Environmental and Social Impact Assessment

June 2017

SOL: Tina River Hydropower Project (Part 9)

Prepared by the Government of Solomon Islands for the Asian Development Bank.

CURRENCY EQUIVALENTS

(as of 9 June 2017)

Currency unit – Solomon Islands dollar (SBD) SBD1.00 = \$0.1276 \$1.00 = SBD7.8308

NOTE

(i) In this report, "\$" refers to US dollars.

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- 2. Habuchi
 - ¿ Also started after Cyclone Namu in 1986
- VII. Livelihood:
 - (a) 1 person working at Gold Ridge
 - (b) 1 person worked with Earth Movers Logging Company
 - (c) Work on Contracts or Hiring bases
 - (d) Marketing flowers, cassava, kumara, fern (kasume), betel nut fruits
 - (e) Milling timber is rated number 1
 - (f) Gardening of cassava, kumara, taro and banana is rated number 2
 - (g) 1 chain saw owner from Habuchi is hired by others to cut timber
 - (h) Feed pigs and local chicken (sale in the village)
 - (i) Selling fruits like lemon, cut nut (barringtonia)
- VIII. Concerns regarding the Construction of the Dam:
 - (a) Fear of losing their dependency on the river for transporting timber, swimming washing, diving and fishing etc
 - (b) Flow of the river between Senge, Habuchi and Pachuki will be low and so they cannot float their milled timber from Senge to Habuchi
 - (c) Habuchi and Pachuki will be badly affected so the only option is to be relocated.
 - (d) They are looking more towards relocating upstream rather than downstream because of their tribal connection to the land and resources upstream
 - (e) Right now they enjoy the free lifestyle, at the same time they are starting to worry about the future in relation to the dam and the power station
- IX. Alternative River for Diving and Hunting area is
 - (a) Toni River
- X. Cultural and Religious Sites:
 - (a) All their cultural and 1 grave sites are located at K oeroba
 - (b) While 1 grave is at Senge
- XI. Health Issues:
 - (a) Main diseases are-
 - ¿ Malaria
 - ¿ Pneumonia
 - ¿ Hernia
 - ¿ Diarrhea
 - ¿ Influencer or flu, etc
- XII. Main Health Concerns:
 - (a) Namanu Health Aid Post-no permanent Medical staff based here
 - (b) Rove Clinic
 - (c) Mataniko Clinic
 - (d) Kukum Clinic
 - (e) No. 9 Central Hospital all located in Honiara
- XIII. General Comments on the Current Situation:

- (a) Like other communities, and hamlets already visited, everyone expressed the same concerns, fears and lack of knowing the future situation
- (b) Despite of that they all wanted the Hydropower Project

WEEK 2-DAY 8: Wednesday 11th September 2013

- SIA Team Program
- VIII. Alteration to the planned field trip program to Namopila, Komureo, Valekocha and Vatunadi which was supposed to be made today
- IX. This was because most of the people in these communities were away and so the only Chief who was around on Tuesday 10th was told about the change of date from Wednesday to Friday.
- X. Therefore instead of going to the field today, the time was spent reviewing the Field Trip Programs based on the changes of dates and communities to be visited
- XI. Venue: Hyundai Office
- XII. Time: 8 am ⁻ 5 pm
- XIII. Discussion Session Attended by: All SIA Team members
 - ¿ Led by Gerard Fitzgerald (team leader);
 - ¿ Kellington Simeon;
 - ¿ Lawrence Foana ota; and
 - ¿ Sharon Para
- XIV. Planned the field work program for the rest of Week 2.

WEEK 3-DAY 12: Tuesday 17th September 2013

SIA Team Visits to:

- I. Main Venue for the Meeting: Mataruka 2
- II. Targeted Communities: Malango, Mataruka 1, 2, 3, & 4
- III. In Attendance:
 - (a) Allen Billy, Chief-Mataruka 1
 - (b) Malachi Rubu, Chief-Mataruka 2
 - (c) Timothy Palo, Chief-Mataruka 3
 - (d) Justice Deni, Chief-Mataruak 4
 - (e) SIA team-Gerard Fitzgerald, Kellington Simeon, Fred Patison, Lawrence Foana ota & Sharon Para
- IV. Program:
 - (a) Welcome & Opening Prayer by Daniel Una-Council Member from Rota Tribe
 - (b) Lawrence Foana ota made the opening remarks in thanking those who have turned up for the Meeting on behalf of the team members
 - (c) Explaining the purpose of the visit ⁻Gerard Fitzgerald, team leader

- (d) Effects of the proposed Tina Hydropower Development Project-Discussions led by Kellington Simeon
- (e) Fred S Patison was also present with the team and expressed the importance of taking note of the communities concerns regarding land and its use. He gave examples of cases in Choiseul and Isabel Provinces regarding land issues.
- V. Visitation by Staff from Project Office:
 - (a) It was confirmed that staff from the Project Office already visited the area and talked about Government s plan regarding the project
- VI. Landownership & Rights to the Tina River:
 - (a) Those present explained that even though they are in Malango, their connection to the Bahomea tribe and landownership rights including rights to the Tina River are equally the same.
 - (b) Some of them expressed their disappointment regarding the fact that those who signed the documents allowing the government to develop the hydropower project on the river had not included them.
- VII. Original Places of Settlements & Graves:
 - (a) Nala
 - (b) Turahi
 - (c) Makuricha
 - (d) Luga
 - (e) Tasi (4 graves, betel nut and cut nut trees)
 - (f) From Tasi to Chichinge (Garry is from Chichinge)
 - (g) From Chichinge to Namoraoni (Jeremiah Matebasia is from Namosa)
 - (h) From Namoraoni to Nala

The last place in the catchment area people left in 1950 to settle where they are today

- VIII. Other Important Resources in the Catchment A reas:
 - (a) Minerals
 - (b) Logging
 - (c) Potential for Eco-tourism development
 - (d) Salt
 - (e) Hot spring (use for healing)
 - (f) Streams for growing water crease
- IX. Their Relationship to the catchment s area:
 - (a) Hunting
 - (b) Fishing
 - (c) Diving

All these activities take place between V atumosa to Choro and they continue until today. They always go to carry out these activities when they are holding Church fundraising programs, feast for the opening of a Church building or Christmas

- X. Livelihood:
 - (a) Gardening-Kumara, cassava, taro, yam
 - (b) Marketing of yams, mushrooms and vegetables
 - (c) Cocoa (own small plots and sold dried beans)

- (e) Piggery- 10 to 20 (feed them with millrun)
- (f) Milling timber (have about 30 chain saws)
- (g) Hunting for pigs, opossum and lizards to sell
- (h) Employment at Gold Ridge Mining Co. (50 employees)
- (i) Earth Movers Logging Co.
- (j) D.JpLkµµµµ∦™kµµµtLkµathkn{†∿ Dtth[,⊡索rIinaX+r↑,
- (k) Teachers (30 ⁻Secondary and Primary)
- (I) Central Government 10
- (m)Provincial Government 2
- (n) Medical 1
- (o) Ports A uthority 1
- (p) Operating Canteens many
- (q) Bus 6 Contracted out
- (r) PhDs Qualification- 2
- XI. Cultural Sites:
 - (a) Manukiki owned by Wisely Sie of Havaina village who was born at Tanabou Village and belongs to a sub-tribe known as Uluna
- XII. Health Issues/Main Diseases and Clinics:
 - (a) Malaria
 - (b) Pneumonia
 - (c) Diarrhea
 - (d) Still birth (big concern amongst women)
 - (e) Rove Clinic
 - (f) Mataniko clinic
 - (g) No.9 Hospital-(Emergency cases only)
 - (h) Transport hardship
- XIII. Benefits if Hydro is Constructed:
 - (a) Improved standard of living
 - (b) Receive more cash
 - (c) Training and managing resources
 - (d) Government acting as guarantor for person loan
 - (e) Opportunity for improvement of businesses
 - (f) Pastors are paid
 - (g) Operate small businesses
 - (h) Light for Church groups to meeting at night & other community programs
 - (i) Refrigerator
 - (j) Electric Sewing Machines
 - (k) TV
 - (I) Video
 - (m) Charging Mobile Phones
 - (n) In Services
- XIV. Youths:
 - (a) A ccess to proper and good education
 - (b) Everyone is provided technical and specialized training

- (c) Establish workshops for furniture making
- (d) Purchase equipments and tools
- (e) Provide lighting for students to study at night
- XV. Women:
 - (a) Sew calico for family & school uniforms
 - (b) Make ice blocks
 - (c) Have cold storage for keeping food
 - (d) Good housing
- XVI. Main Church and Social Groups/Facilities:
 - (a) South Sea Evangelical Church
 - (b) Church Building
 - (c) Women's Fellowship
 - (d) Y outh Groups
 - (e) Sports Groups- Soccer/Netball/Basketball
 - (f) Sports field
- XVII. Land:
 - (a) Ownership is based on tribe
 - (b) Women has the right
 - (c) Important resource for sustaining community life

WEEK 3-DAY 13: Tuesday 17th September 2013

- SIA Team Visits to:
 - I. Main Venue for the Meeting: Belaha
 - II. Targeted Communities: Belaha
 - III. In Attendance:
 - (a) Israel Trevor Sibia
 - (b) Members of the communities
 - (c) SIA team-GF, KS, FP, LF & SP
 - IV. Program:
 - (a) Began with Lawrence Foana ota thanking the members of the communities who are able to attend the meeting on behalf of the SIA team
 - (b) A brief introduction of the team members and their responsibilities
 - (c) Followed by Kellington Simeon explaining the reason for the visit
 - (d) Gerard Fitzgerald explaining the meaning of social and livelihood
 - (e) Also explained steps to take in Hydro Project Development
 - (f) Followed with discussions and questions
 - V. Steps to take in Project Development:
 - (a) Planning includes lots of meetings, revisits to follow up
 - (b) Construction will disturb people, break custom, noise and river polluted
 - (c) Infrastructure good roads
 - (d) Completion will only employ a few
 - (e) Changes in the level of the water in the river
 - (f) Operating stage will cause long term changes

- (g) Benefits should be positive for everyone
- VI. Livelihood:
 - (a) Milling
 - (b) Cocoa
 - (c) Betel nut
 - (d) Marketing garden crops and vegetables
 - (e) Pig
 - (f) Shops for rice, taiyo, noodle
 - (g) Bottle Shop selling SP beer
 - (h) Poultry
 - (i) Coconut
 - (j) Fishing for eel, tilapia, river shells (leve) and shrimps
 - (k) Hunting for wild pigs, opossum, lizards (iguana)
 - (I) Formal employment c 20
 - (m)Earth Mover (Logging Co.) between 10-20 workers
 - (n) Small businesses-Canteens
 - (o) Teachers 20 (Kiddy, Primary and Secondary)
 - (p) 50% make gardens for money
 - (q) Crops grown for consumption and sale-Cassava, kumara, cabbages
- VII. Marriage:
 - (a) In order to maintain the proper cultural practice of marriage and to ensure landownership is sustained and kept within the tribe, a brother son has to marry his sister s daughter.
 - (b) To keep the family relationship strong and intact, X is son must marry Y is daughter.
 - (c) If a woman marries outside of her tribe, the eldest daughter must marry someone within her tribe in order to maintain the right of use to the land
- VIII. Where they get the fish and pigs:
 - (a) Belaha River
 - (b) Tina Catchment area
 - (c) Usually spend 1 to 2 days hunting for pigs
 - (d) If for special occasions they normally spend a week in the catchment area of the Tina River
 - (e) During this time they hunt for pigs, fish and dive for fish, eel and shrimps
 - (f) Where they normally come out after hunting or fishing is at Betiloga
 - (g) They also have time to re-visit old settlement sites to maintain the connection
- IX. L and Ownership:
 - (a) In Guadalcanal landownership is handed down through women line
 - (b) Stretches from Senge to K oeropa
 - (c) Communities living in Belaha have the same right of landownership with those along the banks of the Tina River
- X. Effects of the Hydro Project if Constructed:
 - (a) Change to lifestyle
 - (b) Increase in drunkenness by men and women

- (c) Extra marital affairs will increase due to easy access to more money from the project
- (d) Plants used for medicine in Choro will disappear
- (e) Some of the livelihood activities connected to the Tina river will be affected
- (f) Royalties if not fairly distributed like they have already experienced with Gold Ridge Mining Company will cause disunity among community members
- (g) Timber will no longer be available for house building
- XI. Benefits:
 - (a) Improve access roads
 - (b) A ccess to free power
 - (c) Provide good water supply
 - (d) Current source of water and quality not good
 - (e) Improve standard of living for more than 2,000 living in the community
 - (f) Provide employment
 - (g) Training
 - (h) Establish an institute and other schools improved
 - (i) Provide scholarships (currently GRMC provides scholarships but not enough)
 - (j) Light
 - (k) Refrigerator
 - (I) Operating small income generating businesses
- XII. Health Issues:
 - (a) A Provincial clinic is near the Belaha School
 - (b) Improve sanitation
 - (c) 5 villages have pit toilets
- XIII. Main Diseases:
 - (a) Malaria
 - (b) Pneumonia
 - (c) Diarrhea
 - (d) Dengue Fever
- XIV. Suggested Alternatives Needed:
 - (a) Long term employment for members of the population
 - (b) Proper management of any royalties
 - (c) Change the leadership management
 - (d) Build institutions that will sustain the population
 - (e) Belaha school was built 30 years ago but not many go further so must be improved
 - (f) Improve the only Health Clinic at Belaha
 - (g) Most immediate need of the community is for water supply
- XV. General Observations:
 - (a) Those who spoke generally supported the hydropower project
 - (b) Express the fact that since this is new in the country no one knows it s good and bad effects at this stage
 - (c) The discussions went well and it ended with a peaceful atmosphere

WEEK 3-DAY 14: Wednesday 18th September 2013

SIA Team Visits to:

- I. Main V enue for the Meeting: V era ande (R oadside C ommunities)
- II. Targeted Communities: Vera ande, Verakweli, Niumahata
- III. Attendance:
 - (a) Ruth Kao- Chief Joshua Kao's wife (Vera'ande)
 - (b) Johnson Tadokata Originally from Choiseul (Verkweli)
 - (c) Charity Tadokata Johnson's wife
 - (d) Grace Paul (Niumahata)
 - (e) Saleem Stephen- Muslim follower (Pululaha-South Malaita)
 - (f) Women, youths and children
- IV. Program:
 - (a) Introduction by Lawrence Foana ota
 - (b) Explanation by Kellington Simeon of the reasons for the visit and how people live
 - (c) 3 parts (i) story, (ii) household survey & (iii) interview with women
 - (d) Sharon Para translated the information in the local language
- V. History of the Villages:
 - (a) Families moved from Tina to V era ane on A pril 3rd 2000 because they took up one of the cocoa blocks nearby left by L evers on land they owned
 - (b) Niumahata community was established by families from the Weather Coast who moved in 1968 because of a major landslide and earthquake in that part of Guadalcanal Province
 - (c) V erakweli was established by families who used to live at V eravolia. They moved because of easy access to the road
- VI. Livelihood:
 - (a) Market-pick coconut, kasume
 - (b) Gardening-families main source for food
 - (c) Cocoa-only during pick season from J une to A ugust
 - (d) Sewing sago palm leaves and sell the panels at the market
 - (e) Casual work around the villages
 - (f) Milling timber
 - (g) 6 employed by Lee Kwok Kuen- from Vera ande
 - (h) 8 employed by Lee K wok K uen- from V ermahata
 - (i) 3 employed by Lee K wok K uen- from V erakwele
 - (j) 1 employed by Gold Ridge Mining from V era ande
 - (k) 1 employed by Guadalcanal Plains Palm Oil Ltd from Niumahata
 - (I) Diving along the Tina River by young people for fish/no hunting
- VII. Women s Roles:
 - (a) Operate small income generating businesses like selling ring cakes, young coconuts, bans and other small items
 - (b) Washing clothes and dishes
 - (c) Fetching water from drinking and cooking, collecting food from the gardens

- (d) Women, men and youths harvest cocoa and young coconuts together
- VIII. Church Groups in the 3 Communities:
 - (a) Seventh Day Adventist (SDA)- Place of Prayer- Namanu
 - (b) Church Of Melanesia (COM)- Place of Prayer- Ngalimera/Good Shepard
 - (c) South Sea Evangelical Church (SSEC)- Place of Prayer- Veravinua
 - (d) United Church (UC)- Place of Prayer-GPPOL/Town
 - (e) Assembly Of God (AOG)- Place of Prayer- V erakabikabi
- IX. Health Issues-Main Diseases/Clinics:
 - (a) Malaria
 - (b) Pneumonia
 - (c) Diarrhea
 - (d) Influencer
 - (e) Namanu Health Clinic
 - (f) Good Samaritan Mini Hospital/Clinic near Ngovia School
 - (g) Central Hospital at No.9
- X. Main Source of Water for Drinking and Washing:
- (a) 3 wells (1 for drinking 2 for washing) at V era ande
- XI. Main Concerns, Needs and Worries when the TH Project Actually started:
 - (a) Not enough cash to pay for family needs
 - (b) Generator to pump water
 - (c) If road is constructed, it will be dusty
 - (d) Children s safety will be at risk
 - (e) Random visits by drunkard
 - (f) Put up fence to protect children from running onto the road
 - (g) Road should be tar seal to avoid dust
 - (h) Have check points
 - (i) Put in place speed humps
 - (j) Security will be threatened and probably increase if development takes place
 - (k) Main road use by children going to Rate and Namanu schools
 - (I) Changes may be for good or bad
 - (m) Heard houses might be moved if they are 1 meter within the perimeters of the road
 - (n) Fear of losing their current way of life if they are to be relocated
 - (o) Peace at night will be disturbed due to vehicles going up and down the road
 - (p) Need Police Post
 - (q) Emergency Post
 - (r) School and Clinic at Namanu need to be moved because they are situated on someone else s registered land and relocate them on secure land elsewhere
- XII. Benefits as Perceived by People from these Communities:
 - (a) E asy access to transport
 - (b) Set up side road markets
 - (c) Light
 - (d) Water supply from own source will be improved
 - (e) Good road

- (f) E asy to get quickly to hospital in emergency cases
- (g) Fulltime and Part time employment
- (h) Good housing
- (i) Improve and upgrade the existing schools
- XIII. Some General Observations and Comments:
 - (a) People were basically satisfied with their present way of life
 - (b) They are healthy and are generally easy going with not too much to worry about except when drunkards from other neighboring communities sometimes disturb them because their houses are located near the main road
 - (c) Their feelings about the Tina Hydro Project and plans to expand and use the road as the main access to the location of the site were of a welcoming nature but at the same time of concern and fear for their communities safety and security.

