages where they have land ownership rights. This seems to occur right through the Tina River valley and it is common to see people walking up or down the river or the road to and from their gardens. In some cases such as Choro, where clan land that is suitable for gardens is some distance away, people may build a hut on the land and stay for periods tending their seasonal crops.

179. The total amount of area used for household gardens depends on the size and needs of the household, the energy of the gardeners, and the extent of their involvement in cash cropping. Also some households may have several plots for different purposes. At Antioch it was said that, nowadays, some households have only small gardens because they are not so dependent on home produced food. At Senge, people said that households typically had two plots under cultivation at one time, each plot being approximately 1600m² in size. At Namopila and Pachuki, where people have access to highly fertile river flats (prior to the serious flood of April 2014), plot sizes were also approximately 1600m², although people may only have one plot under cultivation. At Tina and Haimane, garden plots were said to be typically of a similar size, though there is considerable variation. Householders at Vera'ande have a large area of cultivated garden land adjacent to the main Tina road, some of which may be encroaching into the road reserve. This garden land, which is also adjacent to a wetland that produces useful plants, and from which groundwater is drawn, also has several pigsties. Generally, pigsties are located on garden land on the edge of the village. Pig keeping is quite common, and is sometimes a community enterprise (such as at Tina). Relatively few households appear to keep chickens and geese. Domestic fowl are usually kept on a free-range system.

3. Water Rights

180. In Solomon Islands, there are no formal allocations of water rights. Unlike, for example, rights to fish in an area or collect shells, which can be closely held under custom (and recognised

¹⁰ This process was subsequently described in a media statement on 24 June 2014 by the "Core Land Tribes of Tina Hydro Project" as the Bhamoea Land Identification Committee (BLIC) process. It involved investigations and consultations on land ownership by "all the recognised elders and storytellers holding traditional land knowledge".

by law), the High Court¹¹ has held that flowing water is a public right, unowned by the owners of the land over which it passes. In making this determination the Court found that the English common law position also reflected customary understandings of water rights:

In spite of what we may say, it is common knowledge that water is essentially or necessity of the human being. It is always advocated by health officials in public talks and media etc that "water is life". This sum(s) up what I would say on the qualifications as local circumstances render necessary... on applying this common law on water.

And I am satisfied that the common law principles of nobody own(ing) flowing water is not inconsistent with any law or Acts and; its applicability or appropriateness in the circumstances of Solomon Islands is not inconsistent with the Schedule 3 of the Constitution and therefore make a ruling that it is the law in Solomon Islands on the flowing water.

181. The conclusion in the case also reflects the findings of the 1959 Alan Report that noted that customary rights holders do not ordinarily assert control of water supplies.¹²

4. Crops

182. The earlier **Figure 10** on local people's food and nutrition lists the range of food produced from their gardens and adjacent forest areas. As noted, the focus of garden production throughout the villages of the project area is on root crops, especially cassava and kumara, green leafed vegetables, cucumber, pumpkin, tomato, corn, spices, tobacco, fruits (such as bananas, guava, mango, Malay Apple, and citrus), sugar cane, nuts (especially coconut and betelnut), and flowers. Local gardens and nearby areas may also contain small plantations of highly valuable timber tree species such as mahogany, and sago palm. French (2011) provides a comprehensive description of the plants that are frequently grown and/or utilised in the Solomon Islands.

5. Forest Resources

183. The range of timber and non-timber forest plants to be found on Guadalcanal has been documented in the Solomon Islands National Forest Resources Inventory Project in the 1990s. Google Earth provides a 2010 satellite view of the landscape of the project area. This reveals that the settled areas of the Tina River valley and adjacent hills remain forested, although not as densely as the areas in the catchment upstream of Senge.

184. The village workshops confirmed that Malango's forests are essential to the livelihoods and wellbeing of Malango people, providing:

- timber and non-timber materials for housing (i.e., timber, loya cane, thatch, bamboo, and bark):

¹¹ *Solomon Islands Water Authority v Commissioner of Lands* SBHC 58

¹² Allan, C. H. 'Customary Land Tenure in the British Solomon Islands Protectorate' *Report of the Special Lands Commission* Honiara, Western Pacific High Commission, 1957. Considering customary rights to water the report found 'In general, the principle can be stated that the tenure of water supplies is subject to little control'. This was found to be in contrast to strictly held rights to fishing areas along the rivers in Northern Guadalcanal.

- game wildlife for hunting, such as wild pigs, possums, flying foxes, lizards, skinks, frogs, hornbill, pigeons, and ducks ducks):
- plants used for medicinal purposes and magic;
- wild foods such as fruits, wild palm, wild yam, various nuts, and ferns, megapode eggs, and emergency foods when required;
- materials for handcrafts, such as baskets;
- regulation of run-off from the heavy rains that occur on Guadalcanal especially around the high mountains, and climate regulation; and
- and aesthetic appeal, and places for recreation and relaxation.

185. The full range of fauna and flora in the Tina Hydro study area, especially that in the upper parts of the catchment where TRHDP is planned, is presented in ESIA Section 6 – Biological Environment Baseline - Terrestrial.

6. Timber Extraction

186. Apart from materials for their own homes, people in the Bahomea district use the forests in the upper catchment, including the areas proposed for the hydro scheme options, as a source of timber for sale to the construction sector in Honiara. The main species targeted by locals are vitex (*Vitex cofassus*), kwila (*Intsia bijuga*), *Calophyllum* species, and rosewood (*Pterocarpus indicus*). Parties of 2 to 3 men work with a chainsaw to fell selected trees, and then mill them on site into timber according to required sizes. The cut timber is then carried to the river, made into rafts, and floated downstream to pick up points with road access, for example, near Tina village. As discussed previously, most villages are involved in timber extraction. Some of the timber extraction is focused on the Toni River and others on forest areas adjacent to the upper parts of the Tina River, especially around Koropa and upstream as far as Choro. The river is, therefore, integral to local landowners' timber extraction operations.

7. Hunting and Fishing

187. Most hunting by people of the TRHDP area appears to take place in the uppermost parts of the Tina River catchment, upstream of Choro, and especially around and upstream of the old settlement areas of Tulongu, Tulambirua, and Namoradina on the northern slopes of Mt Popomanaseu. Hunting mostly takes place as “expeditions” lasting several days to a week and focuses on wild pigs. Hunting and fishing parties commonly base themselves at Njarimbisu at the confluence of the Mbicho and Mbeambea Rivers. Pig hunting is done with dogs, and tends to be the domain of young men, and is mostly done to raise funds for church and other events, as well as when people feel like a “feed of wild meat”.

188. Fishing is carried out along the length of the Tina River, though nowadays it is focused on the river holes and pools in the upper catchment, upstream of Choro and as far as the Mbicho and Mbeambea Rivers. The main mode of fishing is by spearfishing with mask, snorkel and spear gun, and is sometimes carried out at night. Participants in the village workshops provided long lists of species they said they were catching and eating. The main fish being targeted are eels, helu (Silver fish), valu (Freshwater snapper *Lutjanus fuscescens*), kola (Mullet, *Cestraeus* sp.), and tilapia (in the Ngalimbiu River). People also take prawns (*Ura*) and a range of small fish. At

Senge, villagers named more than 19 species of fish which they said they caught and ate; at Valesala they named 12 species; and at Marava 7 species.

189. According to PHCG in 2011, some fish species that used to be common in the lower and mid reaches of the Tina River can now only be found in the pools of the upper reaches. Despite the claims made in the workshops, the householder survey shows that fresh river fish only infrequently feature in people's diets, if at all, and canned tuna ("taiyo") is now the main source of fish protein. Despite local people's obvious knowledge of the fish species found in the river, from a livelihoods point of view, it seems that fishing is, nowadays, a minor activity along the Tina River. However, fishing is a significant source of livelihood at the mouth of the Ngalimbiu River, where semi-commercial fishing occurs using mosquito seine net, and gill net gear. Additional information on fishes, and their ecological and economic importance, is provided in ESIA Section 7 – Biological Environment Baseline - Aquatic.

8. The River

190. The Tina River is an important natural resource and feature in the lives of people of the project area. For example it is:

- the main source of drinking and cooking water for the whole district;
- a source of irrigation water;
- a place to bathe, wash clothes, clean vegetables , and recreate;
- a transport corridor and mode of transport;
- a source of food, including fish, crustaceans, and a range of plants found in and around the river and tributary streams;
- a fence and boundary marker (e.g. in some villages pigs are kept on the opposite bank of the river);
- a source of rocks and gravel used in local house building, and sold under royalty by the villages in the West Ghaobata area; and
- a car wash - in its lowest reaches.

191. Among the Ghaobata people residing in the lower catchment, sale of river gravel to construction companies is a very important source of income, and a significant component of people's livelihoods. Villagers receive royalties for each cubic meter of material extracted from the riverbed. This material originates from the upper reaches of the river, from where it has been washed downstream during periods of high flow, and then deposited in the inside meander bends in the lower reaches of the river, on the Guadalcanal plains.

192. Importantly, the Tina River is a source of risk to those who live near it or are required to ford it to get to their home villages or gardens. The main risk comes from flooding associated with storms and cyclones, when the river can rapidly swell in volume and, in extreme circumstances, spread out to inundate and destroy infrastructure, villages, gardens, animals and human life.

193. Central to people's experience of living in the Tina River area is the unprecedented storms and floods that came with Cyclone Namu in 1986. As noted in relation to the settlement pattern

of villages in the Project area, the destruction by the Cyclone Namu floods resulted in a major relocation of many villages to their present-day sites.

IV. IMPACT ON COMMUNITIES IN THE PROJECT AREA

A. IMPACT ON LANDOWNERS

1. Overview

195. Land is required for the construction and operation for the Project. The land acquisition process has been detailed in the Land Acquisition and Livelihood Restoration Plan (LALRP). The land requirements can be broadly divided into the three areas defined below.

2. Core Land

196. The Core Land is an area of 428 Ha on which the vast majority of project elements will be located. This includes the dam, reservoir, water tunnel, penstocks, powerhouse, new access roads, substation, quarries, supporting construction infrastructure, laydown areas and buffer areas (**Figure 14**).

197. The Core Land includes the part of the 50-metre wide infrastructure corridor for road and transmission lines south of Marava, the point at which the land changes from registered land to customary land. The portion of the infrastructure corridor north of this point is registered land, discussed separately below.

198. Prior to compulsory acquisition in August 2014, the Core Land was customary land owned by tribal groups.

199. In 2015 the SIG's Commissioner of Lands, using the legally sanctioned land identification process determined that 5 of the 27 Malango peoples' tribes were the customary collective owners of this land, as follows¹³:

- Roha tribe (171 ha) – 161 registered members
- Buhu-Garo tribe (two lineages combined, (161.5ha) – 65 registered members
- Kochiabolo tribe (65.7 ha) – 109 registered members
- Uluna-Sutahuri tribe (two lineages combined, 29.9 ha) – 537 registered members
- Viurulingi tribe (14.0 ha) – 4 members

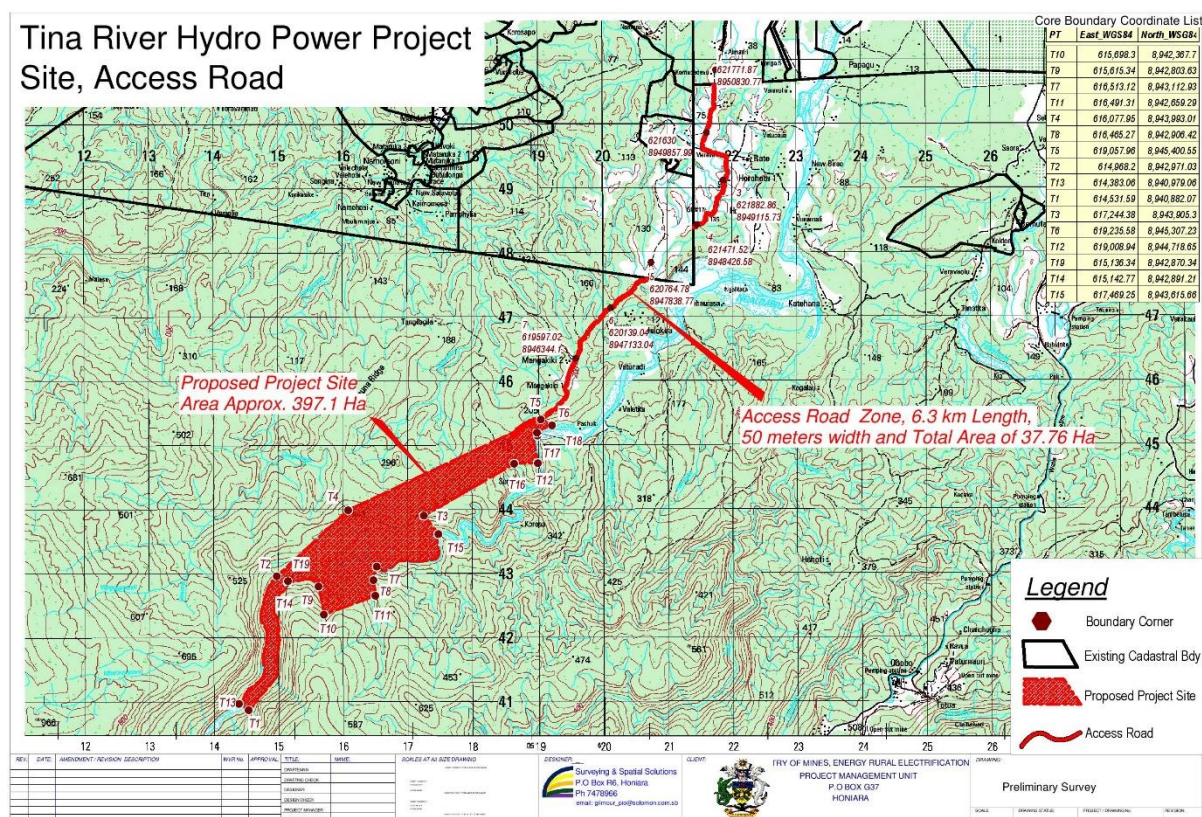
200. On 21 August 2014, under a written agreement with the identified owners, the SIG acquired this land, and its commercial assets, using its 'compulsory acquisition' powers under the Solomon Islands' *Land and Titles Act*.

201. The Core Land includes the southern part of the Infrastructure Corridor. Near Marava and Ngongoti the road will deviate towards Rate and follow a new alignment south for 1.5km before re-joining the existing formed road that travels as far as Managikiki.

¹³ Membership details are according to the Tribal register, as of September 2016.

202. This acquisition did not require any physical resettlement of people.

Figure 14: Map of Core Land Area



Source: Land Acquisition and Livelihood Restoration Plan, SIG

3. Northern Infrastructure Corridor

203. The Northern Infrastructure Corridor is a 50 metre wide stretch of land from Black Post to Marava. It comprises the existing constructed Black Post Road, as well as land adjacent to the road to accommodate road corridor widening and improvements, and the installation of the transmission line.

204. This land is currently registered land, owned by a combination of private and public owners. SIG is in negotiations to acquire the corridor by private treaty.

205. Black Post Road begins on the Kukum Highway and is the current main access to the villages of Bahomea district and the left bank of the Tina Valley. Depending on the weather, the current shingle and dirt road enables suitable vehicles to travel as far inland as Managikiki village, and potentially beyond.

206. Within the Northern Infrastructure Corridor the land to be acquired is largely to the east of the existing road reserve. The road widening and transmission lines will avoid those living on the west side being displaced from their homes and will make the road safer.

207. Four parcels of registered land will be affected, one of which is already owned by the SIG.

B. POTENTIAL SOCIO-ECONOMIC IMPACTS

208. The ESIA provides a detailed assessment on the socio-economic impact of the Project. The assessment is based on the social analysis; Project impacts on land, terrestrial environment, aquatic environment; and further consultation with project affected peoples. As the socio-economic impacts become the basis of the livelihood restoration activities and community development plan, this section is described more in detail than the Project's impact on physical and biological environment.

209. Below is a summary of the construction and operations phases of the Project, and the potential socio-economic / socio-community impacts that may potentially accrue.