WEEK 3-DAY 14: Wednesday 18th September 2013

SIA Team Visits to:

- I. Main Venue for the Meeting: Horohotu 1
- II. Targeted Communities: Horohotu 1, 2, & 3
- III. Attendance:
 - (a) Village Chief- Seth Givu
 - (b) Other Community members
 - (c) SIA Team
- IV. Program:
 - (a) Brief welcome on behalf of the SIA team members and introduction
 - (b) Chief is brief on the history of the communities
 - (c) Discussions and questions regarding topics like livelihoods, health etc
 - (d) The communities thoughts about the benefits and effects of the Tina Hydro Project
- V. History:
 - (a) Originally came from the Weather Coast of Guadalcanal
 - (b) First settled at K onga in 1974 while working for Foxwood Timber Milling Co based near Red Beach
 - (c) From K onga they moved and started the settlement at Horohotu 1. They were already in Horohotu 1 before Cyclone Namu struck in 1986
 - (d) Horohotu 2 was the second community to be established after Horohotu 1 followed by Horohotu 3
- VI. Livelihood:
 - (a) Marketing 2 days a week Mondays and Thursdays
 - (b) Gardening-potato or kumara, cassava, tomatoes, beans, pawpaw, banana
 - (c) Project involved in farming tomatoes, pawpaw and bananas for sale
 - (d) Y ouths employed by others to cut timber and paid
 - (e) 1 employed by World V ision
 - (f) 1 employed by Police as a Prison Warder

- (g) 1 employed by Gold Ridge Mining Co.
- (h) 6 employed by Guadalcanal Plains
- (i) 1 gone to work in Makira/Makira-Ulawa Province
- (j) Dig side of Tina River for drinking water
- (k) 1 rain water tank near the Church
- VII. Heath Issues: Diseases:
 - (a) Malaria
 - (b) Pneumonia
 - (c) Diarrhea
 - (d) Influencer or flu
- VIII. Facilities:
 - (a) Namanu Clinic
 - (b) Clinics in Honiara
 - (c) Project should make allowances for two more main markets
- On the East and West sides of the Project
- IX. Effects from Hydro Project as Communities Foresee:
 - (a) Water from the river will be polluted
 - (b) Clean drinking water will be scarce
 - (c) Not be able to wash calico or dishes
- X. Benefits from the Hydro Project:
 - (a) Provide water tanks
 - (b) Young people will work for the project
 - (c) Easy access to transportation
 - (d) Build clinic
 - (e) Improve schools including Rate Primary and Secondary School
 - (f) Borehole for water for the communities
 - (g) Improve transportation
 - (h) Improve road
- XI. Church Organization:
 - (a) Seventh Day Adventist or SDA
- XII. General Comments:
 - (a) Members did not come to SIA Meeting held at V uramali
 - (b) Some of the community members were away for a Church Meeting
 - (c) The Pastor of the SDA Church is from Marovo area/Western Province
 - (d) The Village Chief did not look healthy due to old age

Week 3-Day 15: Thursday 19th September 2013

SIA Field Visit to:

- I. Main Venue for the Meeting: Ravu, Westside of Ngalibiu Bridge
- II. Targeted Communities: Downstream- (East of Ngalibiu Bridge): GPPOL 1,

Baravale ⁻ c7 houses 1 Church, K adavu, Pokaso- c7 houses, Selaghoghoro- 3 houses, Omba- c2 houses, Papaghu- c 10 houses (indigenous people from the Plains) (West of the Bridge): Ravu, Ngalimera (Y ellow nut), Siroigha, Old Selwyn, K olina-Popoloi 1 (Settlers from the Weather Coast), Pololoi 2- Lee K wok K uen Farm and gravel extraction site

- III. Attendance:
 - (a) Moses Karuku- Assistant Pastor, Church of the Living Word
 - (b) Geoff Alexander- Originally from South Malaita but married to a Guadalcanal lady and is now living near GPPOL (His wife is Agnes Putu's sister)
 - (c) Cathy Kakamo
 - (d) Agnes Putu
 - (e) James Laisa Assistant Administration Officer ⁻ Guadalcanal Province
 - (f) SIA Members
 - (g) Community Leaders
 - (h) Men, women & youths
- IV Program:
 - (a) Brief Introduction of SIA team members
 - (b) Inform those present of the reason for the visit
 - (c) Clarify the status of the SIA team that members are not from the Government or Project Office but are independent with sponsorship by the World Bank.
 - (d) Explain nature of the SIA team's work
 - (e) A sking questions and having general discussions
 - IV. General Discussions:
 - (a) Most of the time was spent by those who spoke which seem to be dominated by three men complaining about their past experiences with Government and NGOs that did not keep their promises or assist them with programs like improvement of their school or building a nearby clinic
 - (b) Examples they gave- Ngalibiu Primary School has 417 students, Grades 1-6 with two streams for each class a day which means that they have 12 class sessions per day in order to cater for the learning needs of the 417 kids
 - (c) Government has already assisted Rate School but not their school at Ngalibiu
 - (d) Ravu Community consists of about 16 villages
 - (e) They use the water from the river for- drinking, swimming, washing and cooking
 - (f) They raised the issue about not being included in the group that signed the agreement for the project to go ahead
 - V. Impacts:
 - (a) If the dam is built it will have some social effects on the life of those who use the water from river.
 - (b) They feel the water might dry up during the dry season
 - (c) They dig the side of the river to get water for drinking and watering their gardens
 - (d) They are concerned about river pollution during the construction of the dam

- (e) Replacement of gravel which they depend on for cash will be affected
- (f) During the dry weather the level of the river will be low
- (g) A ny plans to develop this hydro project must take into account the welfare of those using the river for the livelihood
- (h) Already they have been unfairly treated because of their exclusion from the initial discussions with the government and those who use the river for their livelihood
- (i) No water supply in the communities
- (j) Use old World War 2 drums for their water wells
- (k) If the dam will be safe because of fear that it might break if there is a storm or earthquake.
- Fear is based on their experience during Cyclone Namu in 1986 when the river flooded and swept many of their homes which caused a huge disaster for the families
- (m) A woman expressed her concern that `culture_ was not observed during this particular meeting because they always have refreshments when such gathering is held.
- (n) They will lose the income they generate from sale of gravel from the river
- (o) Use of the river for rubbish disposal from the upstream communities
- (p) Oil spill from Lee K wok K uen farm upstream as well
- (q) They are not happy with the way information is passed to the communities. For example, government initiates a project the information about it is then passed onto the Member of Parliament who in turn channels it to the Provincial Member who finally informs the communities. So far this system has not worked well in the country
- (r) Flooding of houses if dam breaks or during heavy rain
- (s) A rguments over unfair sharing of royalty payments
- (t) Government funding always given to Member of Parliament but never get to people in the communities in the rural areas
- (u) Employment by GPPOL mostly from other Provinces, very low from the village. 95% of the workforce from other Provinces only 5% local
- (v) Lack of money is a major issue of concern
- VI. Possible Options or Solutions:
 - (a) Need to form 3 representative groups- Upstream, Midstream and Downstream to sign agreements to ensure proper and fair sharing of benefits
 - (b) Help to build raised houses on stilts
 - (c) Provide water tanks, boreholes, water pumps, wells improved & water supply
 - (d) Government need to contact Solomon Island Water Authority
 - (e) Connect to main water supply from Honiara which is only 21.1 km away
 - (f) Set up alarm system to warn people of danger when the water level rises
 - (g) Improve already existing wells and provide water pumps
 - (h) Involve more men, women and youths in the workforce
 - (i) Relocate or identify place for communities to escape to during disasters on higher grounds

- (j) Wanted members of their communities to visit the proposed dam site since Tina communities already visited and seen it or in other countries with dams already exist. So government should include them in delegation in the future.
- (k) Women only heard about the dam but do not know how it works. So they need more information
- (I) Weather Division in Government should visit the lower parts of Ngalibiu River because when it rains the gardens and villages are always flooded
- (m)Should have good drainage system in place and proper designs for the settlements
- (n) All communities should have free electricity
- VII. Livelihood:
 - (a) Sale of gravel (Lee K wok K uen-C harge \$100 per load/use 15 ton truck) while Dalgro is charged \$390 per cubic
 - (b) Gardening
 - (c) Piggery
 - (d) Poultry
 - (e) Cocoa
 - (f) Tourism-guided tours to tapu sites
 - (g) Fishing for eel (paleo), kola, mamata, ghatubi, Kukuli (fish with poisonous fins), bagovu, lae, shrimps (ura), mathi, tilapia
 - (h) Kasume, Water Lillie, kamau, pumpkin, pawpaw, banana, taro-swamp taro, tagolo-swamp taro or kakake
 - (i) Aligeto
- VIII. Health Issues:
 - (a) Malaria (low)
 - (b) Dengue Fever ⁻ (about 100 cases)
 - (c) Bakua ⁻ skin disease (Havole vernacular name) (social effect people not married)
 - (d) Pneumonia
 - (e) Diarrhea
 - (f) Diabetes ⁻ poor diet, sugar or fast food
- IX. Clinics:
 - (a) Goro Mini Hospital
 - (b) Ngalibiu Clinic
 - (c) No. 9 Central Hospital-Honiara
- X. Benefits:
 - (a) Have free electricity
 - (b) Employment
 - (c) Improved standard of living
 - (d) Improved roads
- XI. General Observations:
 - (a) People were frustrated
 - (b) Young people not interested in working for GPPOL

- (c) At the end they wanted more information about the project and also others dams in other countries
- (d) Discussion took too long because those who spoke continue to repeat their frustrations and anger
- (e) The meeting ended with a prayer by the Assistant Pastor- Moses K aruku

Week 3-Day 16: Friday 20th September 2013

SIA Team Visit to:

- I. Main V enue of the Meeting: V erakabikabi (Settlers from the Weather Coast)
- II. Targeted Communities: Verakabikabi Community
- III. Attendance:
 - (a) Dominic Kusoli ⁻ Paramount Chief
 - (b) Evens Seleso ⁻ Village Chief
 - (c) SIA team ⁻GF, KS, SP & LF
 - (d) Ray Roberts ⁻ Engineer-Guadalcanal Province
 - (e) Cathy Kakamo
 - (f) Agnes Puti
- IV. Program:
 - (a) Opening Prayer and Introduction of SIA team by Ray Robert
 - (b) Spoke's person on behalf of community was Stanley V eke
- V. History concerning the Settlement:
 - (a) 1965 big cyclone caused big flood forced the first families to move
 - (b) Later other families came to join them from the Weather Coast in 1970 after a big flood and landslide.
 - (c) They bought the land at V erakabikabi from the landowners in the custom way
 - (d) The total number of households in the community is 43
- VI. Livelihood:
 - (a) Most of the family members away in Gold Ridge to dig for gold
 - (b) Marketing- Cabbage, banana, beans cassava, kumara, coconut
 - (c) Panning for gold and selling any finds
 - (d) Hunting for pigs
 - (e) Using eel trap to catch the eel at Betisasanga
 - (f) Hunting for opossum
 - (g) Gardening
 - (h) Diving
 - (i) Farming cocoa
 - (j) Grow swamp taro
 - (k) Fishing
 - (I) Collecting fern-kasume
 - (m) Collecting amau a kind of leave of a shrub like sand-paper which they eat the young leaves and use the mature ones for washing pots and other cooking utensils

- VII. Concerns:
 - (a) Lack of own transport
 - (b) When the road is constructed, it might cause dust
 - (c) Children use the road to walk to school
 - (d) Hydro dam might break causing huge damages
 - (e) Need more information about the Project
 - (f) Always arrange with landowners if want to make gardens
 - (g) Main stream they draw their drinking water from at Ngongoti might be affected when the access road to the dam site is constructed
 - (h) Gardening areas and 1 cemetery near the road might be destroyed
 - (i) Split after family argument resulted in joining two separate churches (Roman Catholic & Assembly of God)
 - (j) During construction of the road, families walking to Church in Marava might be affected
 - (k) Main worries-Money and Food
 - (I) Good clinics are in Honiara
 - (m)School fees
 - (n) Good houses
 - (o) Land
- VIII. Health Issues Main Diseases:
 - (a) Malaria
 - (b) Pneumonia
 - (c) Diarrhea
 - (d) Worry/anxiety
- IX. Clinics & Schools:
 - (a) Namanu Clinic
 - (b) Marava Kindergarten
 - (c) Rate School
- X. Churches:
 - (a) Roman Catholic (Only one Church before 1990)
 - (b) Assembly of God (Establish in 1990)
- XI. Cultural & Historical Sites:
 - (a) No cultural tapu sites
 - (b) 3 Burial grounds

WEEK 3-DAY 16: Friday 20th September 2013

SIA Team Visit to:

- I. Main Venue for the Meeting: Old Selywn
- II. Targeted Community: Old Selwyn
- III. Attendance:
 - (a) Alifox Ulu- Chief
 - (b) Agnes Putu Landowner & Her Home
 - (c) Cathy Kakamo

- (e) SIA Team-GF, KS, SP & LF
- (f) Ronald Vosiu-Bougainville Christian Mission Fellowship
- (g) Community members
- IV. Program:
 - (a) Brief remarks and introduction of SIA team members by Ray Roberts (GP Rep)
 - (b) Explanation concerning the Project visit of this independent team was by Kellington Simeon
- V. History of the Community:
 - (a) This place used to be called Nasilagu when the Anglican Church started a Primary School here
 - (b) When the Church decided to upgrade it to a high school they changed the name to Selwyn College
 - (c) In 1986 when the Cyclone Namu struck, the school was destroyed by flood from the Tina River and was abandoned and the School was relocated near Marovovo on the West side of the island
 - (d) A fter the school moved out the members of the families that own the land moved in after 1986 and settled in the houses that were not destroyed by the floods and they use the name Old Selwyn and Popoloi to refer to their community
 - (e) Before Cyclone Namu they used to live at Siroigha
- VI. Livelihood:
 - (a) Gardening
 - (b) Plan cocoa, banana, etc
 - (c) Coconut
 - (d) Lease land for oil palm
 - (e) 2 members work at Gold Ridge Mining
 - (f) Sale of river gravel @\$500.00 (SBD) per cubic
 - (g) Royalty payment from Guadalcanal Plains Palm Oil Ltd
 - (h) Use Ngalibiu river side for gardening, drawing drinking water, washing when generator is not working
 - (i) Use a well to draw water and only one tank at the Church Building
 - (j) Use two boreholes and two wells
- VII. Their Needs:
 - (a) Solar power pump immediately needed
 - (b) Old pipes needed replacing
 - (c) Power needed to be re-connected
- VIII. Concerns:
 - (a) Their community is located on flat plains and so they fear if a big flood they will be badly affected
 - (b) During dry season the wells become dry
 - (c) Oil and fuel spill
 - (d) To build their houses they have to buy building materials
 - (e) Support for the Government = 0%
 - (f) Promises never been fulfilled

- (g) Only trustees benefit from any help
- (h) To have a plan in place in case of any disaster happening like the dam breaking
- (i) Interim Committee already in place but not legal
- (j) A ccess road still under negotiation
- (k) Upstream already well established with their organization
- (I) Lower stream/downstream still unorganized
- (m)Water boundary need chiefs to discuss and decide
- (n) Parts of the Tina and Ngalibiu are registered and customary owned
- (o) They need to be listened too and recognized also in any benefit sharing
- (p) Damming the water will affect the flow of gravel
- IX. Benefits:
 - (a) Still needed to be seen
 - (b) Improve the road
 - (c) Opportunity for employment
 - (d) Connected to the main power grid
- X. Health Issues:
 - (a) Diarrhea
 - (b) Malaria
 - (c) Pneumonia
 - (d) Dengue Fever -2-3 cases
- XI. Schools & Clinics:
 - (a) Ngalibiu Primary School-Guadalcanal Provincial School
 - (b) Good Samaritan Mini-Hospital administered by the Roman Catholic Church
 - (c) No. 9 at the Central Hospital
- XII. Church:
 - (a) Christian Mission Fellowship
 - (b) Two Missionaries from Bougainville looking after the work of the Church
- XIII. Alternatives:
 - (a) Plan for any areas for safety during disasters
 - (b) MOU with Project Office
 - (c) During the period the work of the Project goes on they need power restored and pump repaired or provided with a new one
 - (d) \$3 million a year should be shared equally amongst family members may be affected
 - (e) Government to put in place clear guidelines on how trustees should distribute any benefits
 - (f) Tribes should choose who should be a trustee

WEEK 4-DAY 17: Monday 23rd September 2013

- SIA Team Visit to:
 - I. Main Venues for the Meetings: Ministry of Environment & Conservation & Guadalcanal Provincial Headquarter

- II. Targeted Officials: Permanent Secretary/ME&Con & Provincial Secretary/GP
- III. Present:
 - (a) Permanent Secretary
 - (b) GF & KS
- IV. Program:
 - (a) Main purpose of the visit was to update the Permanent Secretary of the work that have been done so far among those communities the SIA team members visited
 - (b) This was actually a courteous call
 - (c) Meeting with Guadalcanal Provincial Officials never materialized because the Provincial Government was having problems with its members
 - (d) Instead the SIA team decided to work on the plans for the writing up of their reports.

WEEK 4-DAY 18: Tuesday 24th September 2013

- SIA Team Visit to:
 - I. Main V enue of the Meeting: Solomon Islands Development Trust or SIDT Office
 - II. Targeted Organization: SIDT
 - III. Present:
 - (a) Longden Mankdika- Director
 - (b) SIA team Gerard Fitzgerald
 - (c) Kellington Simeon
 - (d) Lawrence Foana ota
 - IV. Program:
 - (a) Brief on the work of the SIA team
 - (b) Brief on the work of SIDT
 - V. Main purpose of SIA team visit:
- To hear if SIDT has any
 - (a) Current projects in the Tina Hydro Project area
 - (b) Plans for future projects
 - VI. SIDT 's Involvement:
 - (a) Has a project in Chichinge Community
 - (b) A im at developing rural people
 - (c) Encourage more development at village level
 - (d) Introduction of malaria model to get rid of the disease
 - (e) Malaria projects already in place at Tinahulu, Chichinge and Ngalimera
 - (f) Facilitators of projects that help villages to be self reliance

- (g) Provision of drawn maps to locate village sites
- (h) V alue their sites
- (i) Provide advice to communities on how to improve themselves
- VII. Other SIDT 's Activities:
 - (a) Carry out work on Mining and Gender funded by World Bank
 - (b) Involved with the rehabilitation of families from the Gold Ridge Mining area
 - (c) Data collecting excise is all they do
 - (d) Find out how involved are women in any development projects
 - (e) Conducted research 3 years ago with Out-growers at GPPOL but initiative not working
 - (f) Build capacity for a period of 9 months and then they should sustain themselves
 - (g) Encourage all social groups or organizations to work together
 - (h) Promote and encourage villages to involve in small solar and water projects
- VIII. Projects that are still going:
 - (a) Chichinge the project belongs to the people so it is still going
 - (b) Roroni Kindergarten has become self reliance after SIDT assisted in establishing it in the community
 - (c) Tina and Marava eco-tourism project, women's center and sanitation projects are going well especially Tina community's sanitation project
- IX. Main Theme of their Approach to village improvement and sustainability is

`VILLAGE STAND UP SELEVA_

This was the last field visitation and consultation that the SIA team members carried out and on Wednesday 25th the SIA team spent in the office discussing their writing up plans and on Thursday 26th the International Expert, Gerard Fitzgerald left the country.

Morning meal	% of hhd	Midday meal	% of hhd
rice	43%	rice	41%
kasava	25%	cabbage (no detail)	34%
cabbage (no detail)	20%	kasava	25%
tea	20%	banana	14%
kumara	11%	kumara	14%
silver fern/fern/kasume	16%	water	11%
banana	9%	silver fern/fern/kasume	11%
bread	7%	taiyo (canned tuna)	14%
tea-coffee mix	7%	beans	5%
taiyo (canned tuna)	7%	noodles (instant)	5%
beans	5%	pig meat	5%
biscuits	5%	potato	5%
noodles (instant)	5%	tomato	5%
pig meat	5%	cabbage (wild taro leaf)	2%
potato	5%	cake	2%
tomato	5%	coconut	2%
water	5%	coconut milk	2%
slippery cabbage	5%	eggplant	2%
chinese cabbage	5%	fish (savutu)	2%
cabbage (wild taro leaf)	2%	chinese cabbage	2%
cake	2%	pawpaw	2%
coconut	2%	pumpkin	2%
garlic	2%	pumpkin soup	2%
milo	2%	pumpkin tops	2%
pumpkin	2%	slippery cabbage	2%
shallot	2%	taro	2%
		tea	2%

Evening meal	% of hhd	Snacks	% of hhds
rice	77%	none	43%
cabbage (no detail)	36%	banana	32%
kasava	23%	coconut	16%
kumara	22%	nawnaw	14%
silver fern/fern/kasume	16%	betelnut	7%
tomato	11%	cucumber	5%
water	1106	cutaut	5%
water	00%		2%
beans	9%		2%
noodles (instant)	9%	biscuit	2%
taiyo (canned tuna)	9%	breadfruit (May)	2%
banana	7%	silver fern/fern/kasume	2%
pig meat	7%	cakes	2%
potato	7%	cassava	2%
tea	7%	guava	2%

Evening meal	% of hhd	Snacks	% of hhds
eel fish	5%	Malay apple	2%
chicken	2%	noodles (instant)	2%
coconut milk	2%	orange	2%
corned beef	2%	pig meat	2%
fish	2%	rice	2%
kaimosamosa (sand paper)	2%	ringcake (doughnuts)	2%
onions	2%	sugarcane	2%
pawpaw	2%	soft drink-soda	2%
prawns (ura)	2%	tea	2%
pumpkin	2%		
pumpkin top	2%		
sanage	2%		
savutu	2%		

The following table lists aquatic insects (water dependant) insects that thrive in Guadalcanal.

Name	Species particularity	Stations
Heteroptera		
Notonectidae		
Anisops browni	Endemic to the S olomon Islands	
Anisops capitata	Endemic to the Solomon Islands	
Anisops cheesmanae	Endemic to the Solomon Islands	Data from previous surveys (mentioned in Polhemus et al., 2008)
Anisops leucothea		
Anisops nasuta		
Anisops philippiensis		
Anisops sp.		Charebuma River (stations 64a & 64b)
Anisops tahitiensis		Downtown Honiara
Enithares gibbera	Endemic to Guadalcanal	Charebuma River (stations 64a & 64b)
Enithares loria		Data from previous surveys (mentioned in Polhemus et al., 2008)
Enithares sp.		Tenaru River at Tenaru Falls (station 14)
Gerridae		
Halobates micans		
Halobates princeps		
Halobates proavus		Data from previous surveys (mentioned in Polhemus et al., 2008)
Limnogonus fossarum skusei		
Limnogonus luctuosus		Lungga River at mouth of gorge, Sasaa River at road bridge, Ndoma River at road bridge
Limnogonus sp.		Tenaru River at Tenaru Falls (station 14), Charebuma River (stations 64a & 64b)
Limnometra hysterema	Endemic to Guadalcanal	Tenaru River at Tenaru Falls (station 14)
Limnometra lipovskii		Lungga River at mouth of gorge, Ndoma River at road bridge, roadside pond in forest
Limnometra sp.		Charebuma River (stations 64a & 64b)

Table 1 List of aquatic insects in Guadalcanal

Name	Species particularity	Stations	
Metrobatopsis browni	Endemic to the S olomon Islands	Tenaru River at Tenaru Falls (station 14), Tinahulu River (station 15), Lungga River at mouth of gorge, Ndoma River at road bridge, Charebuma River (stations 64a & 64b)	
Neogerris parvula		Data from previous surveys (mentioned in Polhemus et al., 2008)	
Mesoveliidae			
Mesovelia sp.		Sasaa River at road bridge, Ndoma River at road bridge, Charebuma River (stations 64a & 64b)	
Mesovelia subvittata		Tenaru River at Tenaru Falls (station 14)	
Mesovelia vittigera		Data from previous surveys (mentioned in Polhemus et al., 2008)	
Ochteridae			
Ochterus nigrinus	Endemic to Guadalcanal	Data from previous surveys (mentioned in Polhemus et al., 2008)	
Ochterus sp.		Tenaru River at Tenaru Falls (station 14)	
Saldidae			
Saldula parens	Endemic to Solomon Islands	Data from previous surveys (mentioned in Polhemus et al., 2008)	
Saldula solomonensis	Endemic to Guadalcanal	Data from previous surveys (mentioned in Polhemus et al., 2008)	
Saldula sp.		Tenaru River at Tenaru Falls (station 14), Lungga River at mouth of gorge, Sasaa River at road bridge	
Veliidae			
Microvelia sp.		Tenaru River at Tenaru Falls (station 14), Tinahulu River (station 15), Lungga River at mouth of gorge, Sasaa River at road bridge, Ndoma River at road bridge, Charebuma River (stations 64a & 64b)	
Rhagovelia browni	Endemic to Guadalcanal	Tenaru River at Tenaru Falls (station 14), Tinahulu River (station 15), Lungga River at mouth of gorge, Sasaa River at road bridge, Ndoma River at road bridge, Charebuma River (stations 64a & 64b)	
Rhagovelia n. sp.	Endemic to Guadalcanal	Charebuma River (stations 64a & 64b)	
Corixidae			
Micronecta ludibunda ludibunda		Lungga River at mouth of gorge, Charebuma River (stations 64a & 64b)	
Micronecta virgata		Data from previous surveys (mentioned in Polhemus et al., 2008)	
Gelastocoridae			

Name	Species particularity	Stations	
Nerthra gurneyi	Endemic to Guadalcanal		
Nerthra macrothorax		Data from previous surveys (mentioned in Polhemus et al., 2008)	
Nerthra omani	Endemic to Guadalcanal		
Leptopodidae			
Valleriola n. sp.		Lungga River at mouth of gorge	
Valleriola "solomonensis"	Endemic to Solomon Islands	Data from previous surveys (mentioned in Polhemus et al., 2008)	
Ochteridae			
Ochterus sp.		Lungga River at mouth of gorge	
Hydrometridae			
Hydrometra horvathi		Data from previous surveys (mentioned in Polhemus et al., 2008)	
Odonata			
Chlorocyphidae			
R hinocypha liberata	Endemic to Solomon Islands	Tenaru River at Tenaru Falls (station 14), Charebuma River (stations 64a & 64b)	
Coenagrionidae			
Agriocnemis pygmaea		Data from previous surveys (mentioned in Polhemus et al., 2008)	
Agriocnemis salomonis	Endemic to Solomon Islands	Sasaa River at road bridge, Ndoma River at road bridge, roadside pond in forest	
Agriocnemis sp.		Tinahulu River (station 15), Lungga River at mouth of gorge	
Ceriagrion erubescens		Data from previous surveys (mentioned in	
Ischnura aurora aurora		Polhemus et al., 2008)	
Pseudagrion incisurum	Endemic to Guadalcanal	Tenaru River at Tenaru Falls (station 14), Charebuma River (stations 64a & 64b)	
Pseudagrion microcephalum		Tinahulu River (station 15), Sasaa River at road bridge, Ndoma River at road bridge	
Pseudagrion sp.		Lungga River at mouth of gorge	
Teinobasis bradleyi	Endemic to Solomon Islands	Charebuma River (stations 64a & 64b)	
Teinobasis imitans	Endemic to Guadalcanal	Data from previous surveys (mentioned in Polhemus et al., 2008)	
Xiphiagrion cyanomelas		Sasaa River at road bridge, Tina river	
Protoneuridae			
Nososticta salomonis		Tenaru River at Tenaru Falls (station 14), Lungga River at mouth of gorge, Charebuma River (stations 64a & 64b)	
Libellulidae			

Name	Species particularity	Stations
Aethriamanta subsignata		
Agrionoptera insignis similis		
Agrionoptera papuensis allogenes		
Brachydiplax denticauda		
Brachydiplax duivenbodei		
Crocothemis nigrifrons		
Diplacodes trivialis		
Hydrobasileus brevistylus		
Orthetrum sabina sabina		
Orthetrum villosovittatum bismarckianum		Data from previous surveys (mentioned in
Pantala flavescens		r oliteritus et al., 2008)
Protorthemis woodfordi	Endemic to Solomon Islands	
R hodothemis rufa		
R hyothemis phyllis chloe		
Rhyothemis phyllis marginata		
R hyothemis regia juliana		
Tapeinothemis boharti	Endemic to Solomon Islands	
Tramea liberata	Endemic to Solomon Islands	
Neurothemis terminata		Tina river
Neurothemys stigmatizans bramina		Lungga River at mouth of gorge, Tina river
Platycnemididae	1	
Lieftinckia lairdi	Endemic to Guadalcanal	Charebuma River (stations 64a & 64b)
Lieftinckia salomonis	Endemic to Solomon Islands	Data from previous surveys (mentioned in Polhemus et al., 2008)
Salomonocnemis gerdae	Endemic to Guadalcanal	Charebuma River (stations 64a & 64b)
Isostictidae		
Cnemisticta latilobata		Data from previous surveys (mentioned in Polhemus et al., 2008)
Gomphidae		
Ictinogomphus australis lieftincki	Endemic to Solomon Islands	Data from previous surveys (mentioned in Polhemus et al., 2008)
Aeschnidae		

Name	Species particularity	Stations	
Anasciaeschna melanostoma	Endemic to Guadalcanal	Data from previous surveys (mentioned in Polhemus et al., 2008)	
Gynacantha rosenbergi			
Corduliidae	Γ		
Eusynthemis frontalis	Endemic to Guadalcanal	Data from previous surveys (mentioned in	
Guadalca insularis	Endemic to Guadalcanal	Polhemus et al., 2008)	
Coleoptera			
Dytiscidae			
Genus and species unknown		Tinahulu River (station 15), Sasaa River at road bridge, Ndoma River at road bridge, Charebuma River (stations 64a & 64b)	
Gyrinidae			
Dineutes (Callistodineutus) pagdeni	Endemic to Guadalcanal	Charebuma River (stations 64a & 64b)	
Gyrinus sericeolimbatus		Data from previous surveys (mentioned in Polhemus et al., 2008)	
Diptera			
Dolichopodidae			
Genus and species unknown		Lungga River at mouth of gorge	
Simuliidae			
Morops kawagishii	Endemic to Guadalcanal		
Morops papuense			
Morops pohaense	Endemic to Guadalcanal	Data from previous surveys (mentioned in Polhemus et al. 2008)	
Morops selwynense	Endemic to Guadalcanal		
S imulium (G omphostilbia) hiroshii	Endemic to Solomon Islands		
S imulium (G omphostilbia) rhopaloides	Endemic to Guadalcanal	Charebuma River (stations 64a & 64b)	
S imulium (G omphostilbia) sherwoodi	Endemic to Guadalcanal	Charebuma River (stations 64a & 64b)	

Source : Adapted from Polhemus et al., 2008, BRLi, 2013
Flora Transmission Line 1: Secondary vegetation on grassland next to Oil Palm plantation			
Scientific Names	Common/Vernacular	Distribution Status	Protection
	Names		Status
		C ommon,	
1 Broussonetia papyrifera	Paper mulberry	Widespread	Least concern
2 Elaeis guineensis	Oil palm	Common, Plantation	Least concern
3 Mikania micrantha	Mile-a-minute	Common	Least concern
4 E uphorbia hirta	Milky weed	Common	Least concern
5 Mimosa invisa	Sensitive grass	Common	Least concern
6 Mimosa pudica	Sensitive grass	Common	Least concern
7 Hemigraphis reptans	Hemigraphis	Few, Uncommon	Least concern
8 Pueraria lobata	Legume Cover crop	Common	Least concern
9 S ida rhombifolia	Sida	Few, Uncommon	Least concern
10 Ipomoea illustris	Ipomoea	Few, uncommon	Least concern
11 Pennisetum polystachyon	Mission grass	Common	Least concern
12 Pennisetum purpureum		Common	Least concern
13 Brachiaria mutica	Para grass	Common	Least concern
14 Paspalum conjugatum	T - grass	Common	Least concern

The following list of tables present plants that were identified during on-field baseline.