1. Potential Impact Causing Activities

a) Construction Phase

210. Specific activities are likely to generate impacts during the construction phase of the TRHDP, include:

- ▶ Building the RCC dam, including installing temporary diversion works within the river, excavating the dam site, and upstream and downstream quarrying of materials;
- ▶ Constructing new access roads, one from Managikiki to the core land and then to the dam site, and a second road from near Managikiki to the power station and tailrace site upstream of Pachuki. Construction of both roads will require felling and clearing forests and disposing of vegetation, earthmoving (cutting/benching and filling to create a roadway), and installing culverts and drains. Some of the roadways may interact with existing tracks, household food gardens, and/or areas where materials are collected;
- ▶ Presence of road works to improve and widen the existing Black Post Road, from the Black Post (on the Kukum Highway) to Managikiki;
- ▶ Movement of equipment, materials, and people to and from the construction sites, using the new and improved roads;
- ▶ Excavating the headrace tunnel;
- ▶ Clearing forested areas within the hydro storage reservoir, and possible recovery of the logs and/or timber;
- ▶ Erecting the transmission line pylons and conductors from the powerhouse along the Black Post Infrastructure Corridor, and;
- ▶ Employment and management of local and non-local workers to undertake the various tasks involved in building the hydro scheme and in mitigating its impacts.

b) Operation Phase

211. Once constructed and commissioned, the Tina River hydro scheme could cause long lasting impacts on local communities. Operation activities that may affect them include:

- ▶ Modifying the natural flow of the Tina/Ngalimbiu River between the storage reservoir and the ocean in the dry season - mainly arising from peaking operation that will involve reservoir filling and refilling and releasing water through the headrace tunnel to the powerhouse. The reservoir will be refilled at night and water will be released for power generation during the peak daytime power demand periods;
- ▶ Diverting much of the Tina River's flow from the natural river course into the head race tunnel, located between the dam and the powerhouse, leaving the river with a supplementary environmental flow (EF) from the dam, combined with inflow from lateral streams;
- ▶ Using the access roads by workers and contractors working on the maintenance of the dam, reservoir, power station, and transmission lines;
- ▶ Employing and managing local and non-local workers to undertake various tasks involved in operating, protecting, and maintaining the hydro scheme, and;
- ▶ Possibly using the storage reservoir and the access roads by non-project personnel, including local community members and outsiders.

2. Types of Social Impacts

212. During the construction phase and the long-term operation phase of the TRHDP, a combination of direct, indirect, positive and negative social impacts on local communities may arise. Several types of social impacts may occur. These include:

- ▶ Direct physical impacts on nearby communities (e.g., intrusive noise, vibration, explosion shockwaves, dust, air and ground discharges, and visual intrusion) some of which could have potential health consequences and negative impacts on way of life and local amenities;
- ▶ Loss of access to abundant clean fresh water;
- ▶ Damage to and/or loss of access to livelihoods assets, including fishing areas, food garden areas, hunting areas, plant and related materials, planted and wild fruit and nut trees, and timber woodlots and plantations, with potential negative impacts on household and community wellbeing;
- ▶ Opportunities for improved incomes due to increased employment opportunities;

213. Opportunities for improved quality-of-life, through the upgrading of services and facilities.

- ▶ Increased risk of accidents due to project related vehicle traffic;
- ▶ Improved road mobility between villages in the project area, and with Honiara; and

- Threats to indigenous lands, natural resources, security, community health and well-being, and local culture.

214. The communities that are most likely to be negatively affected by the project are those located adjacent to, and make livelihoods-related use of, the Core Land area, and/or the low-flow section of the Tina River.

3. Health, Safety and Wellbeing - Impacts and Mitigation

a) During Construction

215. The construction of the TRHDP may present threats to local people's health and wellbeing. These threats include:

- Outbreaks of gastrointestinal and skin infections arising from run-off and contamination of drinking and washing water from the Tina/Ngalimbiu River and local streams;
- Increase in malaria outbreaks due to more standing water around construction sites;
- Rise in road accidents, lost loads and spillages due to more traffic on Black Post Road, as well as work related accidents;
- Social threats arising from inappropriate behaviour of outside construction workers, and local people employed on the Project. Issues of concern are associated with a potential increase in:
 - a. unwanted pregnancies;
 - b. sexually transmitted diseases such as HIV/AIDS;
 - c. domestic financial issues due to gambling or drinking; and
 - d. alcohol and drugs consumption by men, leading to domestic conflict and violence, and sexual abuse.

216. Nevertheless, with sufficient preparation and investment by the TRHDP PO and the SIG, each of these potential health threats may be avoided or mitigated, as follows:

- The construction of the project (and access roads) should be planned and executed according to GIIP to avoid any physical or biological contamination of water sources. This should be explicitly addressed in a Construction Environmental Management Plan (CEMP), along with cleanup procedures. Alternative drinking water supplies should also be installed throughout the project area, prior to the beginning of the construction phase.
- Unfortunately, some social threats cannot be completely avoided, as they involve individual personal choices of community members (e.g., level of alcohol and drug consumption). However, it is the responsibility of the Project to prohibit disruptive behaviours and one means of prohibiting such behaviors is the decision already taken to avoid the establishment of a workers camp in the Tina/Ngalimbiu River catchment.
- The threat of anti-social behaviour by local male workers could be minimized by the TRHDP PO and the construction contractor implementing strict drug and alcohol

prohibition for all workers. This prohibition may also help reduce the risk of work related accidents and road accidents on Black Post Road.

- In addition, the development of a Health and Safety Plan by the construction contractor, for both workers and villagers living near the site, could minimize the potential risks for road accidents, injuries and property damage resulting from lost loads. The Plan should include measures such as:
 - a. For work-related accidents, the construction contractor will need to provide tailored workplace health and safety training and personal protective equipment (PPE) (helmet, safety boots, gloves, goggles or safety glasses, hearing protection) for construction workers prior to the work commencing; provide a full-time first aide/nursing post on site and arrangements for medical evacuation (including helicopter transport) for serious injuries.
 - b. Ensuring that all drivers and plant operators are appropriately qualified and trained for their work;
 - c. Installing protective roadside fencing (particularly in the most vulnerable areas such as Mangakiki/Verakuji), and hamlets (in the Grassy hill area);
 - d. Installing a separate pedestrian walkway and well-marked road crossing points in the vicinity of Mangakiki/Verakuji, Marava, Rate, Verakabikabi, and on the roadside hamlets in the Grassy Hill area;
 - e. Enforcing speed limits for all traffic on the upgraded Black Post Road;
 - f. Using good international industry practice for the transport of dangerous goods, and;
 - g. Developing a protocol for managing contractor-related road accidents and injuries, including compensation and compensation arrangements.
- The TRHDP PO and the Construction Contractor will have to conduct awareness on HIV/AIDS and STD to prevent and mitigate the impacts of social behaviors which will encourage sexual behaviours. The TRHDP PO and construction contractor may have to engage outside parties to carry out these awareness programs if these issues are sensitive and cannot be discussed openly by project area parties such as the community Liaison Assistant currently engaged by the TRHDP PO.

b) During Operation

217. Stakeholders' are concerned about water quality in the Tina/Ngalimbiu River once the project is operational, especially with respect to the water in the reservoir and in the stretch of river that will have a significantly reduced flow on which three villages depend.

218. Communities are concerned about increased water-borne diseases, especially diarrhea and malaria. Downstream communities are concerned about water borne diseases from human waste, and have requested independent water quality monitoring and reporting. The monitoring of water quality and the incidence of water borne diseases should begin just prior to commencing construction, and should be part of an ongoing environmental management and monitoring program.

219. It is unlikely that the operation of the hydro-scheme will cause any noise disturbance to local households. Locally, the project operation will have no effect on air quality. Owing to reduced

diesel being consumed for power generation, the air quality should improve in the Lungga area, which may have positive impacts on villagers' health.

220. Despite repeated awareness raising and consultations regarding the dam design and dam safety, local communities, especially women, are still concerned about the potential risk of possible dam failure during earthquakes or cyclones. Some community members expressed a lack of trust in the SIG to safely manage the hydro facility and are asking the SIG and the TRHDP PO to resettle them away from the river. However, according to the TRHDP PO, the risk of a dam failure is extremely low and there is no need for resettlement. This position is consistent with the World Bank's policies on resettlement. However, it remains crucial to implement carefully tailored awareness programs to educate communities about hydro dams, the TRHDP design, and the provisions being made for dam safety in order to prevent unnecessary fears amongst local communities and to avoid any unnecessary resettlement.

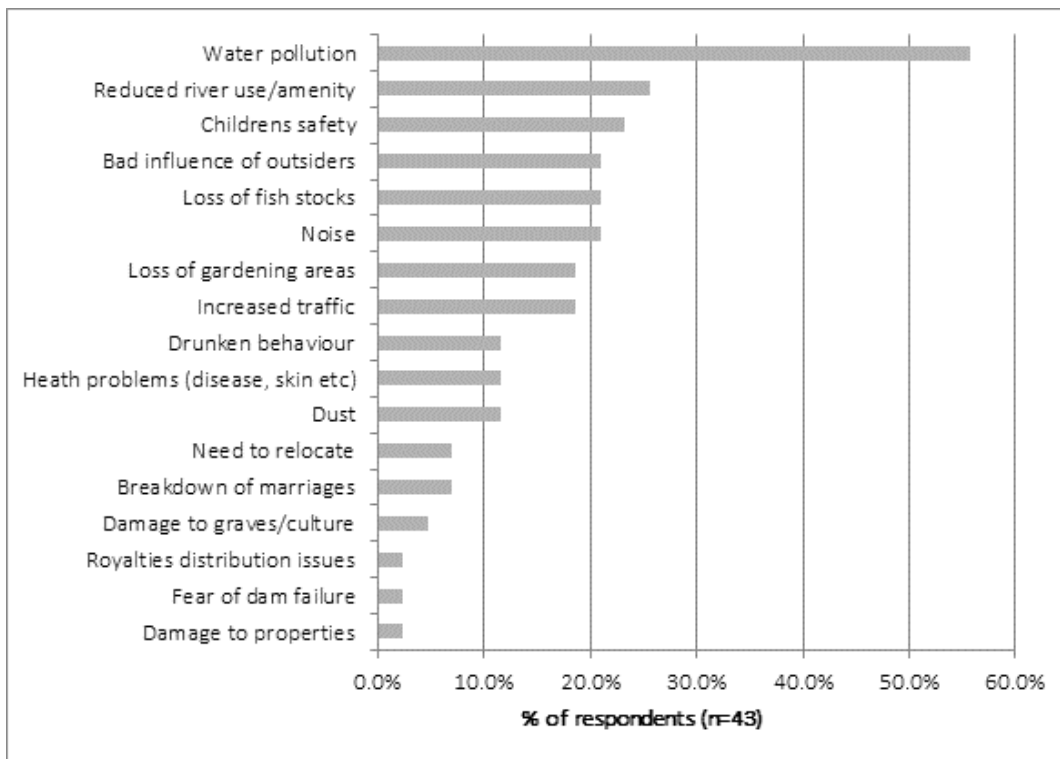
221. Finally, the sudden release of up to 24 m³/s of water from the powerhouse tailrace is seen as a potential safety hazard to local communities, particularly for persons who use the footpaths along the rivers bars and riverbanks. At times, the powerhouse will operate during daytime (peak hour) and will shut down during the night, with the potential ramping flow releases occurring during the daily startup of power generation. To mitigate this hazard a staged release of flows is proposed to alert people to the rising water level, together with awareness on the staged releases and approximate proposed release times.

4. Women - Impacts and Mitigation

222. During the village household surveys, women were asked to indicate their thoughts about potential adverse and beneficial impacts of the proposed TRHDP on them and their household.

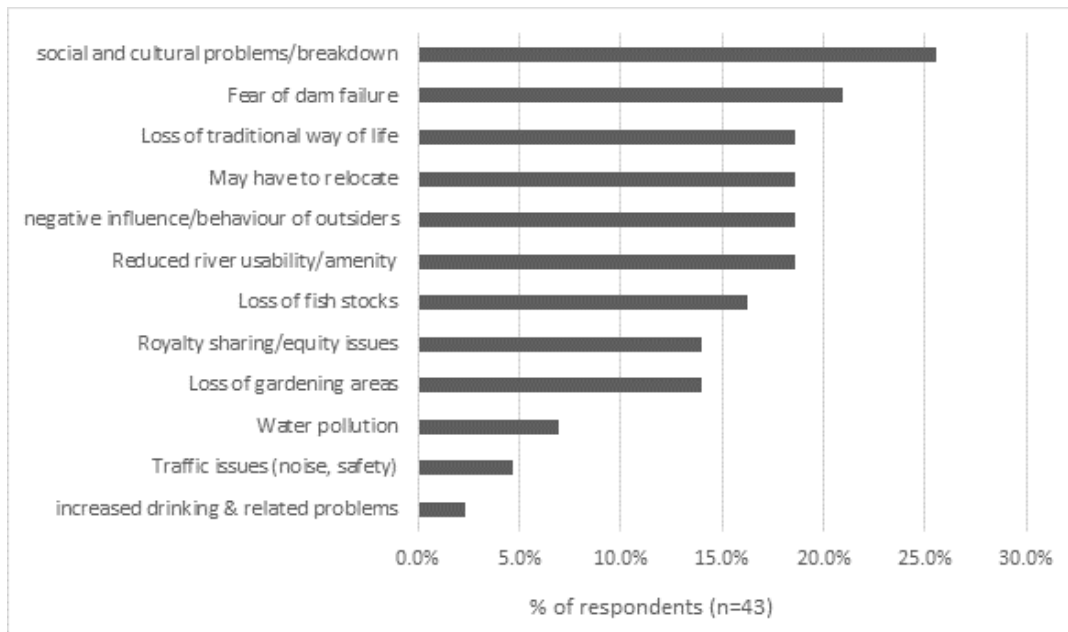
223. The greatest concerns expressed by women include: water pollution, reduced river use/amenity, children's safety, bad influence of outsiders, loss of fish stocks and noise (see **Figure 15**). In terms of the long-term adverse impacts of the TRHDP, women were most concerned about catastrophic failure of the dam, and potential for social and cultural disruption arising from increased outside influences and access to money, by youth and men (see **Figure 16**).

Figure 15: Women's perception on potential adverse impacts of the TRHDP



Source: Tina River Hydropower Development Project – Environmental and Social Impact Assessment, SIG

Figure 16: Women's perception on the long-term adverse impacts of the TRHDP



Source: Tina River Hydropower Development Project – Environmental and Social Impact Assessment, SIG

5. Women's Safety and Wellbeing

224. Women in the project area are concerned about possible risks and threats to their overall safety and wellbeing, as well as that of their children. Their primary concerns include:

- Disaster caused by dam failure;
- Sexual or other assault by outside workers or strangers involved in the Project;
- Road accidents;
- Negative social influences coming from people that are unfamiliar with, or are not sensitive to, local customs;
- Family breakdowns due to potential increase of alcohol consumption, drug use, promiscuity, and gambling associated with increased incomes of men employed on the Project.

225. According to Slovic's findings on risk perception, people tend to rate the risks of new technology (such as a hydroelectric dams and household electricity in the Solomon Islands context) greater than the actual risks. To avoid or reduce feelings of anxiety associated with the dam's safety, the TRHDP PO and/or the construction contractor and operator should carry out, prior to the start of construction, educational programs about dams and their risks, safety around power transmission lines and powerhouse outlets. Prior to electrification of villages, which will occur under the proposed benefits sharing program, public education about electricity and its safe use in the home and community will be proposed for communities and children in local schools.

226. No workers camp shall be established for the TRHDP. Security jobs will be given to local villagers. To avoid potential social and cultural issues for women, the construction contractor should maximize as much as possible the employment of local people on the project, develop and enforce a Code of Conduct for appropriate behavior for incoming workers, and provide cultural awareness training for all staff. To minimize potential social disruption due to increased amounts of cash in the community, budgeting and money management education should be provided as part of the induction and training of locally recruited workers.

227. Local communities adjacent to the Black Post Road have suggested a number of measures to improve the safety of children travelling to and from school at Rate and Valesala. These measures include footpaths, boundary fencing at Vera'ande, Marava, Verakuji, and Mangakiki, and speed controlled areas and/or a police checkpoint near the beginning of the road. The TRHDP PO, construction contractor and transport providers for the Project should be required to ensure that all their drivers are suitably qualified and skilled, and enforce strict codes of practice and road safety rules.

6. Women's Work and Roles

228. The household survey included questions on the division of labour and on the responsibilities within the household. These findings have been summarised and presented graphically in Annex 16 of the ESIA. The data clearly show that women are heavily involved in working in the household (e.g., laundry, growing, preparing and cooking food, caring for the household yard, cleaning the house, and selling produce and cash crops), whereas men tend to

be involved in building and maintenance of the house, clearing forest, hunting, fishing, and dealing with land issues.