Flora Transmission Line 2: Secondary vegetation on grassland next to Oil Palm plantation			
Scientific Names	Common/Vernacular	Distribution Status	Protection
	Names		S tatus
1 Broussonetia papyrifera	Paper mulberry	Common, widespred	Least concern
2 Pennisetum polystachyon	Mission grass	Common	Least concern
3 Mimosa invisa	Sensitive grass	Common	Least concern
4 Mimosa pudica	Sensitive grass	Common	Least concern
5 E uphorbia hirta	Milky weed	Common	Least concern
6 Hemigraphis reptans	Hemigraphis	Few, uncommon	Least concern
7 Pueraria lobata	Legume cover crop	Common, widespred	Least concern
8 Phragmites karka	Fi'I Rade	Common, widespred	Least concern
9 Cucurbita sp?	Cucurbita	Common, widespred	Least concern

Flora Transmission Line 3: Open grassland - Secondary vegetation on roadside				
Scientific Names	Common/Vernacular	Distribution Status	Protection	
	Names		S tatus	
1 Mimosa pudica	Sensitive grass	Common	Least concern	
2 Pennisetum polystachyon	Mission grass	Common	Least concern	
3 S ida rhombifolia	Sida	Common	Least concern	
		C ommon,		
4 Broussonetia papyrifera	Paper mulberry	widespread	Least concern	
5 Starchytapheta jamaicensis	Blue Rat's tail	Rare, Uncommon	Least concern	
6 Brachiaria mutica	Para grass	Common	Least concern	
			Least	
			concern,	
		Planted near a	Exotic	
7 Acacia auricauliformis	Acacia	house	ornamental	

Flora Transmission Line 4: Lowland forest - open vegetation - secondary regrowths			
Scientific Names	CommonNernacular	Distribution Status	Protection
	Names		S tatus
1 Canarium indicum	Ngali nut	Planted, Few trees	Threatened
2 Intsia bijuga	Kwila, Iron wood	Few trees	Threatened
3 Pometia pinnata	Pometia, Taun	Few trees	Threatened
4 Vitex cofassus	Vitex, Vasa	Few trees	Threatened
			Least
5 Macaranga dioica	Macaranga	Common	Concern
			Least
6 Broussonetia papyrifera	Paper mulberry	Common	Concern
			Least
7 Premna corymbosa	Premna	Few trees	Concern
,		Planted, Garden	Least
8 S olanum torvum	Egg Plant	crop	Concern
			Least
9 Mikania micrantha	Mile-a-minute	Common	Concern
10 Starchytapheta			Least
iamaicensis	Blue rat's tail	Common	Concern
			Least
11 Acalypha grandis	Acalypha	Few trees	Concern
			Least
12 Calophyllum peekelli	Calophyllum	Few trees	Concern
			Least
13 Ficus septica	Ficus	Common	Concern
14 Alstonia scholaris	Alstonia, Milky Pine	Few trees	Threatened
			Least
15 Sida rhombifolia	Sida	Common	Concern
			Least
16 Alstonia spectabilis	Alstonia	Few trees	Concern
			Least
17 Merremia peltata	Merremia	Common	Concern
18 Trichospermum			Least
psilocladum	Trichospermum	Few trees	Concern
			Least
19 Cananga odorata	Ylang vlang, Cananga	Few trees. Rare	Concern
			Least
20 Macaranga similis	Macaranga	Common	Concern
			Least
21 Rhus taitensis	Rhus	Few trees	Concern
			Least
22 Ficus variegata	Ficus	Few trees	Concern
			Least
23 Carica papaya	Pawpaw, Papava	Garden crop	Concern
			Least
24 Musa sapientum	Banana	Garden crop	Concern
			Least
25 Manihot esculenta	Cassava, Tapioka	Garden crop	Concern
	• • •	- T	Least
26 Ipomoea batatas	Potato	Garden crop	Concern

Flora Transmission Line 5: Secondary vegetation on open ridgetop overlapping grasslands			
Scientific Names	CommonNernacular	Distribution Status	Protection
	Names		Status
		Common,	
1 Broussonetia papyrifera	Paper mulberry	widespread	Least concern
		Common,	
2 Nephrolepis hirsutula	Fish tail Fern	widespread	Least concern
3 Cananga odorata	Ylang ylang, Cananga	Few trees	Least concern
4 Ficus longifolia	Ficus	Few trees	Least concern
5 Ficus septica	Ficus	Few trees	Least concern
6 Alpnia purpurata	Red Ginger	Common	Least concern
7 Cyathea Vittata	Tree Fern	Few Plants	Least concern
8 Nephrolepis biserrata	Fish tail Fern	Common	Least concern
		Common,	
9 Merremia peltata	Merremia	widespread	Least concern
10 Costus speciosus	Costus	Few Plants	Least concern
11 Pipturus argenteus	Pipturus	Few trees	Least concern
		Common,	
12 Mikania micrantha	Mile-a-minute	widespread	Least concern
13 Pueraria lobata	Legume cover crop	Common	Least concern
14 Manihot esculenta	Cassava, Tapioka	Garden crop	Least concern
		Common,	
15 Pennisetum polystachyon	Mission grass	widespread	Least concern
		Common, Garden	
16 S olanum torvum	Egg Plant	crop	Least concern
		Common, Garden	
17 Colocasia esculenta	Taro	crop	Least concern
		Rare, Only a couple	
18 Viola odorata	Violet	of plants	Least concern
19 Ludwigia octovalvis	primrose willow	Common	Least concern

Flora Access Roads 1: Lowland rainforest on ridgetop			
Scientific Names	CommonNernacular	Distribution Status	Protection
	Names		Status
1 Pometia pinnata	Pometia, Taun	Few trees	Threatened
2 Canarium indicum	Ngali, Canarium nut	Few trees, Planted	Threatened
3 Uncaria appendiculata	Water rope	Few plants	Least concern
4 Pleomele angustifolia	Pleomele	Few plants	Least concern
5 Ptychosperma salomonense	Ptychosperma palm	Few plants	Least concern
6 Licuala lauterbachii	Licuala palm	Few plants	Least concern
7 Celtis philippinensis	Celtis	Few trees	Least concern
8 Alpinia oceanica	Alpinia	Common	Least concern
9 Heterospathe minor	Heterospthe palm	Few plants	Least concern
10 Heterospathe			
salomonensis	Heterospathe palm	Few plants	Least concern
		Common,	
11 Selaginella rechingeri	Selaginella	widespread	Least concern
12 Calamus hollrungii	Lawyer cane, Rattan	Few plants	Least concern
13 Brownlowia argentata	Brownlowia	Few trees	Least concern
14 S chizostachyum			
tessellatum	Bamboo	Few plants	Least concern
15 Calamus vestitus	Lawyer cane, Rattan	Few plants	Least concern
16 Planchonella firma	Planchonella	Few trees	Least concern
17 Mangifera indica	Native mango	Uncommon	Least concern
18 Myristica fatua	Myristica	Uncommon	Least concern
19 Semecarpus forstenii	Semecarpus	Common	Least concern
	Syzygium, wild local		
20 Syzygium onesima	apple	Uncommon	Least concern
21 Rhopaloblaste elegans	Rhopaloblaste palm	Uncommon	Least concern

Flora Access Roads 2: Lowland forest on ridgetop			
Scientific Names	Common/Vernacular	Distribution Status	Protection
	Names		Status
1 Calophyllum peekelli	Calophyllum	Uncommon	Threatened
2 S yzygium onesima	Syzygium	Uncommon	Threatened
3 Syzygium tierneyana	Syzygium	Uncommon	Threatened
4 Syzygium myriadena	Syzygium	Uncommon	Threatened
	Small Ngali nut,		
5 Canarium salomonense	Canarium	Uncommon	Threatened
6 Semecarpus forstenii	Semecarpus	Common	Least concern
7 Vitex cofassus	Vitex, Vasa	Uncommon	Threatened
8 Pometia pinnata	Pometia, Taun	Uncommon	Threatened
9 Mangifera indica	Native mango	Uncommon	Least concern
10 Intsia bijuga	Kwila, Iron wood	Uncommon	Threatened
11 Schizomeria serrata	S chizomeria	Uncommon	Least concern
12 Parinari glaberrima	Tita tree	Uncommon	Least concern
13 Heterospathe minor	Heterospathe palm	Uncommon	Least concern
14 Calamus hollrungii	Lawyer cane, Rattan	Common	Least concern
15 Calamus vestitus	Lawyer cane, Rattan	Common	Least concern
16 Calanthe longifolia	Terrestrial Orchid	Rare, Uncommon	Vulnerable
17 Celtis philippinensis	Celtis	Uncommon	Least concern
18 Sterculia conwentzii	S terculia	Uncommon	Least concern
19 Calophyllum paludosum	Calophyllum	Uncommon	Threatened
20 Areca macrocalyx	Wild Betel Nut	Common	Least concern
21 Alpinia oceanica	Alpinia	Common	Least concern
22 Pterocarpus indicus	Rose wood	Uncommon	Threatened
23 Polyscias guilfoylei	Polyscias	Common	Least concern

Flora Access Roads 3: Lowland forest on ridgetop			
Scientific Names	Common/Vernacular Names	Distribution Status	Protection Status
1Boerlagiodendron novo- guineensis		Common	Least concern
2 Plerandra solomonensis	Plerandra	Common	Least concern
3 Hydriastele macrospadix	Tall Palm	Uncommon	Least concern
4 Cycas seemanii	Cycad	Rare, Uncommon	Vulnerable
5 Heterospathe minor	Palm	Common	Least concern
6 Heterospathe solomonensis	Palm	Uncommon	Least concern
7 Rhopaloblaste elegans	Palm	Uncommon	Least concern
8 Pterocarpus indicus	Rose wood	Uncommon	Threatened
9 Calophyllum peekelli	Calophyllum	Common	Threatened
10 Pometia pinnata	Pometia, Taun	Uncommon	Threatened
11 Kleinhovia hospita	Kleinhovia	Common	Least concern
12 Ficus wassa	Ficus	Common	Least concern
13 Ficus longifolia	Ficus	Common	Least concern
14 Cominsia gigantea	Cominsia	Common	Least concern

Flora Power Plant 1: Lowland forest - secondary and riparian vegetation			
Scientific Names	Common/Vernacular	Distribution Status	Protection
	Names		Status
1 Cananga odorata	Ylang ylang, Cananga	Uncommon	Least concern
		C ommon,	
2 Broussonetia papyrifera	Paper mulberry	Widespread	Least concern
		C ommon,	
3 Samanea saman	Rain tree	Widespread	Least concern
		C ommon,	
4 Merremia peltata	Merremia	Widespread	Least concern
		C ommon,	
5 Mikania micrantha	Mile-a-minute	Widespread	Least concern
		Common,	
6 Pueraria lobata	Legume cover crop	Widespread	Least concern
7 S olanum torvum	Egg plant	Uncommon	Least concern
		C ommon,	
8 Alpinia purpurata	Alpinia, Ginger	Widespread	Least concern
9 Nephrolepis hirsutula	Fish tail fern	Common	Least concern
10 Macaranga tanarius	Macaranga	Common	Least concern
11 Metroxylon salomonense	Sago palm, Sagu	Uncommon	Least concern
12 Areca catechu	Betle nut	Common	Least concern
13 Cocos nucifera	Coconut	Common	Least concern
14 Diplazium esculentum	E dible fern	Uncommon	Least concern
15 Musa sapientum	Banana	Common	Least concern
16 Commelina diffusa	Herb	Uncommon	Least concern
17 Dendrocnide inerme	Poison or Stinging tree	Uncommon	Least concern
18 Cyrtosperma johnstonii	Wlid taro	Uncommon	Least concern
19 Barringtonia procera	C ut nut	Uncommon	Least concern
20 Theobroma cacao	Сосоа	Uncommon	Least concern

Flora Power Plant 2: Lowland forest			
Scientific Names	Common/Vernacular	Distribution Status	Protection
	Names		Status
1 Calophyllum peekelli	Calophyllum	Common	Threatened
2 Pometia pinnata	Pometia, Taun	Common	Threatened
3 Syzygium onesima	Syzygium	Common	Threatened
4 Canarium salomonense	Small Ngali nut,	Uncommon	Threatened
	Canarium		
5 Barringtonia procera	C ut nut	Common	Least concern
6 Licuala lauterbachii	Licuala palm	Common	Least concern
7 Heterospathe minor	Heterospathe palm	Common	Least concern
8 Planchonella firma	Planchonella	Uncommon	Least concern
9 Celtis philippinensis	Celtis	Uncommon	Least concern
10 Elaeocarpus sphaericus	Elaeocarpus	Common	Least concern
11 Macaranga dioica	Macaranga	Common	Least concern
12 Alpinia oceanica	Alpinia, Ginger	Common	Least concern
13 Calamus hollrungii	Lawyer cane, Rattan	Uncommon	Least concern
14 Dysoxylum excelsum	Dysox	Uncommon	Least concern
15 Ficus benjamina	Ficus	Common	Least concern
16 Heterospathe		Common	Least concern
solomonensis	Palm		
17 Vitex cofassus	Vitex, Vasa	Uncommon	Threatened
18 Cryptocarya medicinalis	Cryptocarya	Uncommon	Least concern
19 Ptychosperma		Common	Least concern
salomonense	Ptychosperma palm		
20 Macaranga dioica	Macaranga	Common	Least concern

Flora Power Plant 2: Lowland forest			
Scientific Names	Common/Vernacular	Distribution Status	Protection
	Names		Status
21 Pandanus compressus	Pandanus	Uncommon	Least concern
22 Actinodaphne			
solomonensis	Actinodaphne	Common	Least concern

Flora Reservoir 1: Lowland forest - Secondary regrowths and riparian vegetation			
Scientific Names	CommonNernacular	Distribution Status	Protection
	Names		Status
1 Vitex cofassus	Vitex, Vasa	Uncommon	Threatened
2 Semecarpus forstenii	Semecarpus	Common	Least concern
3 Dysoxylum excelsum	Dysox	Common	Least concern
4 Pometia pinnata	Pometia, Taun	Uncommon	Threatened
5 Drymophloeus salomonense	Drymophloeus	Uncommon	Threatened
6 Areca macrocalyx	Wild betle nut	Common	Least concern
7 Alpinia purpurata	Ginger, Alpinia	Common	Least concern
8 Donax canniformis	Donax	Common	Least concern
9 Cyathocalyx petiolaris	Cyathocalyx	Common	Least concern
10 Cyathea brackenridgei	Cyathea, Tree Fern	Common	Least concern
11 Artocarpus altilis	Bread fruit	Uncommon	Least concern
12 Calophyllum peekelli	Calophyllum	Common	Threatened
13 S chizostachyum	S mall Bamboo	Common	Least concern
tessellatum			
14 Brownlowia argentata	Brownlowia	Common	Least concern
15 Stenochlaena palustris	Climbing Fern	Common	Least concern
16 Planchonella thyrsoidea	Planchonella	Uncommon	Least concern
17 Selaginella rechingeri	Selaginella, Fern Ally	Common	Least concern
18 Macaranga dioica	Macaranga	Common	Least concern
19 Macaranga tanarius	Macaranga	Common	Least concern
20 Calophyllum paludosum	Calophyllum	Uncommon	Least concern
21 Leea indica	Leea	Common	Least concern
22 Euodia elleryana	Euodia	Common	Least concern
23 Elaeocarpus sphaericus	Elaeocarpus	Uncommon	Threatened
24 Syzygium tierneyana	Syzygium	Common	Least concern
25 Heterospathe minor	Heterospathe palm	Common	Least concern
26 Calamus hollrungii	Lawyer cane, Rattan	Uncommon	Least concern
27 Elatostema salomonense	Elatostemon	Common	Least concern
28 Hernandia peltata	Hernandia	Common	Least concern
29 Mucuna elegans	Mucuna	Common	Least concern
30 Flagellaria gigantea	Flagellaria	Common	Least concern
31 Polyscias sp?	Polyscias	Uncommon	Least concern
32 Macaranga similis	Macaranga	Common	Least concern
33 Tapeinochilus	Ginger	Uncommon	Least concern
solomonense Tapeinochilus	_		

Flora Reservoir 2: Lowland forest overlapping secondary vegetation (old garden and village site)			
Scientific Names	Common/Vernacular	Distribution Status	Protection
	Names		Status
		Uncommon,	
1 S pathodea companulata	African Tulip	Introduced	Least concern
2 Ficus longifolia	Ficus	Common	Least concern
3 Semecarpus forstenii	Semecarpus	Common	Least concern
4 Merremia peltata	Merremia	Common	Least concern
5 Artocarpus altilis	Bread fruit	Uncommon	Least concern
6 Ficus chrysochaete	Ficus	Common	Least concern

Flora Reservoir 2: Lowland forest overlapping secondary vegetation (old garden and village site)			
Scientific Names	Common/Vernacular	Distribution Status	Protection
	Names		Status
7 Saurauia purgans	Saurauia	Common	Least concern
8 Areca macrocalyx	Wild betel nut	Common	Least concern
9 Areca catechu	Betel nut	Uncommon	Least concern
10 Ficus copiosa	Ficus	Common	Least concern
11 Alpinia purpurata	Alpinia, Ginger	Common	Least concern
		Uncommon,	
12 Citrus limon	Bush lime	Introduced	Least concern
13 Costus speciosus	Costus, Ginger	Common	Least concern
14 Ficus septica	Ficus	Common	Least concern
		Common,	
15 Broussonetia papyrifera	Paper mulberry	widespread	Least concern
16 Dendrocnide inerme	Poison or Stinging tree	Common	Least concern
17 Pometia pinnata	Pometia, Taun	Common	Threatened
18 Canarium indicum	Ngali nut, Canarium	Uncommon	Threatened
19 Mikania micrantha	Mile-a-minute	Common	Least concern

Flora Reservoir 3: Lowland forest - Secondary regrowths on a very steep slope			
Scientific Names	Common/Vernacular	Distribution Status	Protection
	Names		Status
1 Pometia pinnata	Pometia, Tauna	Common	Threatened
2 Astronidium salomonensis	Astronidium	Uncommon	Least concern
3 Astronidium novae-georgiae	Astronidium	Uncommon	Least concern
4 Cyathea vittata	Tree Fern	Common	Least concern
5 Cyathea brackenridgei	Tree Fern	Common	Least concern
6 Alpinia purpurata	Ginger, Alpinia	Common	Least concern
7 Alpinia oceanica	Ginger, Alpinia	Common	Least concern
8 Rubus moluccanus	Wild Raspberry	Uncommon	Least concern
9 Paraserianthis falcata	Albizia	Uncommon	Threatened
10 Ficus septica	Ficus	Common	Least concern
11 Ficus copiosa	Ficus	Common	Least concern
12 Ficus wassa	Ficus	Common	Least concern
13 Ficus longifolia	Ficus	Common	Least concern
14 Ficus variegata	Ficus	Uncommon	Least concern
15 Macaranga dioica	Macaranga	Common	Least concern
16 Macaranga similis	Macaranga	Common	Least concern
17 Macaranga tanarius	Macaranga	Common	Least concern
18 Macaranga fimbriata	Macaranga	Common	Least concern
19 Terminalia brassii	Brown Terminalia,	Uncommon	Threatened
	S wamp Oak		
20 Alstonia scholaris	Milky Pine	Common	Threatened
21 Calamus hollrungii	Lawyer Cane, Rattan	Common	Least concern
22 Ptychosperma	Native Palm		
salomonense		Uncommon	Least concern

Flora Reservoir 4: Lowland forest - Riparian vegetation			
Scientific Names	Common/Vernacular	Distribution Status	Protection
	Names		Status
1 Paraserianthis falcata	Albizia	Uncommon	Threatened
2 Terminalia brassii	Brown Terminalia,	Uncommon	Threatened
	S wamp Oak		
3 Macaranga dioica	Macaranga	Common	Least concern
4 Macaranga tanarius	Macaranga	Common	Least concern
5 Ficus wassa	Ficus	Common	Least concern
6 Merremia peltata	Merremia	Common	Least concern
7 Alpinia purpurata	Ginger, Alpinia	C ommon	Least concern
8 Cyathea vittata	Tree Fern	C ommon	Least concern
9 Vitex cofassus	Vitex, Vasa	Uncommon	Least concern
10 Hornstedtia lycostoma	Hornstedtia, Sweet	Uncommon	Least concern
	Ginger		
11 Acalypha grandis	Acalypha	Common	Least concern
12 Piper betle	Piper	Common	Least concern
13 Calamus hollrungii	Lawyer Cane, Rattan	Common	Least concern
14 Calamus stipitatus	Lawyer Cane, Rattan	Common	Least concern
15 Saurauia purgans	Saurauia	C ommon	Least concern
16 Euodia solomonensis	Euodia	C ommon	Least concern
17 Pometia pinnata	Pometia, Taun	C ommon	Threatened
18 Trema orientalis	Trema	C ommon	Least concern
19 Dysoxylum excelsum	Dysox	C ommon	Least concern
20 Colocasia esculenta	Wild Taro	Uncommon	Least concern
21 Mikania micrantha	Mile-a-minute	Common	Least concern
22 Nephrolepis biserrata	Fish tail fern	Common	Least concern
23 Nephrolepis hirsutula	Fish tail fern	Common	Least concern

Flora Dam 1: Riparian Vegetation			
Scientific Names	Common/Vernacular Names	Distribution Status	Protection S tatus
1 Tapeinochilus solomonense	Taipeinochilus, Ginger	Uncommon	Least concern
2 Alpinia purpurata	Ginger, Alpinia	Common	Least concern
		Common,	
3 Broussonetia papyrifera	Paper mulberry	widespread	Least concern
4 Ficus longifolia	Ficus, Fig	Common	Least concern
5 Macaranga tanarius	Macaranga	Common	Least concern
6 Artocarpus altilis	Bread fruit	Uncommon	Least concern
7 Pometia pinnata	Pometia, Taun	Common	Threatened
8 Schizostachyum tessellatum	Bamboo	Uncommon	Least concern
9 Heterospathe minor	Palm	Common	Least concern
10 Calamus vestitus	Lawyer cane, Rattan	Uncommon	Least concern
11 Selaginella rechingeri	Selaginella	Common	Least concern
12 Areca macrocalyx	Wild betel nut	Common	Least concern
13 Ficus variegata	Ficus, Fig	Common	Least concern
14 Ficus septica	Ficus, Fig	Common	Least concern
15 Ficus copiosa	Ficus, Fig	Common	Least concern
16 Flagellaria gigantea	Flagellaria	Common	Least concern
17 Elatostema salomonense	Elatostema	Common	Least concern
18 Cyathea vittata	Tree Fern	Common	Least concern
19 Cominsia gigantea	Cominsia	Uncommon	Least concern
20 Ficus chrysochaete	Ficus, Fig	Common	Least concern
21 Paraserianthis falcata	Albizia	Uncommon	Threatened
22 Barringtonia sp?	Wild Cut nut	Uncommon	Least concern
23 Leea indica	Leea	Uncommon	Least concern

Flora Dam 1: Riparian Vegetation			
Scientific Names	CommonNernacular	Distribution Status	Protection
	Names		Status
24 Nastus obtusus	Bamboo	Uncommon	Vulnerable
25 Hornstedtia lycostoma	S weet G inger	Uncommon	Least concern
26 Saurauia purgans	Saurauia	Common	Least concern

Scientific Names	Common/Vernacular	Distribution Status	Protection
	Names		Status
1 Pometia pinnata	Pometia, Taun	Common	Threatened
2 Palaquium firmum	Pencil Cedar	Uncommon	Threatened
3 Calophyllum peekelli	Calophyllum	Uncommon	Threatened
4 Piper wichmanii	Piper	Uncommon	Least concern
5 Cominsia gigantea	Cominsia	Common	Least concern
6 Ficus wassa	Ficus, Fig	Common	Least concern
7 Ficus copiosa	Ficus, Fig	Common	Least concern
8 Ficus longifolia	Ficus, Fig	Common	Least concern
9 Ficus chrysochaete	Ficus, Fig	Common	Least concern
10 Cyathea brackenridgei	Tree Fern	Common	Least concern
11 Alpinia purpurata	Alpinia, Ginger	Common	Least concern
12 Heliconia salomonensis	Heliconia	Uncommon	Least concern
13 Macaranga tanarius	Macaranga	Common	Least concern
14 Dysoxylum excelsum	Dysox	Common	Least concern
15 Dendrocnide inerme	Poison or Stinging	Common	Least concern
16 Elatostema salomonense	Elatostema	Common	Least concern
17 Merremia peltata	Merremia	Common	Least concern
18 Flueggia flexuosa	Flueggia	Uncommon	Least concern
19 Areca macrocalyx	Wild betel nut	Common	Least concern
20 Leea indica	Leea	Uncommon	Least concern
21 Artocarpus altilis	Bread fruit	Common	Least concern
22 Semecarpus forstenii	Semecarpus	Common	Least concern
23 Ficus variegata	Ficus, Fig	Common	Least concern
24 Homalomena alba	Homalomena	Common	Least concern

Flora Dam 3: Old Garden Area - Secondary forest			
Scientific Names	Common/Vernacular	Distribution Status	Protection
	Names		Status
1 Broussonetia papyrifera	Paper mulberry	Common, widespread	Least concern
2 Alstonia spectabilis	Alstonia	Common	Least concern
3 Pometia pinnata	Pometia, Taun	Common	Threatened
4 Macaranga dioica	Macaranga	Common	Least concern
5 Musa sapientum	Banana	Common	Least concern
6 Ficus septica	Ficus, Fig	Common	Least concern
7 Ficus wassa	Ficus, Fig	Common	Least concern
8 Ficus copiosa	Ficus, Fig	Common	Least concern
9 Ficus longifolia	Ficus, Fig	Common	Least concern
10 Dioscorea alata		Uncommon	Least concern

Flora Dam 4: Lowland forest and Riparian Vegetation on very steep cliff substrat			
Scientific Names	Common/Vernacular	Distribution Status	Protection
	Names		Status
1 Pometia pinnata	Pometia, Taun	Common	Threatened
2 Artocarpus altilis	Bread Fruit	Common	Least concern
3 Ficus virgata	Ficus, Fig	Common	Least concern
4 Ficus wassa	Ficus, Fig	Common	Least concern
5 R hus taitensis	Rhus	Uncommon	Least concern
6 Trichospermum psilocladum	Trichospermum	Uncommon	Least concern
7 Neonauclea orientalis	Nauclea	Uncommon	Least concern
8 Ficus variegata	Ficus, Fig	Common	Least concern
	Brown Terminalia,		
9 Terminalia brassii	S wamp Oak	Common	Threatened
10 Calamus hollrungii	Lawyer cane, Rattan	Common	Least concern
11 Flagellaria gigantea	Flagellaria	Common	Least concern
12 Hornstedtia lycostoma	S weet G inger	Common	Least concern
13 Areca macrocalyx	Wild betel nut	Common	Least concern
14 Mussaenda cylindrocarpa	Mussaenda	Common	Least concern
15 Heterospathe minor	Palm	Common	Least concern
16 Paraserianthis falcata	Albizia	Common	Least concern
17 Elatostema salomonense	Elatostema	Common	Least concern
18 Selaginella rechingeri	Selaginella	Common	Least concern

Flora Tunnel: Lowland forest - Secondary Vegetation			
Scientific Names	Common/Vernacular	Distribution Status	Protection
	Names		Status
1 Pometia pinnata	Taun, Pometia	Common	Threatened
2 Cananga odorata	Ylang ylang, Cananga	Uncommon	Least concern
3 Artocarpus altilis	Bread fruit	Common	Least concern
4 Premna corymbosa	Premna	Uncommon	Least concern
5 Ficus longifolia	Ficus	Common	Least concern
6 Dysoxylum excelsum	Dysox	Common	Least concern
7 Terminalia sp?	Terminalia	Uncommon	Least concern
8 Calamus stipitatus	Lawyer cane, Rattan	Uncommon	Least concern
9 C yathea vittata	Tree fern	Common	Least concern
10 Areca macrocalyx	Wild betel nut	Common	Least concern
11 Drymophloeus	Drymo Palm		
salomonensis		Uncommon	Least concern
12 S chizostachyum	Bamboo		
tessellatum		Common	Least concern
13 Ficus Chrysochaete	Ficus	Common	Least concern
14 Macaranga tanarius	Macaranga	Common	Least concern

Flora Cliff 1: Uphill forest - Riparian vegetation on Very Steep Cliff Substrate			
Scientific Names	Common/Vernacular	Distribution Status	Protection
	Names		Status
1 Pometia pinnata	Taun, Pometia	Common	Threatened
2 R hus taitensis	Rhus	Common	Least concern
3 Macaranga dioica	Macaranga	Common	Least concern
4 Cyathea vittata	Tree Fern	Common	Least concern
5 Cycas seemanii	Cycad	Uncommon	Vulnerable
6 Timonius timon	Timonius	Common	Least concern
7 Alpinia purpurata	Ginger, Alpinia	Common	Least concern
8 Phragmites karka	Phragmites	Common	Least concern
9 Ptychosperma salomonense	Palm	Common	Least concern

Flora Cliff 1: Uphill forest - Riparian vegetation on Very Steep Cliff Substrate			
Scientific Names	Common/Vernacular	Distribution Status	Protection
	Names		Status
10 Rubus moluccanus	Wild raspberry	Uncommon	Least concern
11 Uncaria appendiculata	S weet R ope	Common	Least concern
12 Pandanus sp?	Pandanus	Uncommon	Threatened
13 Pholidota sp?	Orchid	Uncommon	Vulnerable
14 Spathoglottis plicata	Groung Orchid	Common	Vulnerable
15 Hoya guppyi	Ноуа	Common	Least concern

Flora Cliff 2: Uphill forest - Riparian vegetation on very steep cliff substrate			
Scientific Names	Common/Vernacular	Distribution Status	Protection
	Names		Status
	Brown Terminalia,		
1 Terminalia brassii	Swamp Oak	Common	Threatened
2 Terminalia calamansanai	Yellow Terminalia	Uncommon	Least concern
3 Pometia pinnata	Taun, Pometia	Common	Threatened
4 Ficus variegata	Ficus	Common	Least concern
5 Broussonetia papyrifera	Paper mulberry	Common,	Least concern
		widespread	
6 Khleinhovia hospita	Khleinhovia	Uncommon	Least concern
7 Ficus copiosa	Ficus	Common	Least concern
8 Ficus septica	Ficus	Common	Least concern
9 Ficus wassa	Ficus	Common	Least concern
10 Cyathea brackenridgei	Tree Fern	Common	Least concern
11 Paraserianthis falcata	Albizia	Uncommon	Least concern
12 Calamus hollrungii	Lawyer cane, Rattan	Common	Least concern
13 Calamus stipitatus	Lawyer cane, Rattan	Common	Least concern
14 Merremia peltata	Merremia	Common	Least concern
15 Uncaria appendiculata	S weet rope	Common	Least concern
16 Pterocarpus indicus	Rosewood	Common	Threatened
17 Hornstedtia lycostoma	S weet G inger	Common	Least concern
18 Elaeocarpus sphaericus	Elaeocarpus	Uncommon	Threatened
19 Rhopaloblaste elegans	Palm	Common	Least concern
20 Heterospathe	Palm	Common	Least concern
salomonensis			
21 Dysoxylum excelsum	Dysox	Common	Least concern
22 Macaranga dioica	Macaranga	Common	Least concern
23 Macaranga similis	Macaranga	Common	Least concern
24 Macaranga tanarius	Macaranga	Common	Least concern