229. Potential adverse impacts that may especially affect women and girls and, therefore, require additional work to avoid or mitigate the effects, include:

- Deterioration of the river water quality and supply, and/or damage to other water supplies;
- Increased amount of dust from exposed river bed, road building, and additional road use;
- Loss of nearby gardening area; and
- Loss of forest resources (materials, foods).

230. As a result of the TRHDP, women's quality of living may improve due to the provision of safe and reliable water supplies, safer roads and more reliable public transport. As part of a benefits package, women's and girl's lives are expected to be made easier by the provision of education and health facilities, and electrification of houses (with labour-saving devices, home entertainment, and opportunities for home-based small businesses). The mitigation measures and the benefits package are crucial to women's welfare and development in the TRHDP area, and arrangements should be included in project implementation for ongoing consultation with local women, perhaps through existing women's groups and associations.

7. Minority and Vulnerable Groups

231. Potentially the most vulnerable group in the Wider Area is comprised of people who lack formal rights to the land they occupy and to local resources (e.g., 'squatters'). These people are primarily located in the lower part of the catchment adjacent to the northern section of Black Post Road and on abandoned or government land between Grassy Hill and Kukum Highway Road. Squatters are vulnerable to attacks by landowners who accuse them of consuming local resources.

232. The second most vulnerable group in the project area is comprised of the 'settler' communities. While they lack of formal ownership of land and local resources, their occupancy is legitimate because they have made customary agreements with landowner tribes. Their vulnerability is primarily due to limits of the land and resources available to them for their livelihoods, as well as their lack of participation in local tribal decision-making. Despite being Guale people, they remain vulnerable to occasional attack by community members from villages in Bahomea. These communities could be affected by the construction and use of the Transmission Corridor(s). The effects are discussed in depth in the LALRP.

233. As the project progresses, issues affecting the communities will need to be dealt with through procedures such as the grievance mechanism and nominated community representatives for project liaison.

234. The main concern noted by the Bahomea villages is the loss of their lands. Landowners and the PO/SIG are responsible for avoiding and resolving these issues by actively engaging with the informal settlers during the detailed design of the transmission corridors.

8. Social Relations and Social Organisation – Impacts and Mitigation

a) Identification of Potential Social Conflicts

235. Participants of the community workshops highlighted the existence of potential social and political conflicts and their concerns about trusting local leadership and the central government. The planning, construction, and operation phases of the TRHDP may affect local social organization.

236. Members of the consulted communities expressed their anxiety about the potential risk for social conflicts between landowners groups and the SIG over various issues including: land and resource ownership and access rights; rent sharing; royalties; compensation payments; and access to development opportunities and benefits. Construction and operation of the TRHDP have the potential to generate both beneficial and adverse impacts on social capital in the project area. According to consulted communities, there are two main concerns regarding social relations:

- Potential internal tribal conflicts over the distribution of benefits, which may lead to social fragmentation; and
- Potential conflicts between local clans and the SIG.

237. According to the members (especially women) of the Bahomea communities (those closest to the main construction area) the main concerns about impacts on social relations are:

- Possible disruption of the local customary way of life and values due to the impacts of outsiders working on the TRHDP and passing through local communities. These disruptions may affect dress codes, behaviour, crime rates, and may represent a possible moral danger to young women;
- Possible social and family problems caused by local men having greater access to cash and, therefore, potentially greater access to prostitutes, alcohol, drugs, and gambling. These concerns are based on the previous experience with Gold Ridge mine.

238. To avoid the conflicts identified above, local inhabitants requested greater input and transparency on issues related to identification, monitoring and evaluation of land and resources that will be affected by the TRHDP. It is also important that development of the Project be undertaken in an inclusive and participatory manner with all of the affected communities. Chiefs and village leaders need to be reassured that all landowners in the project area will receive a share of the benefits. Conflicts and social disruptions may arise if these matters are not dealt with sensitively, and they may pose potential threats to the viability of the Project. These social matters have been dealt with so far by the TRHDP PO, government leaders, and the traditional Chiefs of Bahomea, in accordance with indigenous customs and practices. The process of engagement on land identification, and measures to ensure fair distribution of benefits between land owning tribes and within each tribe, are documented in the Land Acquisition and Livelihood Restoration Plan.

239. International and domestic development agencies could assist by providing training in conflict identification and resolution to church, community leaders and NGOs. The churches and existing civil societies have an important role to play locally in conflict avoidance and conflict

resolution. Finally, the implementation of a social impact management plan and the benefit-sharing program aims to deal positively with the issues raised above.

b) Project Construction Workforce

240. The TRHDP PO has indicated that the peak construction workforce for the TRHDP will include approximately 175 workers. However, at the time of reporting, no definitive information was available on the proposed construction or operations workforce, its timing, occupational structure, required levels of skill and experience, and origin.

241. It is envisaged that residents of Bahomea, Ghaobata, and Malango would be employed as semi-skilled and unskilled labour in the construction of the Project, along with non-local technical specialists and tradespeople. Entura suggested that the construction of the dam would take place at least six days per week, with work suspended during the rainy season, when the river is high. The Project shall have no workers camp on site. It is anticipated that expatriate staff, and workers outside of Central Guadalcanal, will be housed in Honiara and local staff will be bussed to the site from their villages. The size and characteristics of the population of the project area will, therefore, not change due to the project construction.

242. Suitable accommodation will need to be planned for well in advance, by the construction contractor, to cope with a temporary (seasonal) increase in Honiara's population.

c) Uninvited Visitors, Jobseekers and Settlers

243. As a significant construction project, the TRHDP may attract uninvited visitors, jobseekers and settlers, who are otherwise unable to find employment in Honiara, or in Solomon Islands. This is believed especially to be the case for young men. Some may squat on government-owned land within the Tina Valley if they are able to obtain indirect employment. In such cases, the whole family may move to the area, putting additional pressures on local services such as health clinics, schools, and water supplies.

9. Local Customs and Way of Life – Impacts and Mitigation

a) Local Communities

244. The migration of Malango people from the slopes of the central mountain range into the river valleys and ridges to the north has meant increasing exposure to multicultural Solomon Islands life and to Western cultural influences. The traditional hill peoples' mixed livelihoods strategy of shifting subsistence agriculture, combined with hunting and gathering, has been supplanted by wage labour, royalty payments from large-scale logging, purchased goods and food, increasing contact with Honiara, and the use of Solomon Islands Pidgin. In the process, older people of Bahomea say that their traditional culture has changed considerably.

245. From the 1950s onward, such changes were resisted through the Guale cultural revival advocated and practiced by the followers of the Moro Movement (see below). In some cases, families have relocated away from larger settlements to quieter, and more natural areas, where they can practice a subsistence way of life, for example, in the upper part of the Tina valley. However, they remain quite strongly connected to modern day northern Guadalcanal and its urban influences and dependencies.

246. Some members of local communities expressed concern that developments such as electrification of houses and other lifestyle changes would lead to the loss of the traditional way of life. Others are fearful that construction workers and other outsiders will disrespect local customs and standards of behavior.

247. In the longer term, the TRHDP, and the proposed package of benefits, could catalyze the process of exposure to other communities, and of cultural and social change that is already occurring. Increasing and more intense contact with the outside world could accelerate the loss of the Teha language, traditional knowledge of the natural environment and how to obtain a living from it, of tribal genealogy and history, and of the ancestors and spirits. Conversely, most people in the community have indicated that they welcome the possibility of an improved quality of life through electrification, improved water supplies and incomes, better services, and better quality roads.

248. Impacts on the nature of traditional livelihoods are also expected to eventuate from the paid employment of local workers, and the possible paid engagement of local groups for catering or security services. Staff for semi-skilled construction positions are expected to draw from previous workers of the Gold Ridge, many of whom remain unemployed following the closure of the mine in April 2014. In this context, many of the project's workers will have had existing exposure to working with outsiders and to engaging in cash employment in lieu of traditional livelihoods. Baseline studies show an existing dependence on cash incomes in the area (with a weekly average income of SBD\$870 per household), and a higher than average paid employment rate. While the Project embodies a growing trend towards greater involvement with Honiara and outside cultures, the temporary nature of the majority of jobs and impacts (during the construction period) will limit social and cultural change to an extent.

249. In part, TRHDO PO's method of customary land identification, and the involvement of a committee of elders and storytellers (the Bahomea Land Identification Committee), has created an increased emphasis on tribal genealogies, histories, ancestors, spirits and cultural sites, not just in the Core Land, but in the wider Bahomea area considered by Bahomea Land Identification Committee (BLIC).

b) Gaena'alu (Moro Movement)

250. The TRHDP has the potential to disrupt the lives of those residents of the area who follow a less western influenced and more traditional way of life, such as the followers of the "Gaena'alu Way" (also known as the Moro Movement).

251. Fear of disruption to, and loss of, culture is the primary concern for the senior Moro/Gaena'alu priest and village leader of Koropa and its related community of Namopila. With the selection of the preferred alternative (Option 7C) for the Project, much of the feared disruption to the quiet traditional Gaena'alu lifestyle, and to sites of cultural significance, will be reduced. Fear that the customs and lifestyle of the Gaena'alu followers will be disrespected will be avoided by not having a workers camp located within the Tina/Ngalimbiu area, and by the TRHDP PO and construction contractor enforcing a strict Code of Conduct for its workers with respect to contact with local minorities (see Annex 18 of the ESIA).

10. Livelihoods and Key Resources – Impacts and Mitigation

252. The TRHDP is likely to affect the livelihoods of households using resources located close to the dam, reservoir, headrace, powerhouse, power transmission line, or access roads.

253. Based on the fieldwork and consultations with local people, stakeholders and experts, the impacts on local livelihoods of the development of the Project can be expected to mainly come from:

- Loss of, or damage to the natural assets upon which local communities' livelihoods depend, including the Tina /Ngalimbiu River, food gardens, forests, and areas used for hunting, gathering and fishing; and
- Damage or improvement of physical assets and infrastructure, such as tracks, roads, and water supplies.

254. Most households of the study area rely on their own local natural capital as the basis of their livelihood and to meet their basic needs. However, they are increasingly tied into the modern urban-based economy. This is evident in the growing role of cash, which is needed for goods and services, such as food, household fuel and consumables, telecommunications, transport, and school fees. The construction and operation of the TRHDP could bring about change or opportunities for change, in the way some people obtain their livelihoods.

a) Infrastructure

255. The main impact of the TRHDP on the physical infrastructure of local communities is likely to be unintentional damage to infrastructure (e.g., houses, fences, foot tracks, village access roads, bridges, and water supplies), due to the construction and upgrading of the Black Post Road to allow the construction traffic. Once completed, the proposed road is expected to accommodate 25 to 40 project related vehicle trips per day, during the construction season (Entura, 2014). Project traffic will mainly consist of light, medium and heavy vehicles, including vehicles carrying workers, materials, and heavy equipment. Most traffic movements will be confined to daytime.

b) Small-Scale Timber Harvesting and Timber Milling

256. Small-scale timber milling represents a major financial input for indigenous communities of Bahomea. Forested lands, currently accessed for small-scale timber production, will be affected by the land acquisition process.

257. Landowners engaged in timber extraction in the Tina Valley (mainly between Senge and Choro) expressed their concerns regarding the impacts of an altered river flow on their ability to raft sawn timber downstream from the harvest sites to various transport pick up points. Non-timber forest products, including wild foods, medicinal plants, and building materials that are currently available in areas that may be required for the Project (e.g., near Mangakiki and Senge where new access roads will be built) will be lost and become locally scarcer.

258. Construction of the Project will require permanent clearing of 115.49ha of native vegetation, of which 51.0ha is forest (see **Table 13**). The majority of forest will be removed from within the reservoir area and along the access roads. In addition, the Project will modify the river hydrology, affecting the ability to transport sawn timber from the areas where it has been harvested, downstream to village haul out sites.

259. The potential impact of forest clearing is low; the amount of forest that will be cleared represents 0,9% of the total area of non-montane forest in the catchment. In the short term, the

loss of timber will be partially offset by the plan to engage local workers to clear trees from the reservoir area.

Table 13: Area of vegetation permanently lost due to project

Grasslands (ha)	Undisturbed forests (ha)	Disturbed forests (ha)	Remnant forests (ha)	Montane forests (ha)	Riparian (ha)	Cliffs (ha)	Gardens (ha)	Fallow brushland (ha)	Total surface of habitat directly lost to construction activities
20.30	9.54	29.65	11.87	0	21.62	16.12	0	6.40	115.49 ha
51.06ha total forest area removed									

Source: Tina River Hydropower Development Project – Environmental and Social Impact Assessment, SIG

260. The reduction in the river flow between the dam and the powerhouse, will make it impossible during normal flow to float timber down the river from where it is harvested in the Choro and Koropa areas to the traditional haul out sites that are located near villages downstream.

261. In the long term, the creation of a new dam access road could provide better access to areas in the upper catchment for small-scale timber production by local landowners. Use of the road for this purpose will depend on the proposed management by TRHDP, and the land-owning/holding company to be established as part of the Project. At present, it is proposed to limit the use of the road to Project related activities to prevent increasing logging of native forests.

c) Extraction of Aggregates from the River

262. The following discussion is predicated on the assumption that the proposed TRHDP dam may significantly reduce the recruitment of construction grade aggregates (i.e., sand and gravel) in the lower Ngalimbiu River where they are currently mined. However, the recent study by Ian Jowett predicts that changes to downstream gravel levels, if any, will not eventuate for a considerable period of time.

263. Communities in the lowest part of the catchment are particularly concerned about the potential effect of the dam on the transport and deposition of aggregates. Were the dam to have such an effect, the construction of the dam may also have an impact of sale of sand and gravel, which is an important source of income for many communities in the project area.

264. The Ghaobata people, located in the lower part of the catchment on the Guadalcanal plains, rely on royalties from gravel extraction from the Ngalimbiu River. This particular material

is of high quality and is a key source of aggregate on northern Guadalcanal¹⁴. Gravel extractions by communities located in the Upper Ngalimbiu River and in the lower part of the Tina River catchment are sporadic, of low volume, and for domestic use. Throughout the Bahomea district, people occasionally use gravel and sand from the riverbed to make concrete for building their houses, or other types of construction. These extractions do not appear to be a source of revenue for the Bahomea landholders.

265. Participants in the ESIA workshops, household surveys (with the Ghaobata communities at Ravu and old Selwyn) and the mitigation workshops (held by the GPPOL settlement) expressed their concerns about the future of gravel resources once the upper part of the Tina River is dammed and once the flow regime is altered. They also expressed their willingness to provide more information about the gravel extraction rates and the royalties paid to local tribes.

266. Sand and gravel is excavated by loaders and trucks directly from several places in the lower river near Ravu, and downstream of the Ngalimbiu Bridge. There are stockpiles of sand and grit near old Selwyn, and there is a gravel yard, screen, and elevator at the Lee Kwok Kuen and Co (LKK) farm. In mid-2013, the Ghaobata landowners received royalties ranging from SB\$390/m³ to SB\$500/m³ of material. The main client was Dalgro Ltd, which was sourcing approximately 200 m³ per day during the dry season. Solomon Sheet Steel Ltd was also reported to be sourcing gravel from the Ngalimbiu. Apart from the commercial operation of LKK, the communities involved in gravel extraction include Ravu (with about 16 hamlets) and Old Selwyn/Popoloi.

267. As confirmed from Geotech investigation at site option 6A, the alluvium depth at this site is 25 meters. As such, the river will continue to replenish gravel for the downstream communities, and the impact of reduced gravel may not be experienced, if at all, by the downstream communities for a very long time.

d) Natural Capital

(1) Access to Natural Capital

268. The loss of natural livelihoods assets is one of the main concerns of local communities. All the indigenous people of Bahomea and Malango have rights to utilise natural resources of the Tina/Ngalimbiu River catchment, though it is mainly the people of Bahomea who actively exercise those rights for their livelihoods. These include the people residing in the Downstream Area and Infrastructure Impact Area.

269. Most of the permanent loss of natural capital will result from the creation of the hydro storage reservoir, the creation of the access roads and, to a lesser extent, the construction of the dam and powerhouse. Temporary loss of access to natural resources within the upper Tina River watershed will occur during construction.

¹⁴ According to Tawake (2005:17), in the Ngalimbiu River near the bridge, “the river aggregate deposits are composed largely of igneous rock fragments with lesser limestone constituents. Igneous rock fragments comprise plutonic rocks and slightly less volcanic rocks”. The surface area of the resource at the extraction site in 2005 was estimated at 10,000 sq. m. Tawake also noted that there was “No standard compensation and royalty rate paid to resource owners to compensate for the use of sand and gravel on traditionally-owned land” (p25).