Flora Upper Stream 1: Lowland - R iparian vegetation			
Scientific Names	Common/Vernacular	Distribution Status	Protection
	Names		Status
1 Pometia pinnata	Taun, Pometia	Common	Threatened
	Brown Terminalia,		
2 Terminalia brassii	S wamp Oak	Common	Threatened
3 Paraserianthis falcata	Albizia	Common	Least concern
4 Macaranga tanarius	Macaranga	Common	Least concern
5 Cassia alata	Cassia	Uncommon	Least concern
6 Diplazium esculenta	Fern	Common	Least concern
7 Alpinia purpurata	Ginger, Alpinia	Common	Least concern
8 Mussaenda cylindrocarpa	Mussaenda	Common	Least concern
9 Ficus copiosa	Ficus	Common	Least concern
10 Ficus longifolia	Ficus	Common	Least concern
11 Ficus wassa	Ficus	Common	Least concern

Flora Upper Stream 1: Lowland - Riparian vegetation			
Scientific Names	CommonNernacular	Distribution Status	Protection
	Names		Status
12 Crinum asiaticum	Crinum, Lilly	Uncommon	Threatened
13 Pterocarpus indicus	Rosewood	Common	Threatened
14 Calophyllum peekelli	Calophyllum	Common	Threatened

Flora Upper Stream 2: Lowland forest - Riparian vegetation			
Scientific Names	Common/Vernacular	Distribution Status	Protection
	Names		Status
1 Alpinia purpurata	Alpinia, Ginger	Common	Least concern
2 Gymnostoma papuana	Casuarina	Rare, Uncommon	Least concern
3 Paraserianthis falcata	Albizia	Common	Threatened
4 Pometia pinnata	Taun, Pometia	Common	Threatened
5 Vitex cofassus	Vitex, Vasa	Common	Threatened
6 Cyathea brackenridgei	Tree Fern	Common	Least concern
7 Pandanus sp?	Pandanus	Uncommon	Least concern
8 Heliconia solomonensis	Heliconia	Uncommon	Least concern
9 Calophyllum paludosum	Calophyllum	Uncommon	Least concern
10 Calophyllum peekelli	Calophyllum	Common	Threatened
11 Cominsia gigantea	Cominsia	Common	Least concern
12 Alstonia scholaris	Alstonia, Milky Pine	Uncommon	Threatened
13 Flueggia flexuosa	Flueggia	Common	Least concern
14 Costus speciosus	Costus	Common	Least concern
15 Trichospermum	Trichospermum	Common	Least concern
psilocladum			
16 Neonauclea orientalis	Nauclea	Uncommon	Least concern
17 Melastoma affine	Melastoma	Uncommon	Least concern
18 Syzygium onesima	Syzygium	Common	Least concern
19 Areca macrocalyx	Wild Betel nut	Common	Least concern
20 Saurauia purgans	Saurauia	Common	Least concern
21 Medinilla cauliflora	Medinilla	Common	Least concern
22 Selaginella rechingeri	Selaginella	Common	Least concern
23 S chizostachyum	Bamboo		
tessellatum		Common	Least concern
24 Rhus taitensis	Rhus	Common	Least concern
25 Ficus variegata	Ficus	Common	Least concern
26 Ficus chrysochaete	Ficus	Common	Least concern
27 Dendrocnide inerme	Poison or Stinging tree	Common	Least concern
28 Piper wichmanii	Piper	Uncommon	Least concern
29 Euodia elleryana	Euodia	Common	Least concern

Flora Upper Stream 3: Lowland forest - Riparian vegetation			
Scientific Names	Common/Vernacular	Distribution Status	Protection
	Names		Status
1 Terminalia brassii	Brown Terminalia,	Common	Threatened
	S wamp Oak		
2 Calophyllum peekelli	Calophyllum	Common	Threatened
3 Pterocarpus indicus	Rosewood	Common	Threatened
4 Pometia pinnata	Taun, Pometia	Common	Threatened
5 Cyathea brackenridgei	Tree Fern	Common	Least
			concerned
6 C yathea vittata	Tree Fern	Common	Least
			concerned
7 Ficus longifolia	Ficus	Common	Least
			concerned

Flora Upper Stream 3: Lowland forest - Riparian vegetation			
Scientific Names	CommonNernacular	Distribution Status	Protection
	Names		Status
8 Ficus wassa	Ficus	Common	Least
			concerned
9 Paraserianthis falcata	Albizia	Uncommon	Threatened
10 Boerlagiodendron novo-		Common	Least concern
guineensis			
11 Uncaria appendiculata	Uncaria	Common	Least concern
12 Alpinia purpurata	Ginger, Alpinia	Common	Least concern
13 Areca macrocalyx	Wild Betel nut	Common	Least concern
14 Hydriastele macrospadix	Gulubia palm	Uncommon	Least concern
15 Heterospathe minor	Heterospathe	Common	Least concern
16 Rhopaloblaste elegans	Rhopaloblaste	Uncommon	Least concern
17 Homalomena alba	Homalomena	Common	Least concern
18 Dendrocnide inerme	Poison tree	Common	Least concern

Annex 9: Example of field maps

Here insert an example of field map

Annex 10: Regulatory analysis

CONSTITUTION OF SOLOMON ISLANDS

The preamble of the Constitution declares that the natural resources of Solomon Islands are vested in the people and government of the Solomon Islands.[®] This declaration is significant in that it adopts the common law concept where the State owns the natural resources, in particular for example mineral resources, and the perception that natural resources, including water resources are owned by the people. The basic idea is that the natural resources of Solomon Islands (water included) are owned by customary landowners and the Government. Therefore, the customary landowners possess the property rights over their natural resources and accessing that will require their consent.

The right of customary landowners over their land is recognized in the Constitution of S olomon Islands.⁹ The extent of this recognition and protection is argued to be comparable only to that formally given to private property under any Common Law system of land ownership.¹⁰ The concession to the special status of customary tenure is that the alienation or acquisition should be for as short a time as possible to achieve the public purpose being sought.¹¹ The access to resources also means access to land in which the resources is being sought, in the case of the TRHDP accessing the water resources also means accessing the land in which it is located. This means that the TRHDP requires registering the land under the Land and Titles Act. This will require two possibilities of processes to acquire the land. First compulsory land acquisition, which is often used for purposes of national interest, and land acquisition through a land acquisition officer. The option that the TRHDP will take require vigorous consultations which resources customary land resources owners and respecting the rights given to those customary owners under the Solomon Islands Constitution.

AGRICULTURE QUARANTINE ACT 1982

The Agriculture and Quarantine Act 1982 provide for preventing the introduction of disease into S olomon Islands through the importation or landing of animals, plants and other things and preventing the introduction of pests and undesirable plants; for requiring vessels and aircrafts to give notice of their arrival in Solomon Islands; and for connected purposes.¹² This Act grants regulation-making powers to the Minister in respect of the introduction or importation of plants and animals and substances or other material that may be the carrier of plant or animal pests and diseases.¹³ The Act further provides for the appointment of inspectors and defines their powers and prescribed list offences.¹⁴ An Order of the Minister may prohibit or regulate the importation or landing of: (a) animals and animal products; (b) plants; (c) earth; and (d) other things by, or by means of, which it appears to the Minister that any disease or pest might be introduced.¹⁵ The First S chedule sets out the matters which may be dealt with by Order made under this Act.¹⁶

ENVIRONMENT ACT 1998 AND ENVIRONMENT REGULATION 2008

The Environment Act 1998 was passed by parliament in October 1998 and came into force (gazetted) on the 1st of September 2003.¹⁷ Its introduction is to provide a regulatory mechanism to address adverse environment impacts of major economic development projects in the country.

- ¹¹ ibid.
- ¹² Agriculture Quarantien Act 1982 ¹³ ibid.

- ¹⁵ ibid
- ¹⁶ ibid

⁸ Constituion of Solomon Islands

⁹Ibid s112. ¹⁰ ibid.

¹⁴ ibid

¹⁷The Environment Act 1998 (Solomon Islands)

The Act emphasizes upon environmental management and protection, even at the expense of the development project.¹⁸ The Act tries to address this through the application of environmental impact statement (EIS) in order to include environmental considerations as a component of the project.¹⁹ The Act requires that an EIA should be carried out in the project planning stage prior to implementation.²⁰ As a planning and management tool, EIS is very important for decision making processes.²¹

Any large scale development pursuant to the Environment Act is a :prescribed development.²² :Development consent is required by the developer from the Environment and Conservation Division in order for operations to begin. The development consent is the permit given by the Director of the Environment and Conservation Division after a developer submits an ESIA report and is approved. In the context of the TRHDP, once the ESIA is submitted and approved by the Director a development consent will then be issued for the development to occur. In 2008, the Environment and Conservation Division then developed the Environment regulations 2008 which outlines a set of criteria and specific guideline for the development of an EIS and a Public Environment Report (PER).

The Tina Hydropower Development Project is a prescribed development under schedule 2 (section 16) of the Environment Act 1998 and therefore required the formulation of an Environment Impact Statement through the Environment and Social Impact Assessment Process.²³ The EIS is required where a very large-scale development will be undertaken such as TRHDP and a PER for small-scale development such as logging or urban developments.

The scope of the Environment Act and Environment Regulations encompasses a number of processes, procedures and the establishment of an institution to regulate them. The following are the key components of the legislation:

It provides the guiding principles and definition for environment management.²⁴

- Establish the Environment and Conservation as a key institution responsible for managing environmental issues in the country.²⁵
- Sets out the procedures for undertaking and approval of Environment and Social Impact Assessments.²⁶

Develop requirements for robust stakeholder engagement process through public consultation as part of assessment and in the decision making process.²⁷

Requires the formulation of appropriate environment and social safeguards as part of the environment and social impact assessment process (section 31)

Environment monitoring of the development (section 31)

E stablish the E nvironment Advisory C ommittee as the appeal body where the developer or any person may within 30 days of the publication of the Director's decision, appeal against the Director's decision concerning the issuing of development consent.²⁸

FISHERIES ACT 1998

The Fisheries Act 1998 provides the legal basis for a comprehensive and responsive national fisheries management regime.²⁹ It promotes a precautionary approach to fisheries management and encourages the long-term sustainable management of fish stocks.³⁰ It provides that the Minister may make regulations for `carrying into effect the provisions of this Act in particular it focuses on :

- ibid 21 ibid
- ²² Ibid annex 1
- ²³ ibid sec 16
- ²⁴ ibid sec 3
- ²⁵ Ibid sec 5-7 ²⁶ Ibid 15-23
- ²⁰ Ibid 15-23 ²⁷ Ibid sec24
- ²⁸ Ibid sec 13
- ²⁹ Fisheries Act 1998 (Solomon Islands).

¹⁸ Ibid

¹⁹ ibid 20 ibid

³⁰ Ibid s 3-4.

- the licensing, regulation and management of any fishery and the conservation of particular species of fish or other aquatic organisms.³¹ (s59(1)(ii));
- prescribing fisheries management conservation measures, including prescribed mesh size, gear standards, minimum and maximum species sizes, limitation on the amount of fish authorized to be caught by any vessel or person or from any fishery, closed season, closed areas, prohibited methods of fishing or fishing gear and schemes for limiting effort in all or any specified fisheries³² (s59(1)(iv)).

The powers vested to the provincial government under the Act could have implications for the Project. In particular, the provisions where each provincial government is responsible for the proper management and development of the reef, inshore, and freshwater fisheries within its provincial waters.³³ (FA s9). It empowers the province to take the lead on management of resources within reef and inshore waters and in freshwaters.³

The Fisheries Act has no direct specific implications on the Project except with the provincial legislative provision earlier stated. There is a possibility that the fisheries sector could also be involved if compensation measures for the Project, such as development of aquaculture in the reservoir, arises.

FOREST RESOURCES AND TIMBER UTILIZATION ACT 1979

The Forest Resource and Timber Utilization Act 1979 (Cap 40) regulates the timber industry in the country through a license system issued by the Commissioner of Forest.³⁵ There are two types of timbers licenses that can be issued, one is for a milling license and the second one widely used for logging operations is a felling license. The Act made provision for logging operations to occur in customary land through the timber rights hearing process. It commences with an application to the Commissioner of Forest to grant consent to negotiate with the relevant Provincial Government Executive, and the owners of the customary land. If the Commissioner of Forest grants his consent then the Provincial government will organize a timber rights hearing meeting for the purposes of identifying the persons who have rights under customary land and are willing to dispose of their timber rights. A Timber Rights Agreement will then be entered into between the applicant and the persons having rights over the area. The Commissioner of Forest will be advised of the outcome and where a Timber Rights Agreement has been signed, he will issue a felling timber license.

The felling of trees under the act is for the purposes of commercial activity relating to the sale of logs or timber. Whilst the intention of law is not for vegetation removal for construction or other purposes, there is a possibility that a felling license could be required for a large amount of vegetation to be removed. Further consultation will be undertaken with the Ministry of forests if a reasonable amount of vegetation is to be removed during the construction phase of the Project.

³¹ Ibid.s59(1)

³² Ibid s 59(1)(iv)

³³ Ibdi s9

¹⁰ 10 19 ³⁴ Provinces may prepare ordinances regarding a wide range of issues, including: (b) registration or recording of customary fishing rights, their boundaries and the persons or groups of persons entitled under those rights; (c) open or closed seasons for fishing for all or any species of fish or other aquatic organisms in all or any areas of provincial waters based on scientific advice; (d) the closure of areas in which fishing for all or any species of fish or other provide organisms may her ornbihited:

Organisms in an organisms and a procession of the strength of the strength

the ecology of Jack. and regulating the local use of explosives, μουσι... fishing s10,s30(1) ³⁵ Forest Resources and Timber Utilization Act 1979 (Cap 40) (Solomon Islands).

LABOR ACT 1996

The Labor Act 1996 makes provisions for the protection of the workers and their rights during employment. It establishes the office of the commissioner of labor to address all labor related issues. The legislation broadly covers the roles and powers of the office, identifies the commissioner as the administrative body, outline specific guidance on wages and hours of work and minimum wages for all workers in the country.³⁶ The minimum is set by the Minister of commerce from time to time, however minimum amount of time for work and overtime is clearly stated in the law as follows :

(a) the normal weekly hours of any worker shall not exceed forty-five hours;

(b) the normal daily hours of work of any worker in an industrial or agricultural undertaking shall not exceed nine hours;

(c) a worker whose hours of work exceed six hours daily shall be given a break of at least thirty minutes arranged so that the worker does not work continuously for more than five hours;

(d) hours of work and breaks from work shall be so arranged as not to require the worker's presence at the place of work for more than twelve hours daily;

(e) a worker shall be given a weekly rest of at least twenty-four continuous hours, which shall, where practicable, include S undays or other customary rest days; and

(f) no worker shall be required to work on a gazetted public holiday or on more than six days in one week, unless such worker is employed in a service to which the Essential Services Act applies or in an occupation in which work on public holidays or customary rest days is expressly provided for in his contract of service.

It also made provision in the manner in which contracts for employment are made for both nationals and foreign workers. Part VI of the Act provide guidance on the treatment of women and their rights on conditions of employment, maternity leave and their protection from working during unusual hours.³⁷ S ection 39 prohibits women from working at night, with night being defined as the period between 7 o clock in the evening and 6 o clock the next morning.³⁸

Part VII focus on the employment of child and young person to ensure that child labor is restricted. Section 46 states that 'No child under the age of twelve years shall be employed in any capacity whatsoever; Section 47 further state that 'A person under the age of fifteen shall not be employed or work_- (a) in any industrial undertaking, or in any branch thereof, except in employment approved by the Minister; or (b) on any ship:

Part IX outlines the basic conditions for the general care of workers by any employer.³⁹ The Minister under the Act can make special exceptions on the provision of the act on the condition that it does not contravene the purpose and objective of the Act and does not result in abuse or the infringement of the individual workers rights.⁴⁰

³⁶ Labor Act 1996

³⁹ ibd

³⁷ Ibid s 40 ³⁸ Ihid.