(2) Land Use

270. The land required for the project includes:

- Partially logged and intact forest lands, used by some households as a source of wild foods, building and craft materials, traditional medicines, hunting, and bush tracks;
- Sections of the Tina River, including:
 - a. the water of the river, along with the environmental and human-related services it provides (e.g. washing, bathing, water supply, transporting timber, and gravel extraction);
 - b. the riverbed, including rock pools, and other locations used for fishing, tracks, and sacred sites;
 - c. tributary streams, used as sources of wild foods, and as ownership markers, and;
 - d. riparian margins, used as sources of wild foods, and containing former habitation and sacred sites.

271. The creation of the proposed access road above Mangakiki is likely to require only minimal disturbance to garden land or areas for collecting forest resources, since the area has already been harvested for its timber and modified by logging. Building the road section down into the dam site from the ridge will require the removal of small amounts of relatively intact natural forest. No land used directly for human occupation will be required for the construction of the project.

272. The powerhouse will require an area of very steep land several hundred meters downstream of Senge on the left bank of the Tina River. This area does not appear to be used by existing villages. The proposed powerhouse access road, which begins at the logging road south of Mangakiki, on the ridge above Senge, is likely to require land containing trees and plants that are used by local households, and will possibly subsume parts of the main bush track to Senge. Satellite imagery from August 2013 suggests that the road may affect land previously cleared for food gardens. The earthmoving required to construct the road, which traverses the ridge and slopes above Senge, could potentially damage resources belonging to the village if not carefully managed.

273. Section on land ownership, noted that all of the customary land taken for the project was previously owned by local indigenous people and is valued by them. The LALRP sets out the process and measures for identifying and compensating for land value and loss of resources (plants/hunting etc.). However, it is not expected that the loss of the land required for the project will have significant adverse impacts on local livelihoods.

274. The LALRP assesses and addresses the livelihood impacts of the land acquisitions and covers the impacts of acquiring title to the Core Land.

275. The TRHDP PO has proposed that the land in the designated Core Area become legally owned/leased and registered to a Tina Core Land Company – a 50:50 joint venture between the traditional land owners and the SIG. This company would then lease the various sites to the

developer and would then determine future rights of access and uses of the Core Area, including the storage reservoir.¹⁵

(3) Water Use

Water Quantity

276. Notwithstanding that there will be reduced flows in the Tina River between the proposed damsite and the powerhouse, the TRHDP PO reports that there will be sufficient permanent flow to meet the consumption needs of villagers from Choro, Koropa, and Senge, once the project is operational. As noted, at minimum flow there will not be sufficient water or current in this section of the river to float rafted timber downstream to haul out sites at Habusi, Antioch, and Tina Village. The powerhouse tailrace structures and outflow may also present a physical barrier to timber rafting and a safety hazard. Reduced river flow for most of the time will make the riparian areas between Senge and the dam site more accessible to landowners, and possibly encourage an expansion of livelihoods activities in that area.

277. The reduced nighttime flows downstream of the powerhouse will likely to be noticeable during periods of natural low flow in the Tina/Ngalimbiu River catchment. There are implications for communities living adjacent to the river downstream of the powerhouse in terms of timing and safety of river-based activities such as bathing, washing and recreation. A staged release of flows through the power station in the mornings is proposed to minimize safety risks.

Water Quality

278. The construction, upgrading, and use of the road, during the project construction period, may disturb and damage existing water resources used by villages adjacent to the road (e.g., Marava, Vera'ande, Verakabikabi, Valesala/Antioch, Verakuji, and Mangakiki). In addition, the construction of the new section of road at Rate may also damage the catchment area for the Verakabikabi water supply, and minimally, will pollute the water (see Annex 17 of the ESIA). Water quality could also be reduced due to fuel spills, sewage disposal, and chemical leaching and spills at the dam and powerhouse construction sites, or the incorrect management of concrete waste water or sediment run-off from cleared areas.

279. Almost all of the communities in the Tina/Ngalimbiu catchment rely on the Tina/Ngalimbiu River for their domestic water supplies. Consequently, the potential loss of access to clean and potable water due to river pollution and sedimentation during the construction of the dam, is a major health concern for all the riverside communities of the Downstream Area, especially for women. While villages along the Tina Road get their water from other sources, they are still concerned that construction activities, such as road building, will disturb and contaminate these sources of water. Water pollution problems often occur after heavy rains, due to land disturbances, such as logging.

280. In addition to concerns about the water taken from the Ngalimbiu River for domestic purposes, the Ghaobata communities of the lower catchment on the Guadalcanal Plain, are worried about the effect of the dam on the water levels in their wells and boreholes, especially in the dry season. Throughout the project area, members of all riverside communities noted the potential impacts of reduced water quality and availability on bathing, washing of clothes and food, recreation, and fishing. Women expressed particular concern about these matters.

¹⁵ See Project Office press release, "Tina River Core Land Owners Give Consent" dated 17 July, 2014)

Figure 17: Locations of the known water supplies adjacent to the Tina Road (blue drops)



Source: Tina River Hydropower Development Project – Environmental and Social Impact Assessment, SIG

(4) Hunting and Fishing

281. As described previously, all of the indigenous communities of Bahomea and some of the adjacent Malango communities occasionally use the rivers, streams and forests of the upper Tina River catchment for hunting, fishing and camping. The household survey found that game animals and fresh river fish are no longer common in local peoples' diets. Hence, hunting - and to a lesser extent fishing - tend to be seen as a cultural activity involving young people and to provide wild pork for church and community feasts, rather than as an essential part of peoples' livelihoods. In contrast with some Ghaobata households, fishing is not a source of income for people of Bahomea.

282. The extent of the loss of fishing, hunting and gathering opportunities will depend on the access arrangements for and future management of the upper catchment.

283. Some fishing spots could be permanently lost. Conversely, the proposed storage reservoir may provide future aquaculture and fishing opportunities.

284. Downstream of the dam site, the river will become more turbid due to reservoir clearing, cofferdam installation and removal, and other riverbed disturbances during construction, and will be less suitable for spear fishing using snorkel diving gear. Conversely, the new access road will enable landowners (and potentially outsiders) to access fishing spots upstream of the construction area more easily. The TRHDP PO has suggested that access to upstream areas via the new road, would ultimately be determined by the Core Land Company, subject to the mitigation measures recommended in the ESIA.

285. Poorer water quality caused by construction could also have a negative impact on the fishery at the mouth of the Ngalimbiu River, although this is considered unlikely. Gravel mining in the lower Ngalimbiu River bed already introduces sediment to the river, yet fishing appears to continue.

286. During project operation, the main effect on fishing will be the reduced number of rock pools where people spearfish. This will occur in the reach of the Tina River covered by the reservoir, and in the reach that will have reduced flow. In addition, there may also be changes in the fisheries due to the barrier to migration of the dam and powerhouse turbines. The study by Ian Jowett suggests that the reduced flow in the river will be advantageous to certain fish species, detrimental to others, and provide an overall increase in fish densities. Proposed mitigations include using trap and haul methods to move fish over the dam.

287. Hunting areas will also be lost, although the reservoir may provide better access to areas in the upper Tina River catchment, where hunting effort seems to be concentrated.

288. Specific hunting-related impacts mentioned by villagers include:

- Displacement of wild pigs, the main game animal, from riparian areas and possibly pushing them downstream and closer to settlements and gardens as occurred with logging. This migration of pigs could be accelerated by the creation of the new road, and;
- Displacement of waterfowl that rely on the river and adjacent streams for their habitat.

289. Measures to address livelihood impacts of reduced access to hunting and fishing, including providing ongoing access for local communities during the operational period, are set out in the LALRP.

(5) Food and Materials Gathering

290. The riparian area (micro-wetlands) between Senge and Choro is reported to be a source of wild fruits, edible ferns, nuts, medicinal plants, plants deemed to have magical properties, and bush materials. These plants will be affected by the reduced river flow, since floods that periodically replenish the riparian areas, will be controlled by the dam. This could have consequences on the livelihoods and wellbeing of the four households in the two villages. It seems, from discussions with local people, that most materials should be available in other locations. The creation of the dam access road will reduce the availability of some materials and plants (e.g., in the road corridor), but will also make it easier to access alternative areas and supplies.

291. As part of any resettlement planning for the project, SIG has, in close cooperation with the affected landowners, investigated the occurrence of culturally or economically important plants in the core project area, that may be destroyed by the Project and for which compensation would be payable. A process for compensation and retained access for local users of the Core Land Area is set out in the LALRP.

11. Cultural Heritage – Impacts and Mitigation

292. The local indigenous people of Bahomea and Malango have traditional authority and use rights over the project area, and are concerned about the potential desecration and damage to their cultural sites as a result of the Project.

293. The most significant cultural impact of the project will be the loss of, and/or damage to, sites of importance to the indigenous people. The potential adverse cultural impacts include:

- the permanent loss of tambu sites, including natural features and objects, rock pools, streams, and former habitation sites within the proposed project area (Core Land); and
- during construction, disturbance to or desecration or destruction of tambu sites, graveyards and other places of social and cultural importance located next to the Black Post-Tina Road, and in the new road corridors.

294. The construction and operation of the TRHDP could have direct physical effects on several types of culturally sensitive sites. These include places of:

- long term cultural significance such as archaeological sites, historical places and former village sites; and
- religious or spiritual significance and associated with custom stories and ancestors (e.g., tambu sites, graves, custom houses, places of worship, and boundary markers such as special trees, rocks, streams). For example, people from Marava, Vatupaua, Rate CHS, Ngongoti communities noted that several burial places may be affected if the existing Tina-Black Post Road was to be enlarged.

295. Sacred sites may be owned by, or have particular importance to individual groups or clans, and underpin notions of identity and land ownership. Knowledge of the location and meaning of tambu places can, therefore, be a proof of land ownership. Thus, the information can be highly confidential. Unfortunately, only the very old members of a clan may have such knowledge, and there is “no effective system” for the management and protection of ancestral and scared sites and objects (Ministry of Culture and Tourism, 2012).

296. The protection of sites and cultural materials is covered by the “Nasinol Policy Framework blong Kalsa” (The National Cultural Policy Framework, 2012), which sees protection and preservation of Solomon Islands indigenous languages, arts, customs, traditional knowledge, and heritage as crucial for maintaining Solomon Islands peoples’ dignity and identities, and as ‘an essential component of the socioeconomic, political, and spiritual development aspirations of the Solomon Islands’ (SIG, 2012: 3). Policy goals listed in the framework document that are relevant to the TRHDP include:

19.1 The country has a proper and effective system for the management and protection of ancestral and sacred objects and sites;

19.2 The cultural heritage of the country is protected and preserved for the cultural education of today’s youth and future generations;

24.1 The country has a national database and effective system for the management and protection of cultural landscapes of archaeological and historical significance;

24.2 Cultural landscapes of archaeological and historical value are integrated into cultural tourism development; and

24.3 Cultural education, historical knowledge and field research are enhanced and facilitated through the availability of well-protected and well-managed sites throughout the country.

297. Other than proposing a database, the Framework proposed no concrete steps for protecting culturally important sites.

298. The ESIA is limited as far as baseline studies of cultural heritage in the project area are concerned. Because most of the knowledge is kept confidential, investigators were not able to gain detailed information to locate all sacred or cultural sites for the potentially affected communities and landowners. In some cases, broad descriptions were provided during interviews with senior men. Riparian surveys conducted by Pacific Horizons Consulting Group (PHCG) in 2011 noted and mapped the locations and names of various streams and features between the upper end of the Tina River catchment and Pachuki. In addition, the approximate locations of some old villages were recorded. During the ESIA village workshops, the names of originating villages and the sequence of village settlements prior to the current settlement patterns were recorded, though exact locational data was not obtained. Also, the existence of present day graves and other cultural features were noted during the village workshops, though except in the case of Mangakiki and Verakuji villages, their exact locations were not recorded.

12. Potential Beneficial Social Impacts Identified by Community Members

a) Access to Electricity

299. According to the communities, bringing electricity to villages, churches, and houses could be a main benefit of the TRHDP. This is a strong indicator that local people understand the nature of the proposed hydroelectric development and the benefits of having electricity.

300. Based on the workshop consultations and the householder surveys, electric lighting is the most sought after benefit of the project because it will:

- Enable children and adults to study in the evenings;
- Provide security in the home and around the village, especially for women;
- Increase levels of community interaction, by facilitating evening gatherings and, thus enriching the community life.

301. Having their own electricity supply will enable households to take advantage of modern electrical appliances and machines, specifically:

- Refrigeration, providing greater food hygiene and security and, therefore, providing financial and health benefits;
- Electric cookers and washing machines, which will reduce the level of manual labour and resources currently required for cooking and washing, and improve the quality of women's lives;
- Home and community entertainment systems, which are seen as providing educational, psychological, and socio-political benefits, and reducing the sense of isolation; and,
- Use of power tools and machinery, especially for carpentry and building, sewing, and craft work, which will enable the establishment of small businesses and workshops, and provide additional income opportunities for both males and females. Power tools will also considerably reduce some of the heavy labour for men in building, improve efficiency and productivity, and improve working conditions.

b) Increase in Employment Opportunities

302. The principal benefit to human capital from the TRHDP will be additional employment opportunities. Stakeholders believe that the construction of the project will provide opportunities for direct and indirect employment, for both males and females, and for landowners. The TRHDP PO anticipates that the construction of the TRHDP will require up to 175 workers at its peak. The percentage of locals in the workforce is expected to be high, as the developer for TRHDP will not be permitted to employ any semi-skilled or unskilled foreign workers and training is to be provided to improve local residents' opportunities. The actual number of people recruited locally will depend on the skills required and the availability of jobseekers.

303. The landowners and communities of Bahomea and Malango are expected to be given priority for employment on the Project and to receive training in plant and machinery operation, administration and security work. Some local people will take advantage of providing goods and services to the project such as food preparation, cleaning, and security. On the operations side

of the project, young people may see opportunities of developing new careers and providing ongoing services. New opportunities associated with the new reservoir (e.g., tourism and possibly fish farming) are also possible. Finally, these potential business and employment opportunities could improve income diversification and standard of living.

304. The World Commission on Dams (WCD) notes that the wages paid to construction workers represent the single largest social benefit during the construction phase of a hydropower project. The social benefits have positive consequences on the workers' families and community. Jobs may be created to provide support services to workers and to the Project (e.g., accommodation, meals, transport and retail). Off-site jobs may also be created in the manufacture, supply of construction materials, and transportation.

305. Priority is given to employment of people from the Bahomea and Malango communities. Workers from outside the host community will also be needed, chiefly for technically specialised skills which may not be available locally. An influx of job-seekers into rural and isolated areas can have an adverse impact on local communities and the environment; to preclude this induced effect the developer will provide for accommodations for all non-local workers in Honiara.

306. Some local residents may be trained to fill operational positions. There may be a small number of other paid jobs (e.g., site security) for local people during the operations phase of the Project once it has been commissioned. Routine maintenance will be done under an Operations and Maintenance contract with the Project Company. The required operational workforce is still under consideration.

c) *Livelihoods Strategies*

307. During construction of the Project, people who are working on the TRHDP are likely to spend less time producing food from their gardens. Findings of the community workshops highlighted a variation in nutrition, with an increase in intake of imported carbohydrates. These variations were attributed to an increased reliance on cash from paid employment, timber sales, rents and royalties from Gold Ridge mining and from natural forest logging.

308. Finally, in the longer term, the TRHDP is likely to have a positive benefit in local people's livelihoods. Improvements to the road infrastructure could make life easier, and provide better access to Honiara's markets. The much-desired electrification of local villages could bring diversification in household livelihoods, with the opportunity for home-based manufacturing and artisan activities. This would reduce household income vulnerability. Provision of other benefits, such as reliable water supplies within the villages, would reduce the domestic workload on women and girls, and free them up for other income-generating work.

d) *Improved Education and Skills*

309. If suitable training and learning arrangements are put in place, the Project offers an opportunity for developing new skills for the indigenous people through pre-employment job training through institutions, and on the job training¹⁶.

310. The local landowners anticipate that the SIG will provide education and training sponsorships and scholarships as part of a benefits program. The opportunities for education and

¹⁶ Don Bosco Technical Institute and the Solomon Islands Association of Rural Vocational Training Centres offer village-based and residential training in relevant areas (See <http://www.siartc.org.sb/publications.html>)

training will become clearer once project planners have identified the workforce requirements, and employment policies have been developed.