⁴⁰ ibid

The employment of foreign (to Solomon Islands) employees on the Project will be subjected to the requirements of the Immigration Act 1987.⁴¹ All entrants who wish to reside and work in the Solomon Islands must have two distinct authorizations; a valid permit that allows them to enter and reside in the S olomon Islands and a work permit that authorizes the holder to undertake employment or business in the Solomon Islands.⁴² The permit to enter and reside in the Solomon Islands is issued by the Ministry of Immigration and is valid for two years.⁴³ At the end of the two year period it can be renewed or extended by applying to the Director of Immigration two months prior to the expiry of the existing permits.⁴⁴The work permit is issued by the Commissioner of Labour as set out in the Labour Act Part V Section 37.45 Anyone wishing to work or operate a business while residing in the in the Solomon Islands must submit an application to the Commissioner of Labour.⁴⁶ Foreign nationals currently working in the Solomon Islands often enter the country on a visitor's permit or a 92B (business) permit and apply for a work permit after they have commenced work.⁴⁷ The practice is to avoid long delays in the process of getting work permits.

The provisions of both the labor act and the immigration act will be important during the construction phase if foreign workers are to be engaged.

LAND AND TITLES ACT

The issue of land is the most challenging in the modern development of Solomon Islands. This is due to the fact that landownership is related to customary practices and communal ownership of land and resources. Land ownership is attributed to tribes, clans and families rather than an individual. Land include vast majority of land, including forests, lagoons and reefs and that the clan or tribe, the chiefs or family heads decide over the deployment and use of the land for the benefit of the clan or community at large. This definition applies to everything on land and for the TRHDP includes the river itself, reservoir and the catchment areas. No person other than a Solomon Islander may hold or enjoy any interest of whatever nature over, or affecting, customary land. A S olomon Islander is defined under the Land and Titles Act as a person born in the Solomon Islands who has two grand-parents who were members of a group, tribe or line indigenous to the Solomon Islands. An exception is made to this rule - s.241 (2), for a person, not being a Solomon Islander, who:

- is or has been married, whether according to current customary usage or otherwise, to a Solomon Islander and who according to current customary usage becomes entitled to acquire or enjoy the interest in question in right of his being or having been so married; or
- acquires or becomes entitled to enjoy such interest by inheritance according to current customary usage.

The Lands and Titles Act provided two alternative mechanisms by which land can be acquired. Under Part V of the Lands and Titles Act, voluntary acquisition under Division 1 or compulsory acquisition under Division 2.

Under Division 1, when a customary owner wishes to transfer or lease his land, this must be done by a transfer or lease it to the national Government (through the Commissioner) or a Provincial Assembly (traditionally in the name of the Premier) and any customary usage prohibiting or restricting such transactions will be disregarded.

⁴³ Ibid. ⁴⁴ Ibid.

⁴⁵ above n 25 ⁴⁶ Ibid.

⁴¹ Immmigration Act 1987

⁴² Ibid.

⁴⁷ Ibid.

Part V Division 2 provides for a compulsory acquisition and compensation process is available in the case of both registered and unregistered land (including customary land). These provisions are subject to section 8 of the Constitution, which permits compulsory acquisition of property for specified public purposes, in particular where (i) the acquisition is necessary or expedient in the interests of town or country planning or for developing or utilizing the property to promote the public benefit, (ii) there is reasonable justification for any hardship caused and (iii) the acquisition is permitted by statute which provides for reasonable compensation and a right of access (direct or on appeal).

The Lands and Titles Act also made provision for preservation orders to be applied to land of 'historic, architectural, traditional, artistic, archaeological, botanical or religious interest, and permits the establishment of nature reserves.

The Tina Hydropower Development Project is located on customary land and therefore is required to adhere to processes under the Lands and Title Act through land acquisition. The most obvious process would be the voluntary land acquisition process. This will be done by undertaking a land identification process as a prelude to the acquisition process.

The current process undertaken by the TRHDP Project office is an internal process developed in consultation with customary landowners of the TRHDP. This process is called Land Identification (Land ID) process. Customary landowners organize themselves through the House Chiefs with respective tribes, clans and families in shorting out ownership and boundaries of the respective lands. The information is compiled by customary landowners after full agreement by all parties and provided to the project office. The TRHDP project office will then use the information to register the land either through land acquisition or compulsory acquisition as described above. The Land ID process is currently in progress and is expected to finish soon.

CUSTOMARY LAND RECORDING ACT

The Customary Land Record Act provides that the decision to apply for registration belongs to customary land holding group. Boundary disputes are to be settled by negotiation and in case no agreement or settlement is reached, the final and conclusive decision belongs to the traditional chiefs and no longer to the members of the Government. However, the determination of the chiefs is still subject to judicial review by the High Court and, on appeal, by the Court of Appeal. This Act is much more based on negotiation with customary land holding groups.

One of the strengths of the Act is that it differentiates between primary and secondary rights. By contrast, a weakness is that it does explain how a commercial investor can deal with landowning groups once they are recorded under the Act. In practice, the Customary Land Record Act has been applied only very rarely since 1994, and the provisions of the Land and Titles Act regarding the registration process remains in effect. Therefore the Project as discussed will require the land registration process under the lands and titles act rather than this particular law. As earlier stated, the house of chiefs are yet to be formally recognised and therefore whilst informal process of recording can occur formal recording will be done under the lands and titles act.

MINES AND MINERALS (AMENDMENT) ACT 2008

The Mines and Minerals (Amendment) Act 2008 provides the statutory framework for the mining sector. Section 2 states that no mining operations shall take place except in accordance with its provisions. Mining is defined as intentionally extracting any mineral which is itself defined as any substance found naturally in the earth except petroleum.⁴⁸ Several types of permits may be granted by the Minister responsible for mines and minerals: reconnaissance permits, prospecting licences, mining leases, alluvial mining, gold dealing and building materials permits.⁴⁹

⁴⁸ Mines and Minerals Act 1996

⁴⁹ Ibid.

The section of the Act most relevant to the Project is for material extraction from the site to be used as building material for the Project construction. Part VIII of the Act states that a permit is required for extraction of building materials.⁵⁰ Only the holder of such a permit may undertake mining or quarrying to obtain building materials. The Mines and Minerals (Amendment) Act 2008 defines building materials as "clay, gravel, sand and stone used for buildings, roads or other construction purposes"⁵¹. The building materials permit is not transferable and royalties must be paid at the prescribed rate per cubic meter for all building materials extracted. However, similar to many of the laws in the S olomon Islands the Minister under Section 69 of the Act can make an exemption to the building materials permit; "building materials for building or road construction for the personal use of the landowner or occupier, or for sale not exceeding a prescribed amount, may be mined without a building materials permit".⁵² The extraction of materials for the TRHDP will require seeking an appropriate permit from the Ministry of mines for quarry development to occur. However, the Minister of mines has powers to make exemption where a national project such as the TRHDP is involved.

NATIONAL PARKS 1954

The Act provides for the creation of national parks in S olomon Islands. The minister responsible at that time was the minister for cultural affairs and parks. The Minister can make a proclamation declaring certain area to be a national Park and purchase or acquire any land for such purpose. The rights of residence in Parks are restricted and there is a ban on hunting (other than fishing), carrying arms and making fires. The Queen Elizabeth II Park near Honiara was declared a National Park in 1965, today it exists in name only as it is highly degraded and squatters have long settled in the Park. The administration of the Act vests with the Minister and Park Rangers. These Park Rangers are appointed by the Minister. Park Rangers are empowered to ensure that national parks are well kept.

This Act would be important is the upper Tina catchment is to be declared a National Park, however it is outdated and lacks provisions to empower customary landowners to make decisions about their resources.

PROTECTED AREAS ACT 2010

The Protected Area Act 2010 is developed with the objective of establishing protected areas to conserve biological diversity.⁵³ To achieve these, the Act provided for the establishment of a Protected Areas Advisory Committee (PAAC) and made provisions for declaration of protected areas by the Minister of Environment from the advice of the Director of environment.⁵⁴ As a means to finance biodiversity protection, the Act established a protected area trust fund to be also managed by the PAAC.⁵

In order for an area to become a protected area (PA), a community or organization will prepare an application to the Director of Environment for their site to be declared as a protected area. The application will need to include a PA management plan and scientific studies to show that the areas is of significance to biological diversity and to the community in terms of natural resources. The application will also include estimated budget for the PA and evidence of agreement by all customary landowners, map showing the boundary and size of the site. The director upon receiving the application will review the application and make recommendation to the Minister if the application have merits and should declared a PA. The basic requirements for considerations by the minister include:

(a) the conservation objectives of the protected area are identified and are in accordance with sound conservation practices;

(b) the boundaries of the area are accurately identified, or otherwise demarcated and surveyed;

55 ibid s 13-15.

⁵⁰ Ibid.

⁵¹Ibid.s 3.

⁵² Ibid s 69.

⁵³ The Protected Are Act 2010 (Solomon Islands) s 3 objectives are; establish a system of protected areas where special measures need to be taken to conserve biological diversity, develop guidelines for selection, establishment and management of protected areas, regulate and management biological resources important for the conservation of biological diversity within or outside protected areas, promote the protection of ecosystems, natural habitats and maintenance of viable population for species in natural surroundings, promote environmentally sound and sustainable development in areas adjacent to protected areas and rehabilitate and restore degraded ecosystems and promote the recovery of threatened species through development for management plans and strategies.
⁵⁴ Ibid s 4-9 s 10-12.

(c) the consent and approval are obtained from persons having rights or interests in the area;

(d) an appropriate conservation, protection or management plan is developed for the area to ensure that the conservation objectives of theprotected area will be achieved.

The Act then focused on the regulating research of biological diversity and bio-prospecting prohibiting biodiversity research unless a permit is issued by PAAC.⁵⁶

The PAAC assumes many powers under this Act. It consists of the chair, a deputy chair, four NGOs representative, four others appointed by Minister of Environment and a secretary.⁵⁷ The Act explicitly states their functions and their powers.⁵⁸ These include appointing management committee for protected areas, overseer the use of the protected area fund, provide technical support for protected areas management and approval of biodiversity research permits.⁵⁹ Although there is a provision for public officers or any person appointed by Minister of Environment to enforce the act as inspectors, the powers of the inspectors are also subject to directions issued by the PAAC.⁶⁰ S ince its inception, no site has been declared as a formal protected area. The PAAC which has the responsibility of overseeing its implementation have not been formally appointed.

The legislation provides the opportunity for the Tina upper catchment area to be under formal protection. This is a process that has to start sooner rather than later as the issues relating to landownership over the catchment may take sometimes to resolve.

PROVINCIAL GOVERNMENT ACT 1997

The Provincial legislative authority derives from a combination of this Act and the accompanying Devolution Orders. The Devolution Orders enable each province to make legislative power over a range of matters of direct relevance to natural resource management and environment.

Power for making ordinances over wildlife and marine resources is also devolved under the Provincial Government Act 1997. "Provincial legislative authority derives from a combination of the Provincial Government Act 1997 (PGA) and the accompanying devolution orders (PGAs33). Regulatory or executive powers derive from valid provincial ordinances or may be delegated to the province under national statutes, devolution orders, or by negotiation between the province and responsible national authority (s31(1)).

The Devolution Orders made in respect of each province give them legislative competence over a range of matters of direct relevance to natural resource management."

The Provincial Government Act 1997 Schedule 3 provides a list of activities for which the provinces have responsibility and have the power to pass ordinances;

Trade and Industry - Local licensing of professions, trades and businesses, local marketing.

Cultural and Environment Matters - Protection of wild creatures, coastal and lagoon shipping,

Agriculture and Fishing - Protection, improvement and maintenance of fresh-water and reef fisheries.

Land and Land Use - Codification and amendment of existing customary law about land. Registration of customary rights in respect of land including customary fishing rights. Physical planning except within a local planning area

Local Matters - Waste disposal

Rivers and Water - Control and use of river waters, pollution of water,

⁵⁶ ibid s16-18.

⁵⁷ ibid s 4. ⁵⁸ ibid s 5 6.

⁵⁹ ibid .

⁶⁰ Ibid s 20.

Corporate or Statutory Bodies - Establishment of corporate or statutory bodies for provincial services including economic activity. (Provincial services include "Conservation of the Environment" and "Fishing").

The Guadalcanal Province Wildlife Management Area Ordinance 1990 (GPWMAO) applies for the protection of wildlife. This ordinance applies to TRHDP to ensure that wildlife impacts are understood. The ESIA will study freshwater wildlife and biodiversity mitigation measures will sufficiently address the requirements of this ordinance. It also states that Management area may be established where the Guadalcanal Provincial Executive decides that an area requires management to protect, maintain, improve, or propagate any species that the area uses as habitat.

Other requirements also include business license during construction and approval for construction permit of buildings under the provincial planning board.

RIVER WATERS ACT 1964

The objectives of the Act are to provide for the control of river waters and for the equitable and beneficial use thereof. The Act however, only applies to rivers that are specifically designated. The Act devolves all ministerial functions to be exercised by the relevant provincial ministers.⁶¹ The inspector's power however remains with the national (central) Government inspectors. The River Waters Act 1964 clearly stated that it is an offence to interfere with a river except in accordance with the terms and conditions of a permit.⁶²

A permit may be granted for the following operations on a river :

"by means of a ditch, drain, channel, pipe or any other means whatsoever, diverts any water from a river;

fells any tree so that it falls into a river or river bed;

in any manner obstructs or interferes with a river or river bed;

builds any bridge, jetty or landing stage over or beside any river;

damages or interferes with the banks of any river; or

contravenes any order made under section 4 of this Act".63 This means that a permit cannot be issued where a river is declared by order as being protected by the minister.

The legislation is applicable to the following rivers Mataniko River, White River, Mbalisuna River, Ngalibiu River, Lungga River and Mamara River. All these rivers are on Guadalcanal and Ngalibiu is downstream of the Tina river.

The law specifically applies to the section of the river called Ngalibiu referred to as the part of the Ngalimbiu River and the land adjoining within the area edged red on Plan number 2034 held in the office of the Commissioner of Lands, Honiara. The maps currently does not exist in the Commissioner of lands office and thus the requirement for a permit will be sought from the Minister for MMERE before constructions works occur.

The process for applying for a permit is by submitting details of the proposed construction and diversion that will occur including maps of the location in which construction will occur. The conditions for issuing of permit include the studies of the current use of the rivers and the potential impact of the river. S ection 7 (2) states that 'In granting any permit under this section the Minister shall have regard to the existing use of water and shall safeguard such existing use of water as far as appears to him to be practicable and consistent with the provisions and purposes of this Act_. A practical application would be to submit the EIS and proposed development plan for a permit to be issued. The law does not provide for timeframe for the permit to be issued.

⁶² Ibid. s 5

⁶³ Ibid.

SAFETY AT WORK ACT 1982

The legislation codifies the duties of employers to their employees and others responsible in ensuring the safety of workers in various work environments. In particular safety of workers in dangerous and risky conditions. It provides for the civil and criminal liability of employers who are negligent to the safety of their workers. Part III of the legislation stipulates very specific duties relating to work environment that is dusty, have fumes, pressures and vacuum systems, machinery, electrical installations, fires and explosions, and other hazardous work environment. Part IV provides for the regulation of these conditions and powers given to the commissioner of labor to regulate working conditions, investigate offences and prosecution where there is breach.

S chedule I, II III and IV of the legislation provide for the duties of employers in terms of safety and outlines the expected standards that should be adhered to.

The legislation has a number of subsidiary legislation focusing on very specific areas as follows:

Code of practice for timber scaffolding $\bar{}$ this section is for timber process and does not apply to the TRHDP.

Code of practice for flammable and combustible liquids

Safety at work first aid provision regulations [–] provides basically states that first aid kit should always be provided for labours on site.

Safety at work pesticide regulations.