311. It is recommended that the TRHDP PO survey local villagers to identify people interested in working on the project construction, and that the survey include a preliminary skills and experience audit. On the basis of the survey and the workforce requirements, the contractors, working with SIG and local training providers, should facilitate community participation in the project, by providing:

- Project work-readiness courses to job seekers/aspirants in the project area, including resume preparation, work safety and health, and money management, and;
- Training, where possible, in specific skills (e.g., driving, plant operation, trades assistants, etc).

312. As part of a promised benefits sharing program the SIG has begun implementing a much needed and well-received \$2 million upgrade to schools in the Bahomea area. The project could also support transportation to the schools.

e) *Ecotourism Opportunities*

313. One on hand, tourism could be enhanced as a result of improved roads and access to the upper catchment. However, the reduced flow in the by-passed section of the Tina River could reduce the site's attractiveness for eco-tourists.

314. The access track to Senge Village, which used to run a small-scale ecotourism operation¹⁷ (receiving over twenty international visitors in 2013), will be disrupted by the access road to the powerhouse. Sadly, the manager of the Senge operation passed away and the homestay is no longer running.

315. Various tourism development opportunities may be available for tribes/clans that are owners of the core land as well as neighbouring lands. These tourism opportunities are associated with the creation of the hydro reservoir and the possible future creation of a forest reserve in the upper Tina River catchment. Tourism could become a source of employment and revenue for these people. Over the long term, such development could be linked to a potential development of a trans-Guadalcanal trail, linking the North coast with the central mountains and the Weather Coast.

f) *Improved Roads and Accessibility*

316. The Black Post Road provides access to several communities located around the Tina village but not to settlements adjacent to the Ngalimbiu/Tina River. Settlements between the Tina village and Senge village can only be accessed on foot by bush tracks or along the river bed. The upgrading of the existing Black Post-Tina-Mangakiki Road are seen by local people as a considerable benefit to the community. The improvement of the road will allow:

- Better and more reliable transportation services throughout the area;
- Reduce the maintenance costs for those who already have vehicles; and

¹⁷ See [http:// www.sengevillage.com](http://www.sengevillage.com).

- Improve access to health and other public services, facilities, markets, events, and employment opportunities both within and outside of the immediate district. Women see considerable benefits in being able to better access health services for themselves and for their children.

317. In the longer term, and providing the roads are maintained, the people of Bahomea will benefit from having a much higher quality and safer road than at present, which will enable the provision of better public transportation services to and from Honiara. Better quality roads will also mean shorter travel times and higher service reliability, especially during wet weather. Accessibility should, therefore, improve for all local rural communities, with flow-on effects to people's welfare and development.

g) Local Financial Capital and Economic Development

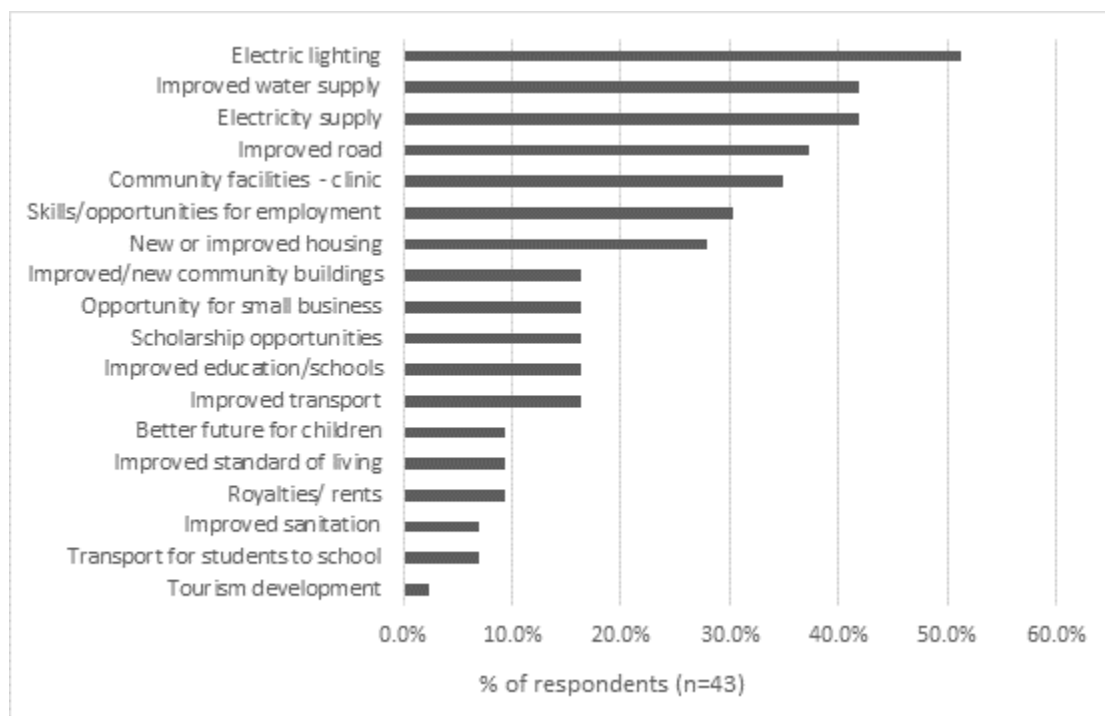
318. Local communities have considerable expectations that the TRHDP will be accompanied by a SIG funded benefits program, which aims to improve local services and facilities, such as schools, health centres, roads, water and electricity supplies. New schoolrooms and road improvements have already been provided by the SIG, which has fostered a degree of confidence in the ability of the Project to deliver benefits to local communities.

319. Based on previous and ongoing experience of developments in the Central-north Guadalcanal area, people in the wider project area believe that the TRHDP may be a good (and perhaps easy) source of income. Local people expect this to come from access fees, meeting fees, compensation (for the purchase of land and loss of livelihood assets) and community or individual payments for agreeing to the project. Some also expect to receive cash rather than traditional 'compensation' payments for damages to their land and resources. According to the local communities, such payments are seen to potentially improve their standard of living and status.

h) Potential Project Benefits for Women

320. According to women's perception on the benefits of the TRHDP, the main benefits are: electric lighting; improved water supply; electric supply; improved roads; community facilities (e.g., clinic); and skills and opportunities for employment (see **Figure 19**). Other potential benefits of the Project are reflected in the survey results.

Figure 19: Women's perception on the benefits of the TRHDP



Source: Tina River Hydropower Development Project – Environmental and Social Impact Assessment, SIG

V. LAND ACQUISITION PROCESS FOR THE CORE LAND AND ASSOCIATED BENEFITS

A. THE LAND ACQUISITION PROCESS

1. Overview

321. The land acquisition process is detailed in the LALRP. This section provides a summary of the land acquisition process related particularly to the Core Land as it is important to understand the process in which the customary landowners were identified in order to appreciate the compensation they received and the benefits they will receive, as well as the community benefit sharing mechanism targeting both the Core Land customary landowners and the other tribes in the broader areas who are not customary landowners of the Core Land.

2. Access Agreement

322. For the preparation of the Project through the feasibility study, SIG first needed to obtain the agreement of all landowning Malango tribes in the broad Project area in the upstream of Tina River. Since the objective of the feasibility study was to identify the most suitable site and layout for the hydropower project, the exact area needed for the Project was not clear at this stage.

323. In 2011, the SIG entered into a “land access agreement” with the 27 land owning Malango tribes of the broad Project area to conduct the studies with full agreement of the local landowning tribes. In the agreement, the customary landowners guaranteed to provide physical access to their lands for 18 months to enable investigative drilling, and for environmental and social impact studies to be carried out. In return the SIG gave each tribe a “goodwill payment” of SBD100,000, i.e., a total of SBD2.7 million, paid into a “*special account held on behalf of the landowners, and under control of the [then] Landowner Council.*”¹⁸ The Land Owner Council (LOC) was established and funded by the SIG (via the PO) as a Malango Ward consultative body for the Project. The funds were disbursed by the SIG to the tribes, though the details of their internal distribution remain confidential to the tribes themselves.

324. The 27 tribes were identified by SIG for the purpose of setting up the LOC. The LOC initially had 26 members, then one additional were added. In the last year that the LOC met, in 2013, three other tribes sought membership, but were not added. This variation in LOC membership highlights the somewhat fluid nature of defining project area beneficiaries in an environment where customary land affiliation and ownership is subject to interpretation. A flexible approach to identifying the tribes and tribal members eligible for broad community benefits under this Community Development Plan is therefore required.

325. In February 2013, following a programme of community consultations involving more than 500 members of the affected communities, the landowners agreed to extend the access agreement for a further 18 months to enable finalisation of the technical investigations.

¹⁸ Press release TRHDP project office, 2011. “Energy minister hands over 2.7 million dollars to Tina River landowners”.

3. Identification of the Core Land

326. As result of the feasibility study, the land required for the selected layout of the Project was determined. This land of 428 ha which the vast majority of project elements will be located was named the *Core Land* as described in Section A of Chapter IV. SIG acquired the Core Land using a ‘compulsory’ process under the *Land and Titles Act* (LTA), but it was first necessary to identify the landowning tribes and to obtain broad community support.

4. Identification of the Four Customary Landowners of the Core Land

327. In 2011, the LOC agreed to undertake the investigation of the customary land ownership for the land required for the Project. However, its makeup, internal dynamics, orientation, and incentive structure meant that it was unable to make any progress on identifying customary landowners. It was also unable to transmit information effectively, leading tribal members to express dissatisfaction with performance and wanting to dissociate from the process.

328. In 2012, a group of Bahomea traditional chiefs and other leaders who wanted to progress the question of local land ownership established the “Bahomea Land Identification Committee” (BLIC) and began investigating the primary land ownership for the Core Land during 2012 and 2013. The BLIC included traditional knowledge holders (known as story tellers), chiefs and elders from different tribes within the Bahomea and Malango village districts of Central Guadalcanal. The status of the chiefs, elders and story tellers in their tribes and communities gave the Committee a reputation as representative of the community and as providing a more culturally authentic land identification process than the stalled LOC arrangement.

329. The BLIC used Guadalcanal *Kustom* methods to determine land ownership – including examining historical and traditional oral knowledge about land ownership, tribal groupings, and various forms of evidence of ownership. Much of this information would not be available to the younger generation and is considered confidential to each tribe. There is no evidence of land owner bias or of conflicts of interest in the Committee’s determinations of land ownership – demonstrated in ownership determinations where it is shown that its principal members were not generally found to hold primary interests in the Core Land.

330. Using this culturally appropriate and accepted consultative and investigative process, the customary land owning lineages were identified as being:

- the Roha tribe,
- the Buhu Garo tribe,
- the Kochiabolo tribe, and
- the Viurulingi tribe

331. The boundaries of each tribe’s interest were mapped and these boundaries will be kept confidential to the tribes.

332. This process resulted in identification of the land boundaries which established relative benefits for each tribe in the “Process Agreement” which was agreed through the negotiation described below.

5. Process Agreement Negotiation with the Four Tribes

333. With BLIC having identified the customary owners of the Core Land, the PO undertook a negotiation with those owners on how to proceed with the land acquisition. The PO negotiated a Process Agreement with the relevant tribes over a period of months in mid-2014. Project staff and 6-10 representatives of each tribe negotiated the agreement and the majority of tribes included women in these negotiations. The tribes were asked by the PO to bring both male and female representatives to the negotiations. Women from approximately half of the tribes attended the negotiations.

334. Consistent with the WB safeguard policy, the PO funded a lawyer, engaged through the Landowner's Advocacy and Legal Support Unit (LALSU) of the Public Solicitor's Office, to provide independent legal support to each of the landowning tribes. This ensured they received full and independent information and advice regarding the land acquisition process.

335. Approximately 6 rounds of negotiations were held with each tribe, conducted in Solomon Islands' Pijin. After each round, amendments were made to the text of the draft Process Agreement. Early negotiations took place with each tribe separately, while later negotiations involved representatives of all tribes together.

336. The final text as agreed by representatives of the landowning tribes was then discussed at full tribe meetings to confirm broad tribal support and understanding beyond the representatives. The PO presented the key clauses of the Agreement, explained the process of land acquisition, and provided maps of the Core Land to be acquired. Tribal members were given an opportunity to comment and to ask questions. None of the tribal members attending these meetings objected to the acquisition of the land for the Project.

337. For the formal signing of the Process Agreement, each tribe chose seven representatives of whom at least two were women. The final signatures were made at a public ceremony before the Prime Minister (Gordon Darcy Lilo) in July 2014.

6. Addition of the Fifth Tribe to the Process Agreement

338. At the time the Agreement was negotiated, a portion of the land acquired for the purposes of the reservoir was outside of Bahomea. As such, BLIC did not conduct land identification for this area and the reservoir land was not included in the Process Agreement. The Commissioner of Lands (COL) advised the potential owners to register an interest in the land as part of the compulsory acquisition step that followed, and they did so in November 2014. The COL, (in considering evidence submitted in support of claims for compensation arising from the compulsory acquisition in August 2014) later determined that a fifth tribal grouping (the Uluna-Sutahuri) was the customary owner of the land on the right bank of the proposed reservoir. The Uluna-Sutahuri grouping was later included in the Process Agreement.

7. Terms of the Process Agreement - Compensation

339. In the Process Agreement the Core Land customary landowners consented to the "compulsory" acquisition of the land by SIG under Section 75 of the LTA, and to provide

unimpeded access to the Core Land for the constructor, and developer/operator. This effectively ended the previous access agreement.¹⁹

340. The Process Agreement documented the understanding reached between SIG and the Core Land customary landowners which can be broadly grouped into those related to compensation the landowners are entitled to and those that are benefits beyond the compensation.

341. The agreements related to compensation are as follows:

- Legal support to assist the tribes to work through the statutory compulsory acquisition claims process.
- Provide assistance to the landowning tribes for each to establish a corporation (later changed to be a cooperative association as a more suitable legal entity for the purpose);
- Return of 100% ownership of the land to the customary landowners after the hydro scheme has ceased operations and completed all closure obligations.

8. Terms of the Process Agreement – Benefits

342. Further to the agreed compensation above, SIG and the customary landowners agreed on the following benefits:

- A consent/signing fee for each tribe and signatory - paid in cash;
- A guaranteed minimum payment per hectare for the acquired land (with the land owning tribe also entitled to compensation for lost livelihoods assets as per the LTA and the World Bank/ IFC requirements);
- Return to tribal landowners of 50% ownership in the acquired land after the acquisition through the creation of the Tina Core Land Company (TCLC) - a joint venture company between SIG and the landowning tribes;
- The TCLC to lease the land to the developer, whereas the lease will be distributed to each of the core landowner's cooperatives;
- Ongoing payment of a revenue share (royalty) of 1.5% of the amount paid by SIEA under the power purchase agreement; and
- Financial and management training to corporations.

9. Mechanisms to Avoid Elite Capture

343. Concerns were raised by tribal members throughout consultations that payments made to chiefs and other representatives are not shared equally with other members of the tribal group, particularly women, youth and the elderly. Experiences with other projects in Solomon Islands

¹⁹ The reason for adopting compulsory acquisition is described in detail in the LALRP. The valuation process is also detailed in the LALRP.

suggests that payment disbursement not managed with care may cause internal disputes and fissions within tribal groups.

344. To provide for equality of benefit sharing the PO worked with the tribes during the process agreement negotiations to plan the creation of co-operative societies. Under the arrangement, each tribe is to incorporate a co-operative society owned equally by all members of the tribe. This plan was also reflected in the terms of the compensation offer provided by the COL: "Payment will be made to a corporate entity representing the tribe or, where such an entity is not established within a reasonable time, payment will be made in such manner as to ensure fair distribution to tribal members at the discretion of the Project Office."

345. All payments for the market value of the Core Land, as well as future royalty payments under the Process Agreement, will be paid into the Co-operative Society accounts. Two practical mechanisms key to enabling the establishment of the societies are:

- An accurate register and photograph of the members of each tribe prepared by local PO consultants, agreed by tribal leaders and later confirmed at the initial AGM. Draft Registers for each tribe were completed by PO in 2015, with amendments upon finalisation at each inaugural AGM;
- The creation of a bank account for individual members of each tribe, including trust accounts for children

346. The cooperative societies promote equal benefit sharing through equal ownership by all members of a tribe, including women, men and children, and by providing equal voting rights to all tribal members aged over 15.

347. The overall distribution of payments is determined by each Society with support from the Project Office. The two established societies for Roha and Uluna Sutahuri have agreed to allocate funds across four separate uses: equal dividend payments to all members directly to each member's bank account, a cultural obligations fund to sister tribes and reciprocal customary rights holders, an investment and business fund, and an ongoing administration fund. Payments were divided approximately equally across the first three allotments with a smaller amount allocated to administration. The direct payment of equal dividend payments to individual accounts has received strongly positive feedback from tribal members, particularly women.

348. The PO plays a hands on role in the ongoing management of the Co-operative Societies, assisted by a qualified accountant from a private financial firm. The accountant acts as a compulsory signatory on all Co-operative Society Account transactions. The accountant plays the role of an Administrator and is responsible for ensuring that all transactions comply with the payment distributions agreed by members and the by-laws. Sustainable funding for the on-going role of an Administrator is intended to be sourced from the rental payments of the Developer to the TCLC.

VI. COMMUNITY BENEFIT SHARING

A. Overview

349. In addition to the benefits directed specifically to members of the five Core Land Tribes as a result of the signature of the Process Agreements, a broader set of benefits would be provided to the project area communities for the purpose of enhancing development. These benefits would be of a broader public benefit in nature rather than individual, cash benefits such as those included in the Process Agreements. All of the 27 LOC tribes and other tribes which may also have an affiliation to the area, as well as residents, including settlers (including in the northern infrastructure corridor), who are within Malango and Bahomea area would be beneficiaries of community benefit sharing activities.

350. Since the broad community support for the Project resulting through free, prior and informed consultation was obtained based on the communities' understanding that Project benefits will be shared, not only with the Core Land Tribes, but also with the project area communities, benefit sharing activities need to be implemented for the Project to be in compliance with World Bank OP 4.10.

B. Introduction to Benefit Sharing in Hydropower Projects

351. Hydropower projects generate a wide array of economic costs and benefits that accrue to different stakeholders in different ways. Typically, project developers reap the economic rent generated by projects²⁰; Governments increase energy supply and/or reduce energy costs to support their economies through renewable (cleaner) sources; and final consumers are able to access cheaper electricity to sustain their businesses and livelihoods. Unlike the other stakeholders, the local communities who live in proximity to the project area bear the socio-economic costs associated with the project: they experience changes in the surrounding environment, physical displacement, loss of land, forest and fishing grounds, change in livelihood and food security, and in some cases disruption of traditional practices and activities. The risk of impoverishment of the communities affected by hydro development can be high, if not properly managed. These communities exercise formal and informal rights over the land they own and/or occupy and the resources they have access to, and are generally reluctant to give up these rights unless they clearly benefit from doing so.

352. The existing compensation and mitigation measures, which are compulsory in the international investment frameworks such as the World Bank Operational Policies, the World Bank Performance Standards, and the Equator principles, were created primarily to minimize the adverse socio-economic impacts of investment projects. However, the international evidence (not just on hydro but more broadly on extractive projects) shows that in several instances these measures alone have been insufficient to prevent the risk of impoverishment of the local

²⁰ The term *economic rent* refers to the surplus return or profit that some factors of production generate when they vary in quality and are limited in supply. It arises when exploiting a natural resource whose value is independent of any labour, capital or entrepreneurial effort applied to the resource (Rothman, 2000). Rent is a unique form of return in that it will not be dissipated by free market competition and will continue to accrue to whoever holds the right to exploit hydro resources.

communities hosting the project (see Cernea, 2008²¹), and many projects worldwide continue to encounter strong local opposition²². In the light of this, the concept of ‘benefit sharing’ started emerging as an enhancement or evolution of such measures.

353. The concept of ‘benefit sharing’ first appeared in the context of extractive industries, with the first mechanisms emerging in the mining industry in the 1930s. Their application in hydropower development is more recent. In 2000, the International Energy Agency (IEA, 2000) recognized that ‘local communities are key players in hydropower projects because they are most directly affected by a project’, and recommended that ‘local communities benefit from a project, both in the short term and in the long term’ not only through monetary benefits but also ‘improved access, improved infrastructure, support for health and education programs, legal title to land are all important benefits that may be derived from a hydropower project (IEA, 2000).

354. Similarly, the World Commission on Dams (WCD, 2000) proposed a new policy framework for hydropower development, which included the recognition of entitlements and sharing of benefits with the adversely affected communities. The framework recommends that adversely affected people be recognised as first among the beneficiaries of the project, and that mutually agreed and legally protected benefit sharing mechanisms be negotiated to ensure implementation.

355. In early 2000s, the World Bank started exploring ways of incorporating ‘benefit sharing’ into dam projects. The need for benefit sharing stemmed from a recognition of lessons learned from hydropower legacy, the roles of social and cultural factors in the effectiveness of outcomes, the added value of multi-sectoral integrated approaches, and the rights of local communities to benefit from development projects (WB Technical Workshop, 2009). Although benefit sharing (beyond compensation) is not yet compulsory in the Bank’s safeguards, there are several cases of projects where benefit sharing has been implemented with the Bank’s support.

356. There is no single definition in the literature, but one which well captures the key elements of benefit-sharing is the one proposed by SWECO (2011), which describes it as:

‘A framework for governments and project proponents to maximize and distribute benefits across stakeholders, through relevant spatial and temporal scales by use of various mechanisms, and consistent with the principles of sustainability’.

357. This definition implicitly recognizes the asymmetric nature of hydropower development impacts, and identifies benefit sharing as the most appropriate mechanism to correct for it. Benefit sharing addresses the shortcomings of previous approaches by adopting a broader concept of sustainable development: it recognises the role of multiple stakeholders in the success of the project, and the entitlement of the affected people to reap the development opportunities resulting from the realisation of the project. The beneficiaries of benefit sharing are typically spread over the project influence area (i.e. they are not limited to the directly affected population), and include those who sacrifice their access to natural resources, give up non-priced environmental services, and are impacted by cumulative and indirect effects. Unlike mitigation measures, which are

²¹ Cernea, M. Michael (2008), ‘Compensation and benefit-sharing: Why resettlement policies and practices must be reformed’, Water Science and Engineering, Vol. 1, No. 1, 89–120.

²² Instances of conflict between developers and project-affected people are widely described in the literature of infrastructure investment in general, not only hydropower. See Fenn et al., 1997; Cheung and Chuah, 1999; Pena-Mora and Tamaki, 2001; Jong and Seung, 2003.

funded through project investment budget, benefit sharing is typically financed by the operating income of projects.

358. The main objectives of benefit sharing are essentially twofold, stemming from different (yet linked) rationales: i) to contribute to a fair redistribution of the benefits generated by the project in favour of those most adversely affected (justified on equity and economic ²³ grounds), and ii) to support sustainable and inclusive development, (justified on development grounds). Local power structures and dynamics should be well understood, and benefits should be shared widely enough to avoid resentment and conflict.

359. From the project owners' perspective (developers and Governments), benefit sharing should also be seen as part of a sensitive risk management strategy to build "social license to operate". For this purpose, benefit sharing should include a strong 'communication and engagement' element, and signal commitment by establishing a formal and systematic approach to local development. Benefit sharing can thus contribute to align the incentives of the affected communities to those of the project's owners, building consensus and trust.

360. For benefit sharing to be effective, tangible benefits should be distributed throughout the life of the projects. Whichever the source of funds, their use can be different. Broadly speaking, one can distinguish between cash and in-kind transfers:

- **Cash transfers** refer to the transfer of funds by the project proponents and/or Government to directly increase the disposable income of individual households and businesses. These can include direct money transfers to individuals or households, dividends from equity shares, subsidized electricity rates/free power, and funds for microenterprises and SMEs.
- **In-kind** benefits have more of a public nature and can include training and capacity building, preferential employment policy, physical infrastructure (water supply and sanitation, roads, rural electrification, rural irrigation systems, telecommunications), health and education facilities and services (clinics, schools, community centres, libraries, textbooks), and financial literacy programmes (often linked to microfinance programmes or other cash-transfer programmes).

361. Although benefit sharing design should be context-specific, there are 6 key aspects that should be carefully taken into account. These can be summarised as follows:

- (i) **Good communication and early engagement:** local communities' concerns and expectations regarding the project need to be listened to, and engagement should be continuous (before, and during operation) avoiding a mere one-way information flow.
- (ii) **Target group:** the target area should be defined with a view to supporting internal community stability and cohesion, and in respect of indigenous institutions, norms and practices.
- (iii) **Timing of benefits:** Local communities need to see tangible benefits materialising early on in the project life, and even before construction starts.
- (iv) **Legitimacy and ownership:** benefit sharing should support local ownership, and utilize and strengthen local institutional capacity.
- (v) **Governance and delivery:** benefit sharing should be simple to administer, have a clear and inclusive governance structure, and support sustainability of benefits in the long-term.
- (vi) **Livelihood enhancement:** benefit sharing should support the provision of public goods, and encourage private sector growth and development in the target area.

²³ Benefit sharing can also be seen as a way of correcting for a 'market failure' resulting from the existence of costs (negative externality) generated by the project and for which the market let alone can provide a fair compensation.

C. Two Phases of Benefit Sharing in the TRHDP

362. A strict interpretation of benefit sharing signifies that only benefits accrued from the project are shared with the community. In this case, the ongoing financing to sustain benefit sharing in the TRHDP will only start to materialize once the hydropower facility (HPF) is constructed, commissioned and PPA payments begin, which is expected only in mid-2022. This would leave as much as four years, during the construction period, without financing for community development. Given the high expectations of the communities in the project area which are directly and indirectly affected by the Project to see tangible benefits as soon as the Project begins SIG and the World Bank are in the process of obtaining funds to implement a community benefit sharing pilot (CBSP) during the construction period. As the mechanisms for financing and the approach to benefit sharing would be different, the CDP differentiates between two phases of benefit sharing, each of which will be comprised of solely in-kind investment activities (in contrast to the cash transfers included in the Process Agreements). The phases are as follows:

- Construction Phase: Community Benefit Sharing Pilot (CBSP)
- Operations Phase: Community Benefit Sharing Mechanism (CBSM)

D. Construction Phase: Community Benefit Sharing Pilot (CBSP)

1. Overview

363. To prepare for implementation of the CBSM during operations, SIG is seeking financing from the Japan Social Development Fund (JSDF) to support the Community Benefit Sharing Pilot (CBSP). Due to the expected source of financing, the CBSP is designed as a stand-alone project with its own objectives, components, monitoring and evaluation system as it is not only aimed at financing benefit sharing activities in association with the TRHDP, but also serving as pilot and potential model for the use of benefit sharing arrangements as a part of other development projects in Solomon Islands and elsewhere in the Pacific. However, the CBSP is an associated project to the TRHDP, and given the importance to demonstrate benefit sharing during the early years of the Project (i.e. during construction), SIG will seek an alternative source of funding in the unlikely event JSDF does not materialize.

2. Detailed Design of CBSP

364. The CBSP is a pilot project, intended to demonstrate the application of benefit sharing in association with a large-scale development project, in this case, the TRHDP. The institution building aspect of the project would build the mechanisms for benefit sharing that would be applied to the TRHDP during its operation and make some initial, high-priority investments.

365. In order to achieve the project development objective of CBSP: ***to establish the institutional arrangements and capacity for affected communities to effectively manage benefit sharing revenues from the Tina River Hydropower Development Project and improve their basic services and economic opportunities***, the CBSP will have four components:

- (i) **Component 1:** establishment of the Community Benefit Sharing Fund (CBSF) and community capacity building;
- (ii) **Component 2:** improving community infrastructure;
- (iii) **Component 3:** human resource development; and
- (iv) **Component 4:** project management, monitoring and evaluation, and knowledge dissemination.

3. Component 1: Establishment of Community Benefit Sharing Fund (CBSF) and Community Capacity Building

366. Component 1 will support the drafting of institutional arrangements and operating procedures for the CBSF, establishment of the Fund, and facilitation of active community consultation and input into Fund arrangements. Technical and legal advisors will be engaged to liaise with community representatives and undertake a range of consultation meetings with various stakeholders to provide advice on benefit sharing and help draft the technical documents related to the Fund. Draft documents will be prepared as inputs into the process of registration of the necessary documentation, including draft rules for a Fund as well as other policy and procedural documents.

367. Implementation of Component 1 will be supported by consultants and specialists, including (i) a Community Benefit Sharing Coordinator, (ii) Community Benefit Sharing Technical Advisor, (iii) a Legal Advisor, (iv) a Document Design and Preparation Consultant, and (v) other relevant experts as necessary. These consultants will work within a Community Benefit Sharing Team (CBST). The CBST will be established as a sub-unit within the Project Office of the TRHDP, reporting to the TRHDP Deputy Project Manager on a day-to-day basis, and under the guidance of the TRHDP Project Manager, as a whole. The TRHDP Project Manager shall ensure that implementation of CBSP progresses in synchrony with the TRHDP and that progress gained and challenges encountered by CBSP are properly communicated to the Ministry of Mines, Energy and Rural Electrification (MMERE) Permanent Secretary, the World Bank and other stakeholders.

368. **Establishment of the CBSF.** This component will support the drafting of institutional arrangements and operating procedures for the CBSF. Depending on what was agreed and stipulated in the Fund's constitution, a governance structure and process will need to be implemented. CBSP will support the establishment of the governance structure by organizing communities; raising awareness on the structure, the various positions and their roles, and the ideal qualifications of the persons to be placed in those positions; as well as organizing and facilitating the process for appointing persons to the positions. CBSF will be established and registered during the CBSP so that its capacity can be strengthened sufficiently for it to be fully operational by the time the CBSM kicks off with the commissioning of the hydropower facility. Continuous technical and administrative support will also be extended by CBSP to the CBSF governing body through its specialists, consultants, as well as other technical and admin staff.

369. **Training and Awareness Building** - In accordance with the Communication Strategy, CBSP will undertake intensive information dissemination to build awareness in the communities regarding the benefit sharing arrangements, its key parameters and mechanics, grievance and feedback mechanisms, and other pertinent information. Once the CBSF Board and other officers and staff are in place; CBSP will undertake an assessment of the training needs of the entire structure and then put together and deliver a short to mid-term Capacity Building Program to address the identified gaps in knowledge, attitudes and skills of the Board and staff. Among the

anticipated key training and capacity building topics are board governance, strategic planning, project management, fund administration, financial management, organizational development, etc. The training and capacity building interventions will be programmed annually and implemented in order of necessity. A local NGO, firm and/or qualified individuals will be contracted to provide this training, and potentially mentoring.

4. Component 2: Improving Community Infrastructure

370. This component will fund community investments in water supply and electricity infrastructure, as preliminary benefits to the communities before the hydropower operation actually starts generating benefit sharing revenues. Preliminary technical assessments of demand for water supply and grid-connected electricity as well as engineering and hydrological factors influencing delivery options have been prepared as inputs to the final list of water supply and electrification investments under the Project.

371. Implementation of the Water Supply and Sanitation Subcomponent will be outsourced to a firm with technical oversight to be provided by a CBSP Community WASH Specialist (CWS) who will be supervised by the Community Benefit Sharing Coordinator (CBSC). The WASH Contractor (WC) and CWS will follow the Ministry of Health and Medical Services' (MHMS) Rural WASH Community Engagement Guide, beginning with survey and design, followed by community orientation and planning, construction and capacity building for sustainability. The WC will identify and coordinate with a volunteer WASH Facilitator and a WASH Committee that will facilitate community engagement in planning, construction (if any involvement), and sustainable operations. To further promote sustainability, the WC will engage training institutions/consultants to provide training to members of the WASH Committee on relevant topics such as basic plumbing, pump maintenance, etc.

372. Implementation of the Rural Electrification Subcomponent will be mainly undertaken by SIEA. The project will finance the procurement of a contractor to purchase and install equipment and materials required for the extension, and SIEA will take ownership of the lines upon completion as a part of its Honiara grid system.

a) Sub-component 2(a): Water Supply and Sanitation

373. This sub-component aims to provide water supply to eligible villages and WASH facilities to selected public infrastructure (e.g., schools, health centres) in these areas in accordance to the Rural Water Supply, Sanitation and Hygiene (R-WASH) Policy of the MHMS and in collaboration with relevant programs such as the Rural Development Program (RDP). The overall objective is to provide access to potable water and WASH facilities to as many people as possible in accordance with the key design consideration stipulated in the RWASH policy to give preference to *basic, low-tech* solutions that require minimal O&M. CBSP shall consider high-tech solutions only if the recipient community is sufficiently prepared and assessed as capable to bear the financial and O&M requirements of the system. Implementation of this sub-component shall be undertaken by the WASH Contractor under the technical supervision of the CBSP Community WASH Specialist and follow the steps below.

374. All of 88 villages covered by CBSP, the total number of villages in the Bahomea and Malango cultural areas, will be initially considered for this sub-component. However, in order to attain effectiveness and the best value for money; only a limited number of villages will be selected based on a transparent set of criteria. The water sub-component site selection process will be undertaken as follows:

(a) **Technical assessments and initial priority investment listing** - A technical assessment of the CBSP target villages was undertaken during project preparation by the MMERE PO in collaboration with the RDP WASH team.²⁴ Using the results of the technical assessments, an initial list of WASH priority investment areas was identified with an aim of maximizing the number of beneficiaries given the budget limitations.

(b) **Review and validate the initial priority investment list** - In this step, the WASH priority investment list generated during project preparation will be jointly reviewed with the provincial administration, ward leaders, officials of the MHMS, as well as the RWASH and RDP team. The purpose of the review is to confirm and agree on the list and ensure that this intervention does not duplicate with other plans and is in accordance to the government's RWASH policy. The WC, in coordination with the CWS, will organize and facilitate this step. After the review, the CBST shall finalize the list and ensure its alignment to the budget, as needed.

(c) **Village Consultation and Planning** - At this stage, the villages targeted for water systems installation have been identified and included in the sub-component priority investment list. The purpose of this stage is to prepare a WASH Plan, including a final system design with the community and other major stakeholders, as well to organize and train the Community WASH Committee and other village representatives before the actual installation of the village water system.

(d) **Construction and Installation of the Water Systems** - Construction / installation of the community water or WASH system will immediately commence once the WASH Sub-Project Agreement has been signed between the project and the target community. The WC, in coordination with the CWS, shall follow these steps:

- (i) Undertake site/ground preparation in coordination with the Community WASH Committee.
- (ii) Procure materials and equipment in accordance to World Bank and SIG guidelines.
- (iii) Undertake construction in collaboration with the village/community leaders.

(e) **Water and Sanitation Systems Handover and Monitoring** - In order to ensure sustainability of the village water system, the following steps shall be undertaken by the WC in collaboration with CWS once water supply systems installation is completed.

- (i) Conduct the WASH Committee and Caretaker Training, and Completion Ceremony.
- (ii) Undertake Follow-up Monitoring and Coaching.

b) Sub-component 2(b): Rural Electrification

375. This sub-component aims to extend the SIEA electricity grid up the Black Post Road to Tina Village, to connect the existing public service facilities (i.e. Rate School and Konga Health Center), and run low voltage lines throughout Tina Village to allow for household connections. SIEA has prepared a preliminary design and costing for the work. The project will provide financing to SIEA to contract a firm to procure and install equipment and materials required for the extension, after which SIEA will take ownership of the lines as a part of its Honiara grid system.

376. In preparation for the construction of the transmission lines, SIEA in collaboration with CBSP/TRHDP PO, will undertake awareness raising and information dissemination activities to inform community members on the planned project activities. Discussions will also be held with

²⁴ The initial surveys and assessments together with the recommended Water/WASH packages for village clusters were prepared in May 2016 by the RDP team led by Peter Wopereis, Senior RWASH Specialist.

the Rate School and Konga Health Center administrators to discuss arrangements for establishing service line connections and installing internal wiring to each of these facilities.

377. Upon completion of awareness building and consultation activities, SIEA will then finalize the design of the scope of work, prepare and publish a Request for Proposals to attract a contractor to construct and commission the lines.

378. While this project will not finance household connections, it will run low voltage lines through areas which will make it easy for households to purchase service lines to connect to their homes. If there are sufficient finances available from the Output-Based Aid (OBA) project which SIEA is currently implementing, SIEA may offer subsidies to households to allow them to obtain a household connection.

379. In addition to the grid extension financed by this project, from Black Post Road (Feeder 12) to Tina Village, SP may also finance extension lines into other villages within the benefit share area as part of its distribution expansion program. Should this proceed, CBSP/TRHDP PO would provide support, particularly in engaging with community.

5. Component 3: Human Resource Development

380. This component will support the members of communities in the project area in accessing employment opportunities to be created by TRHDP, during and after construction. A roster of eligible individuals will be prepared and training designed and delivered to enhance the readiness of these individuals to secure employment. The Developer will also be asked to provide a list of technical skills and services that will be needed so that technical and vocational training can be developed and provided to target beneficiaries.

381. The Project shall promote an enabling environment on both the supply and demand sides of the local labour market in order to achieve the component objective. Two approaches will be used to secure opportunities on the demand side: (i) Whenever possible, giving preference to hiring/contracting CBSP Component 3 beneficiaries during the installation and related activities for water and electricity systems under Component 2; and (ii) Setting up provisions in the Power Purchase Agreement (PPA) between the Developer and SIEA to encourage the Developer to employ individuals from these communities.

382. On the supply side, the component shall support the development and improvement of the skills and capacities of local manpower resources to qualify for and be effectively engaged in employment contracts associated with the TRHDP. Delivery of the component on the supply side shall be facilitated through two types of training: Pre-employment training (PET) and technical and vocational training. The pre-employment training will work with the resources developed under the Rapid Employment Project (REP) of the Honiara City Council to provide out-of-school youth and unemployed individuals with basic knowledge, attitudes and skills before their entry/re-entry into the labour force. The PET objective, “to introduce concepts and to orient the trainees to the world of work and self-reliance through life skills development and life-long learning”, will be adapted to the context of the CBSP villages to prepare employable individuals for gainful employment with the construction and related activities of TRHDP and CBSP. The technical and vocational training (TVT) will provide skills training based on skill sets in-demand on the side of the Developer (The sub-component may include short courses outside of Solomon Islands if training for the needed skills is not available locally). Training will be provided to eligible individuals in the technical and vocational courses identified in the database of in-demand local hire jobs, skills and service contracts and targeted in the overall plan for the delivery of this component.

Actual delivery of the training courses will be undertaken by the HRDC which may also consider sending enrollees to training courses outside of Solomon Islands if the required course is not available in the country. The steps for implementing these activities are discussed in detail below.

383. The eligible individuals for Component 3 are the certified residents of the benefit sharing area, including all individuals on the Bahomea and Malango tribal registries.

384. Implementation of the Human Resource Development Component will be outsourced to a Human Resource Development Contractor (HRDC) who will then be responsible for directly implementing the subcomponents, including the selection and identification of trainers and consultants, administering the training courses as well as all the logistics required for the courses, and managing job placement/matching, referrals, and providing follow-up support for graduates. The CBS Team shall direct the work of the HRDC, be responsible for selecting the trainees/beneficiaries of each subcomponent, and ensure overall quality of implementation.

385. Component 3 will also be implemented in partnership with a number of institutions, project and business entities, including the TRHDP Developer, SIEA, REP, RWASH, RDP and other entities. The TRHDP Developer is expected to require the widest variety of human resources and the biggest number of service contractors and sub-contractors and is therefore the main target market for the local manpower and firms trained under this component. The electrification systems to be installed under Component 2 will be done by a contractor hired by SIEA which is also expected to be needing additional manpower and service contractors to undertake systems installation. The PET module of REP is envisaged to be adapted for component 3. RWASH and RDP are projects that have extensive exposure to target villages and knowledge of community situations and processes and are therefore an important resource for the development and delivery of Component 3 training modules.

386. The HRDC, in collaboration with the CBS Team, will ensure that skills training and capacity building inputs provided to the manpower supply and local firms match the demand for workers, contractors and service providers in the area, using the following steps:

- (a) Create a roster of all eligible individuals in the project area.
- (b) Create a database of in-demand local hire jobs, skills and service contracts.
- (c) Develop an overall plan for matching supply with demand.

387. The HRDC/CBSP will continue supporting individuals even after they have completed the above courses. As individuals graduate from the courses, the HRDC shall establish a database of the pool of training graduates and use this as basis for providing post-training assistance, including: (i) referrals, job matching and placement; (ii) technical assistance in preparing resumes and proposals; and (iv) provision of follow-up training and technical support. The HRDC/CBSP shall closely work with the Developer, SIEA and other potential employers to improve the chances of the graduates to secure employment and/or contracts.

6. Component 4: Project Management, Monitoring and Evaluation, and Knowledge Dissemination

388. This component will mainly fund the incremental costs of CBSP management incurred by the TRHDP Project Office (PO).

389. **Project Management-** A small team will be hired by the Ministry of Mines, Energy and Rural Electrification to manage project activities and to establish the basis of ongoing government support for the operations and governance of the benefit sharing fund. Project Officer will be hired to work within the TRHDP Project Office (PO) team. Procurement, accounting, engineering, administrative and other core function support will be drawn from the TRHDP PO and supplemented as needed.

390. **Monitoring and Evaluation-** This component will establish the M&E system of CBSP, specifically the development of an M&E framework, the collection of baseline data and subsequent data during implementation in accordance with the CBSP results framework. Methods for participatory M&E will be explored and implemented as appropriate.

391. The purpose of the project's monitoring and evaluation (M&E) system is to assess progress and evaluate if the project is meeting its stated objectives. The monitoring and evaluation of the project will have the following focus areas: (i) Operations – tracking physical and financial progress of implementation; (ii) Learning – this focuses on documenting and communicating lessons learned; (iii) Results – covering outcome/impact indicators in the Project Results Framework; and (iv) Evaluation – including qualitative studies/reviews on specific topics (e.g. gender), technical, financial and social evaluations and audits, safeguards, and findings from supervision missions.

392. **Knowledge Dissemination-** This component will also ensure that knowledge gained from project implementation is carefully documented, processed, analyzed, and made available as references and learning materials for relevant stakeholders. The knowledge dissemination activities comprise the following four elements:

393. **Communications.** Significant portion of the Project, particularly Component 1, requires a strong communication between the Project and its key stakeholders, particularly the community members in the CBSP benefit areas, thus requiring a strong communication strategy for relaying clear, accurate and timely information to target villages and other key stakeholders. Modalities and options for community benefit sharing have to be prepared in communication materials that are easily understandable to the target audience, especially villagers; agreements and consensus reached from the consultations on benefit sharing, community infrastructure, and human resource development interventions need to be very clear to all concerned stakeholders; the mechanics, procedures, entitlements and responsibilities of each individual or entity involved in the Project need to be transparent and predictable. At the inception of each component, the CBSP Team, in collaboration with the TRHDP Project Office, will formulate core messages that need to be communicated to CBSP communities. The messages will be conveyed through mass communication media suitable to local conditions, such as (i) stationary, multi-information print material; (ii) quick, one-message print materials; and (iii) spot audio materials. Communication materials will be simple, straightforward and attractive to entice target beneficiaries to read.

394. **Transparency.** Key documents related to the project will be disclosed publicly. This includes the findings of the financial, technical and social audits, procurement documents, as well as other documents as indicated in this Operations Manual. In addition, project related documents are made publicly available in the participating communities, as feasible. A project website, likely developed as a section of the TRHDP website, will be established to publicly disclose pertinent project documents, reports, case studies and other materials.

395. **Project Evaluation.** Project evaluation will be undertaken to measure progress in achieving the targets set out in the results framework, using qualitative and quantitative

methodologies. A third party (individual consultant or firm) will be engaged by the project to establish the baseline data at project start-up and undertake a mid-term and final evaluation. The final evaluation will measure and summarize project achievements in relation to the targets set out in the project results framework. Similarly, the final evaluation will be examining the contributing factors for achieved results, causes for any underperformance against targets, as well as lessons learned and best practices gained from the project. Conclusions and recommendations will be extracted from the findings of the final evaluation and will be packaged as a knowledge product for similar projects.

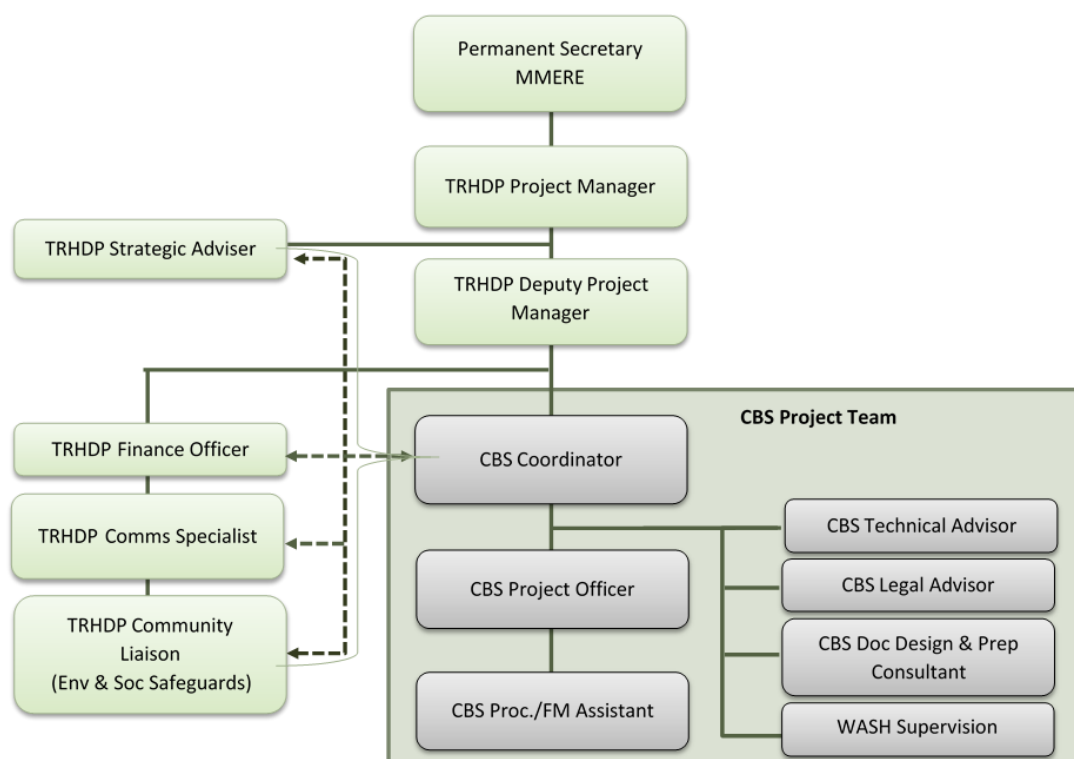
396. **Small Studies, Success Stories and Video Documentaries.** Depending on available budget and progress of the project, CBSP may organize the preparation of small studies and other documentaries (e.g., short video clips, before and after stories, etc.) that record and share success stories and best practices gained from the project. Small studies, most probably using qualitative research methodologies and relying heavily on consultations with beneficiaries, may include: (i) a review of technical quality and maintenance of infrastructure, RWASH approaches, etc., (ii) an economic analysis of Component 2 and/or 3 interventions, and/or (iii) specific household surveys to track key project outcome indicators.

7. Implementation Arrangements of CBSP

397. The THRDP PO, which sits within MMERE, will be responsible for CBSP implementation. Management of CBSP and overall supervision of the work of the Community Benefit Sharing Team (CBST) will be the responsibility of the Tina River Deputy Project Manager under the supervision and guidance of the TRHDP Project Manager. The Project Manager, who reports to the MMERE Director - Energy, will ensure that implementation of CBSP progresses in synchrony with TRHDP and that progress gained and challenges encountered by CBSP are properly communicated to the MMERE Permanent Secretary, the World Bank and other stakeholders.

398. Day to day management and coordination of project activities will be handled by the CBST under the leadership of the Community Benefit Sharing Coordinator who reports to the Tina River Deputy Project Manager. The Coordinator will be supported by a Project Officer who also covers the role of an M&E Officer. Other functions will be shared with TRHDP staff, including the TRHDP Finance Officer, the TRHDP Communications Specialist who will also manage the TRDHDP-CBSP Feedback Handling Mechanism, and the TRHDP Community Liaison who will, at the same time, be responsible for Environmental and Social Safeguards.

Figure 20: CBSP Implementation Structure within the PO



Source: Draft JSDF Project Paper, World Bank

8. Cost Estimate and Financing Plan of CBSP

399. The indicative cost estimate and financing plan are provided in **Table 16**.

Table 16: Indicative Cost Estimate and Financing Plan

Project Components	Project cost	Proposed JSDF Grant Financing	% Financing
1. Establishment of community development fund and community capacity building	359,000	359,000	100%
2. Improving community infrastructure	1,906,020	1,906,020	100%
3. Human resource development	264,000	264,000	100%
4. Project management, monitoring and evaluation, and knowledge dissemination	270,980	270,980	100%
Total Baseline Costs	2,800,000	2,800,000	100%

Source: Draft JSDF Project Paper, World Bank

E. Operations Phase: Community Benefit Sharing Mechanism (CBSM)

1. Overview

400. As indicated in the section above, the CBSM, which will be in operations for the 30-year operational period of the Power Purchase Agreement, will include a CBSF which will be designed under Component 1 of the CBSP.

2. Objective

401. Pursuant to the principles of benefit sharing in hydropower projects, the key objectives of the CSBM is: *to share the benefits from the Tina River Hydropower Development Project with communities in the project area for the purpose of community development.*

3. Targeted Communities

402. The targeted communities for benefit sharing during construction and operations are the same, as follows: *“all residents in the Malango and Bahomea cultural areas of the Malango Ward, including individuals on the Bahomea and Malango tribal registries.”*

4. Implementation Arrangements

403. Once the hydropower facility is commissioned, it is expected that the responsibility to implement the CSBM will be transferred to the Project Company since the PO will scale-down and eventually phase-out its activities, and because it is certain that the Project Company will be operating for 30 years during its PPA obligation. The detailed implementation arrangements will be formulated based on experience from CSBP implementation and recommendations made under CSBP Component 1.

5. Activities to be financed

404. The exact nature of the activities to be financed will be defined through the community consultations which will take place during the construction phase and based on lessons from implementation of CBSP. The Social Impact Assessment identified a range of development activities that are of interest, and these will be revisited during the consultations. A “Community Benefit Sharing Plan” will be prepared by the communities as a five-year community investment plan to be funded by the Total Benefit Share Amount each year. More recent consultations held with regards to the design and safeguard arrangements for the CBSP confirmed demand for the activities financed in the Pilot, and identified a few other key priorities that would be explored further during consultations. These include: support for education, including financing of an Education Authority to strengthen school and student performance; enhanced health services by upgrading and building the capacity of the health centers in the area; building and supporting women’s resource centers in the main villages; continue skills training for improved livelihoods and job opportunities.

405. In addition to the community development investments to be made with CBSF resources, funds would also need to be used to finance the administration of the Fund, including engagement of a full-time consultant/administrator, funds for community consultation meetings, and ongoing operational costs.

6. Cost Estimate and Formula for Determining Benefit Share Payments

406. The formula for calculating the amount of funds to be transferred into the Community Benefit Sharing Fund each year is still being negotiated between the parties to the PPA and TRHDP Implementation Agreement. As such there will be some degree of adjustment to the current, proposed approach to calculating the costs, payment amounts for community benefit sharing. The main features of the Community Benefit Sharing Mechanism as it currently stands are:

- **Minimum Guaranteed Amount:** a minimum amount to be paid of USD 150,000 p.a. This would be the amount paid annually as a Benefit Share regardless of energy generation. These minimum funds would be primarily used to support investments in ongoing, basic service support such as education and health care.
- **Energy Royalty Amount and Calculation Method:** multiply the “energy royalty” by the number of kilowatt hours generated per billing period to determine the Energy Royalty Amount for that period. The proposed “energy royalty” is USD/Kwh 0.0026, an amount that will lead to an annual Energy Royalty Amount that is sufficient to maintain a meaningful annual development investment program. The “energy royalty” would also be escalated annually by a fixed, projected inflation rate of 2.25%. Assuming average annual generation of 78.35 GwH, as per the project feasibility study, estimated average energy royalty per annum, starting in the first year would be: *USD/Kwh*
 $0.0026 \times 78,350,000 \text{ Kwh} = \text{USD } 203,710$.
- **Total Benefit Share Amount:** this is “the Energy Royalty Amount” plus the “Minimum Guaranteed Amount.” This is the total benefit-sharing amount paid by SIEA to the PC for each payment period. Again, assuming average annual generation of 78.35 GwH resulting in an energy royalty of USD 203,710, plus the Minimum Guaranteed Amount of USD 150,000, the Total Benefit Share Amount per annum would be USD 353,710. Based on a bottom-up budgeting exercise which included the minimum administrative fee, ongoing investments in quality education, health care, livelihood, and small-scale infrastructure activities, as well as small allocation for other demand-driven activities, an average annual amount of \$350,000 is sufficient.
- **Administrative Fee:** at least \$50,000 or 15% of each CBSM payment per year, whichever is higher, would be dedicated to the payment of administrative costs including the contracting of a Community Benefit Sharing Fund Manager and operational costs.
- **Payment method:** The PC shall calculate and add the Energy Royalty, Minimum Guaranteed Benefit Share, and Administrative fee into the PPA bill to SIEA as separate line items. Upon receipt of SEIA Capacity Payment, the PC shall be responsible for transferring the Energy Royalty and the Minimum Guaranteed Benefit Share amounts into the Trust Account no later than 30 days from receipt.
- **Inclusion in retail electricity tariff:** The Total Benefit Share and Administrative Fee shall be added to the total PPA cost and included in the “fuel charge” portion of the retail tariff calculation. Final consumers will pay a small additional amount in their bills for the development of the Tina River community, who has agreed to host the project in their area.

- **Benefit sharing trust account:** Through the CBSP, SIG will register a “Tina River Community Benefit Sharing Fund,” under the *Charitable Trusts Act*, and open an associated bank account for the receipt and management of benefit sharing funds.

VII. MONITORING AND EVALUATION OF CBSP AND CBSM

A. Monitoring and Evaluation of the CBSP

1. Monitoring and Evaluation Arrangements

407. The PO under MMERE will be responsible for the monitoring and evaluation of the CBSP. Since the implementation duration of the CBSP is similar to the duration of the LALRP activities, the PO will conduct monitoring and evaluation concurrently as specified under the JSDF project design.

408. The monitoring will use a combination of “internal” participatory and expert-lead monitoring and evaluation, along with “external” independent review.

409. Internal monitoring will be carried out by the PO, and external monitoring and evaluation will be carried out by an independent expert on a semi-annual basis.

410. The independent consultant will be supported by a financial auditor appointed by the SIG, and together they will submit periodic written reports to the PO/MMERE, the World Bank and other donor partner institutions. At the end of the plan period the external consultant and financial auditor will provide a written summative evaluation of the performance of the CBSP.

2. Financing

411. JSDF, the funding source for CBSP, has allocation for monitoring and evaluation under Component 4.

412. Component 4 of the main project (TRHDP) is the Technical Assistance to support the activities of the PO and will finance key safeguards experts of the PO and the independent expert to conduct the semi-annual monitoring and evaluation.

B. Monitoring and Evaluation of the CBSM

1. Monitoring and Evaluation Arrangements

413. Once the main project (TRHDP) is commissioned, CBSM will be implemented by the Project Company which will remain operational for at least 30 years under its PPA obligations. The PO is expected to initially conduct monitoring and evaluation, but as it down-sizes, the CBSM should be integrated as a program under a government ministry. Component 1 of the proposed JSDF-funded CBSP will establish the detailed monitoring and evaluation arrangements of CBSM.

2. Financing

414. By the time CBSM is rolled out, the proposed JSDF would have completed, and the main TRHDP project will only be able to finance the monitoring and evaluation until June 2023 when it too is expected to close. The Project Company, with the administration financing from the CBSM, will provide ongoing M&E support, drawing on K-water resources as and when possible.

VIII. COMMUNITY CONSULTATIONS AND GRIEVANCE REDRESS

A. Community Consultations

415. The long stretch of consultations held over 5-6 years for the preparation of the project will need to be continued during the implementation of TRHDP, including during both the construction and operations phases. The TRHDP PO will have two community liaison officers, one male and one female. These individuals will be responsible for visiting the project area communities on a regular basis to meet with all of the 27 or more tribes and other representative groups (i.e. women's group leaders) in the project area and to gather feedback on the project and any other issues that may affect community views on the project. One important aspect of this community engagement will be monitoring of benefit sharing activities and recommending any adjustments to implementation to respond to community feedback. All community interactions will be documented as they have so far, during project preparation, to ensure that individuals' views are captured and acted upon, as needed.

416. As described above, one aspect of Component 1 of the CBSP is to undertake community consultations to obtain guidance on the design and procedures of the CBSM. To prepare for implementation of the CBSM, CBSP financing will be used to prepare a 5-year Benefit Sharing Plan to identify the types of investments and objectives that the communities would like to finance over the period. This Plan will serve as an important accountability mechanism, ensuring that the benefit sharing funds are spent as agreed in the Plan.

417. In addition to the monitoring and community liaison activities undertaken by the Project Office and Project Company, a third party monitoring agent will be contracted during implementation to assess key aspects of project performance from an independent perspective and to advise as to ways the project could improved to be more effective.

B. Principles of Grievance Redress

418. In line with World Bank policies on land acquisition (resettlement) and engagement with Indigenous People, grievance redress arrangements or mechanisms need to be:

- culturally and socially appropriate;
- able to take into account of and allow for “judicial recourse and community and traditional dispute settlement mechanisms”;
- pays attention to impacts on vulnerable groups;
- gender responsive;
- appropriate to scale;
- accessible without cost;
- participatory;
- affordable;
- prompt; and

- transparent, accountable, and fair.

419. Grievance Redress Mechanism is not to impede access to the country's judicial or administrative remedies.

420. The Grievance Redress Mechanism (GRM) utilized for the TRHDP as a whole will also be used to respond to any issues which arise in the implementation of the CBSP and CBSM activities. As such, the following sections describe the same GRM arrangements which are described in the a LALRP.

C. Types of Grievances

421. Several types of grievances or disputes could arise that could present a risk to the community benefit sharing activities:

- the ownership of the land and the assets affected - which could be between community members and groups;
- the implementation of the livelihoods restoration programme (e.g. compensation rates, restoration work etc.); and
- the implementation of the CBSP and CBSM.

422. The first type of grievance or issue, while precipitated by the project, is typically dealt with on a regular basis under the traditional *kastom* system and involves knowledgeable tribal elders and chiefs undertaking an investigation, consulting with the parties, and arbitrating for a resolution. In the particular context of the Project, specific measures to resolve land ownership grievances through the BLIC process, and subsequent consultations are discussed in LALRP Chapter 6. Administrative and judicial remedies, and the legal assistance provided to tribes with respect to these, are also set out in LALRP Chapter 6.

423. The second and third types of issues or concerns are directly about the implementation of the LALRP, CBSP and CBSM, and in practise grievances are likely to arise from:

- misidentification of the assets or land owner due to mapping errors or inaccurate or misleading information during the assets surveys;
- disputes, arising for various reasons, over ownership of assets, e.g. fruit and nut trees, timber trees etc., in the Core Land area or infrastructure corridor;
- disagreement over the valuation or quality of an asset where compensation is payable
- disagreement over the type of measure applied to achieving livelihoods restoration;
- dissatisfaction with the quality or quantity of the restoration measure applied (e.g. clearing and planting of replacement garden);
- disagreement over the cut-off date applied; and
- disagreement over activities and funding of activities under CBSP and CBSM.

424. Matters concerning the LALRP and CSBP will be the direct responsibility of the Project Office, as the implementing agency and with overall responsibility for TRHDP implementation on

behalf of the SIG. The Project Office will play a key role as a project coordinating body for the first five years, including distribution of compensation payments, managing livelihoods restoration, and arranging and overseeing the consultation and community relations strategy. The GRM arrangement for CBSM, during hydropower facility operation, will be based on the Project Company's community liaison function which has been included in the budget for Project Company operations during the PPA period.

D. Grievance management approach

425. The proposed approach to grievance resolution for the LALRP and CBSP combines community-based resolution with PO-based resolution, and potential use of the legal system if complainants prefer. It provides for multiple entry points to the system, formal recording of concerns, multiple resolution pathways depending on the nature of the grievance, use of *kastom* conflict resolution where possible, active consultation, and an appeal system.

426. In the case of the TRHDP livelihoods restoration work, community members have said it is preferable for concerns or complaints from affected persons to be dealt with using *kastom* conflict resolution processes within the community where possible. This would be most appropriate for land and assets ownership issues that arise. Consultative methods will be preferred over formal legal methods, and a detailed protocol for their use will be developed by the PO in consultation with the community leaders.

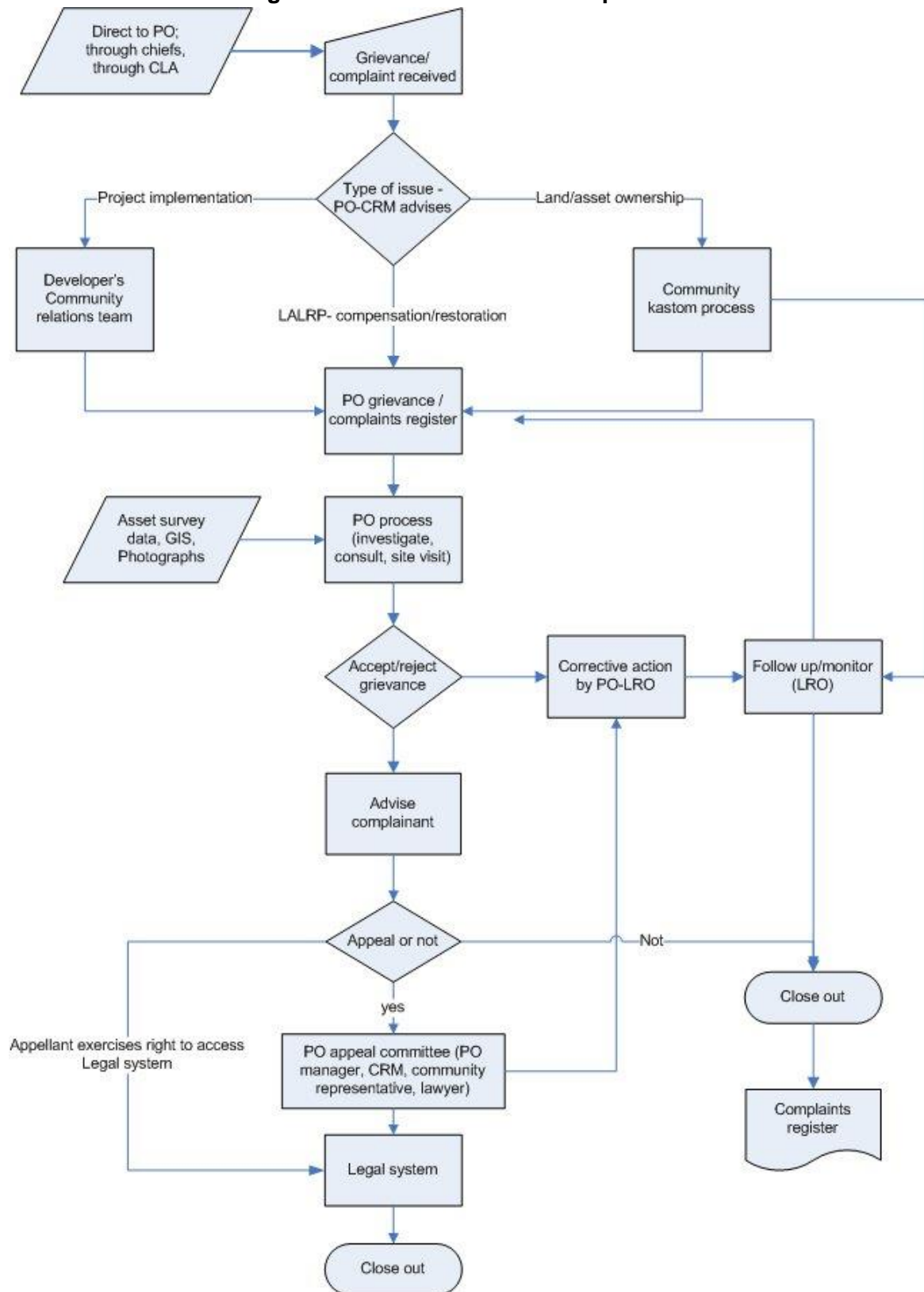
427. Community-based resolution (*kustom* resolution) is proposed for disputes relating to land or asset ownership and involves the use of village, community or tribal leaders. It will take two forms: (1) for minor grievances between community members or within a tribe, PO will refer matters to the relevant leaders for resolution and (2) where grievances are between village, community or tribal leaders, the PO will facilitate a mediation or negotiation between the relevant parties. Where a grievance relates to the PO's management of the LALRP, CBSP or CBSM, *kustom* resolution is not appropriate.

428. Grievances relating to land, resettlement action plans or compensation will be dealt with in accordance with the grievance mechanism set out in section E of the LALRP. Project construction and operation impacts shall be managed in accordance with the grievance redress mechanisms to be prepared by the Project Company in accordance with the Environment and Social Management Plan (ESMP) set out in Chapter 13 of the ESIA. Any grievances raised with PO staff relating to construction or operational grievances will be referred to the appropriate entity in accordance with the Project Company's grievance mechanism.

E. Mechanism for dealing with grievances

429. In order not to cause any confusion, the GRM mechanism is recommended to be the same as for the LALRP and is illustrated below in **Figure 21**.

Figure 21: Grievance resolution process



Source: Tina River Hydropower Development Project – Land Acquisition and Livelihood Restoration Plan, SIG