TOWN AND COUNTRY PLANNING ACT 1980

The Town and Country Planning Act 1980 provides for the regulation of planning at national and provincial level.⁶⁴ Although it has a national scope, the legislation can only be applied to urban areas. The Act empowered each province to have a town and country planning board.⁶⁵ Their responsibility is to prepare local planning schemes and control development of land within urban areas.⁶⁶ However, the definition of `development_under the legislation excludes agricultural activities, fisheries and forestry.⁶⁷ The Board members are appointed by the Minister⁶⁸ in accordance with the advice of the Provincial Executive. The board is responsible for making decision on certain developments according to local planning schemes for each provincial urban development. The board has no jurisdiction over customary land which is a significant limitation.⁶⁹

In the case of TRHDP, which is located on a customary land, this particular legislation does not apply. Although this could change if the site is to be declared as part of a local planning scheme for urban development.

WILD BIRDS PROTECTION 1914

This Act is repealed by the WildLife Protection and Management Act (Cap 10 of 1998).

WILDLIFE PROTECTION AND MANAGEMENT ACT 1998

The preamble to The Wildlife Protection and Management Act 1998 states that it is "An act to provide for the protection, conservation and management of wildlife in S olomon Islands by regulating the export and import of certain animals and plants; to comply with the obligations imposed upon S olomon Islands under the Convention on International Trade in Endangered S pecies of Wild Fauna and Flora and for other matters connected therewith or incidental thereto".⁷⁰

 $^{^{64}}$ The Town and Country Planning Act 1979 (Solomon Islands).

⁶⁵ Ibid.

⁶⁶ ibid.

⁶⁷ Ibid.

⁶⁸ The Act refers to the Minister charged with the responsibility for town and country planning. The relevant minister is the Minister of Finance, National Reform and Planning.

⁷⁰The Wildlife Protection and Management Act 1998 (Solomon Islands)

The object of the Act is to regulate the international trade in the country's wildlife resources including birds, reptiles, amphibians, mammals, insects, plants and marine organisms. In order for anyone to be involved in the wildlife trade that individual or organization needs to have an 'approved management programme_and have its name entered into a specific 'register.⁷¹ In regulating the export or import of plant or animal specimen, the Act prohibits any export or import of plant or animal specimen without the relevant permit. The procedure for application for a permit is set out in the Act. The export of live animals from S olomon Islands is also dealt with in the Act and a separate permit is required. The Director has the discretion to permit the export or import of specimen that is prohibited under the Act in exceptional circumstances. S chedule I lists the species that are prohibited to exports, S chedule II lists the regulated and controlled species for which a valid permit to export such specimen is required.

The legislation also has a list of protected species that will require attention if they or their habitat are at risk. These species are identified by the flora and fauna baseline sections.

ENVIRONMENTAL HEALTH ACT 1980

The Minister of Health is responsible for the administration of the environmental health services. The Minister may delegate this administration to the Provincial Government and the Honiara City Council that are designated as Enforcement Authority. There is provision in the Act that if the Enforcement Authorities do not perform their duties under the Act, then the Minister can arrange to have their functions carried out by others, and require the Enforcement Authority to reimburse the Ministry for the cost of doing so. The Enforcement Authority is given power to make its own by-laws under the Act to facilitate the efficient operation of environmental health services. The Enforcement Authority is required by the Act to carry out a program of health education and publicity in accordance with directions given by the Minister.

Environmental Health (Public Health Act 1970) Regulations

The Public Health Act, (No 2 of 1970) was repealed under this regulation. It was contemplated that a new Public Health would be enacted, however this did not happened, resulting in saving some parts of the Act. These regulations consist of Parts III to XII and section 2 of the repealed Act.⁷² These regulations deal with public health issues and how to deal with them when they occur. The regulations empowers the Minister and the Under Secretary of the Ministry of Health and Medical Services to take specific measures to prevent the occurrence of a public health disease or where such decease had already occurred, to take measures to contain and prevent the spread of the disease. The Minister establishes 'local authorities_which are the Executive of the Honiara City Council and the Executive of the Provincial Assemblies, plus any others, which can include Area Councils.

The Minister also establishes public health areas. Any such areas can be exempted from some or all of the provisions of the regulations. The duty of every local authority is:

`to take all lawful, necessary, and, under its special circumstances, reasonably practicable measures for preventing the occurrence or dealing with any outbreak or prevalence of any infectious, communicable or preventable disease, to safeguard and promote the public health and to exercise the powers and perform the duties in respect of the regulations 73

⁷¹ Ibid

⁷² Environment Health Regulations

^{73&}lt;sub>Ibid</sub>.

In the case of the TRHDP, the Guadalcanal provincial health authorities has a duty to take necessary and reasonably practicable measures to enforce the law and request that at all time the Project site be in a clean and sanitary condition. When a local authority or health inspector becomes aware of a nuisance (pollution into environment from business activity or development), a notice to remove the nuisance must be served. There is a set procedure where the owner or person causing the nuisance fails to comply with the notice, the local authority or the health inspector shall cause a complaint relating to such nuisance to be made before a court. The court may by summons require that person to appear before it. The regulations spells out the actions that the court may take including the imposing of penalties and fines on the person that fails to comply with any order of the court. The regulations also deal with offensive trades (offensive trades are defined in the S econd schedule of the regulations). It is an offence for any person to carry on any offensive trade (business activity that results in pollution into the environment) on any premises without the written consent of the local authority and the Health Director.

SOLOMON ELECTRICITY ACT

The Electricity Act was initially established 1969, and amended several times up to 1988. It establishes the Solomon Islands Electricity Authority ("SIEA") and sets out the overall rules regarding power production and supply. The Electricity Act is a very basic piece of legislation, which does not address issues relating to the power sector in any detail. The main subsidiary legislation on the matter has been drawn up by the Ministry in charge of the sector (currently the MMERE) and is as follows (in descending order of relevance for the Project):

Electricity (Tariff) Regulations;

Electricity (Tariff) (Amendment) Regulation 1999;

Electricity (Tariff) (Automatic Fuel Price Adjustment) Regulations;

Electricity Regulations (Amendment) Regulation 1997;

Electricity (Exemptions) Order.

The SIEA is generally in charge of all matters related to electricity production and transmission/distribution in the Solomon Islands, including ensuring standards of safety, efficiency and economy. It also advises the Government on matters related to electricity and can make recommendations as to regulatory instruments.

The SIEA is set up as a "body corporate", with independent liability and the capacity to independently enter into contracts. The SIEA consists of a Chairman and four members (which together form its Board), as well as a general manager (acting ex officio). The general manager is appointed by the Authority, while the five members of the Board are all appointed by the Minister in charge of the electricity sector in the Government (the "Minister").

The definitions section of the Electricity Act distinguishes between "private" and "public" electrical installations, as follows:

- "private installation" means an installation operated by a licencee or owner solely for the supply of electricity to and use thereof on the licencee's or owner's own property or premises; or, in the case of a consumer taking electricity from a public installation for use only on the property or premises of the licencee or owner;
- "public installation" means an installation operated by a licencee for the supply of electricity to any person other than the licencee: provided that the licencee may use electricity for his own purposes where such use is consistent with the terms of the licence.

The Electricity Act sets out in very wide terms the functions and duties of the SIEA in this domain, as follows:

(a) to manage and work any electrical installations transferred to the SIEA by the Government and other installations and apparatus acquired by the SIEA (this mainly relates to the transfer to the SIEA of installations existing at the time the SIEA was established);

(b) to establish, manage and work such electrical installations as the Minister may from time to time require or as the SIEA may from time to time deem it expedient to establish;

(c) to secure the supply of electricity at reasonable prices;

(d) to promote and encourage the generation of electricity with a view to the economic development of S olomon Islands;

(e) to advise the Minister on all matters relating to the generation, transmission, distribution and use of electricity; and

(f) to ensure standards of safety, efficiency and economy in respect of the production, transmission, distribution and use of electricity.

In particular, the Act empowers the SIEA to:

(g) generate, transmit, transform, distribute and sell electricity either in bulk or to individual consumers;

(h) purchase, construct, reconstruct, maintain and operate supply lines, generating stations, transformer stations and all other appropriate stations, buildings and works;

(i) sell, hire or otherwise supply electrical plant and electrical fittings and apparatus, and install, repair, maintain or remove any electrical plant, fittings and apparatus;

(j) acquire any property, real or personal, which the Authority deems necessary or expedient for the purposes of constructing or extending or maintaining any installation or otherwise for carrying out its duties and functions under the provisions of this Act.

GUADALCANAL HISTORIC PLACES ORDINANCE 1985

This Ordinance allows for protection of heritage sites. A heritage place can be declared protected by resolution by the Provincial Assembly. Consent of the representative of landowners is necessary. Prior to an activity, any developer has to undertake a site survey to identify and locate sites of historical, cultural and archeological significance.

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Annex 12: Minutes of Mitigation Workshops

Mitigation Workshop Team

BRLi Team; Eric Deneut, Gerard Fitzgerald, Lawrence Fonoata and Fred Patison TRHDP Team; Fred Conning and Brally J im Tavalia

Meeting and Workshops	Comments, issues , concerns and recommendations	
03/02/2014	Preparatory Meeting ⁻ TRHDP Project Office	
 A general discussion with the project office of option 7c for the scheme. There is a number of discussion on technical issues related core land and its acquisition. Discussion was also held on the environmental flow for the section between the Dam and the power station. There is also a micro-scheme that will be set up for the environmental flow release. The meeting proper proceeded with Eric going through the power point presentations he prepared. The presentation covered a number of major themes as summary to the mitigation matrix. The focus of the discussion is the improve the presentation and its outline. 	 Cultural heritage confidentiality Emphasis on community service and development Benefit sharing mechanism is currently being developed Avoid use of the word royalty Important that people understand the project, the impact and the measures being proposed. 	
4/02/2014, 9AM-12PM	Meeting with Tina Hydro Taskforce and PS's	
 Welcome and introduction by TRHDP Project Manager. Eric Deneut started presentations on the impacts and mitigation 	 Discussions on the environmental flow and further explanation by the project office on the Dam design. Initial discussion on the fisheries above the dam as result of its development and the need for a fish pass. Questions were raised on how Fiji addresses the environmental flow and the fish pass. It is clarified that no such environmental consideration for fish pass has been reflected in the Fiji project ESIA A question was raised on the broader lesson learned from international experience and Asia-pacific region on fish passes. It's being clarified that further studies will be done and reflected in the ESIA report. It is being raised that specific species should be targeted to ensure that there is clear information on the species affected by the development. Clarification was being sought if non-native species of fish will be introduced and if so what kind of species. It is being 	

Meeting and Workshops	Comments, issues , concerns and recommendations
	["] A question was raised if the fishery on the river is of economic scale. It is clarified that this not economical and also not significant for domestic use either.
	A question was raised on the impacts of gravel extraction downstream. It is clarified that no clear information exists on the status of gravel but there won't be any significant impact at least for another 50 years (short term). There is a need for more information on the deposition rate of the gravel for the whole river system.
	[•] A concern was raised on the impact of population increase due to the development. This is in relation to the squatters and settlements. This will be further discussed.
	[¨] A concern was raised on the potential impact on floods during heavy rain falls. This was clarified by the BRL team.
	A concern was raised on the potential for labor camps being created. It is clarified that all external labors will be housed in Honiara and that on site accommodation not an option at this stage.
	^{••} A question was raised on the waste management issues for the project and a landfill site. This will be further explored by BRL.
	Another concern was raised on the health risks from water borne diseases considering the fact that the site is a hot spot for Malaria. This needs to be reflected in the ESIA. It is further stated that the whole of Guadalcanal plains will be affected by the risk of water diseases due to a large body of stagnant water inland.
	[•] A concern was raised on the measures that are put in place as mitigation actions. The mitigation actions recommended needs to get the consent of local communities. The communities also need to be comfortable with the any proposed mitigation actions.
	^{••} The issues of security for the communities from intruders will need to be fully considered in the ESIA.
	[•] A question was raised if the definition of impacts also includes those of the transmission lines.
	A question was raised on who will be responsible financially for the proposed mitigation actions. The important question is whether it is the SIG or the project investor. This was clarified by the Tina hydro project manager.
	A further clarification was sought if the assessments also include impacts of transmission line development. It's being clarified that the lines are included.
	 A question was asked on the nature of the road access to the project site and current plans are for its development. Clarification was made that discussion are underway on the development of the road access. Further discussions were made on who owns the road, who will meet the cost of its development and also the expected nature of the development.

Meeting and Workshops	Comments, issues , concerns and recommendations	
4/02/2014. 2PM-4PM	 A concern was raised on how the ESIA process is informed by the Land Identification process, the benefit sharing mechanisms and the grievance mechanism. A final comment was made on the need for the work currently being done by the project office to be reflected in the ESIA process. Government officials, NGOs and private sector 	
 Welcome and Introduction of the project by the TRHDP Project Manager. The presentation of impacts and mitigation matrix by Eric 	 A question was raised on the impact of the dam on sediment deposit for downstream agricultural activities. The issue of water temperature is also being raised in relation to impacts on the biota within the river system A question was also raised on dissolved oxygen change 	
Denedu	due to the Dam.	
	investigated especially for biomass decomposition in the reservoir.	
	^{••} The need to have in place the institutional arrangements for the river monitoring regime.	
	A concern was made on the giant African snail and other invasive species. The BRL team stated that this will be dealt with in the report.	
	The issue of giant African snail management after construction is being raised. A question if there is a map of the distribution of the snail.	
	^{••} A question was raised on the rubber plant as an invasive and how the dam construction can exacerbate invasive species.	
	["] It is stated that the Giant African snail is a French delicacy and should be considered as a management option.	
	^{••} The risk of social upheaval in context of a post-conflict situation specific to the site is raised as a concern.	
	A question was raised in relation to issues related to education and its importance. This was being clarified by the TRHDP project manager. A comment was raised on the need for education schemes to be done after a proper assessment is being done.	
	A comment was made on the need for a comprehensive process of empowerment for leadership and also mechanism that facilitate community development activities. In particular the issue of trusteeship needs to be carefully navigated with agreements that will be negotiated and formulated. The cash hand out is an example of a very poor means of benefit.	
	Project office made a clarification that mechanism currently being developed for education as a package of the benefit distribution system.	
	It is further stated that the lessons from the global experience is that, cash hand out do not work and involvement of women in the consultation and engagement processes is critical.	

Meeting and Workshops	Comments, issues , concerns and recommendations
	A question was raised on seismic consideration in the feasibility studies. It is clarified that it is part of the geological studies.
	A comment was made on the need to ensure that grievance mechanism includes local communities in the implementation framework.
	A question was raised If there will be an emergency plan in the case of dam failure. It is clarified this is a standard operation procedure for Dams.
	[•] A question was raised on the issue of social inconvenience usually raised by the project affected communities. This needs to be captured in the ESIA as it will certainly become part of future demands. Further concern was raised on the needs for caution on the kind language being used as well.
	["] A question was raised on the mechanism for cultural heritage and tabu site recording for the ESIA.
	["] Comments that for Gold Ridge, all taboo sites are being recorded and mapped by the national museum. This is something that can be replicated by the TRHDP.
	A question on the percentage of women being consulted out of the 500 people being met. There is a need to rethink of having women as focus group and thus there is a need for change on what issues are being discussed within the context of women's group. It is important that they are being consulted on major key issues as well.
	" Gender is an important issue for the WB and therefore it is important that how they are being consulted is being documented.
	A comment was made on the fact that the project should not be a proxy government - it has to make the government see the need for things to happen.
05/02/2014, 3-6PM	Tina Village [–] Bahomea
Öpening statement and Welcome by Brally from the project office	^o On the issues of alternative water supply there is a need for a committee to be established by the communities and the TRHDP to focus on water related issues.
Eric Deneut introduced the BRL team and started with presentation. Mr. Lawrence F. provided interpretation in pidjin with Mr. Fred P taking the minutes.	" The water will be subject to construction and therefore there is potential for spillage from the heavy machines being used. Thus it is recommended that all villages downstream close to river including Tina village to be relocated to a new site. This new site should have access to clean water supply.
 At the end of the meeting a representative of the Tina and nearby communities presented 10 benefits that should part of any agreement 	 A comment was made on the fact that women are dependent on river for daily subsistence activities. Therefore before any construction start the supply of alternative water sources is a pre-requisite.
negotiated with landowners and communities in the project affected area. The request are as follows;	 A question was raised on the actual timeframe on what exactly will happen for the project and the ESIA studies. A suggestion was made for the Solomon Island Government to establish a police post within the project area to help provide security.

167		

М	eeting and Workshops	Comments, issues , concerns and recommendations
ż	All affected communities to have access to free electricity	" A recommendation was made for the road that will be constructed to be sealed and four layered. This to ensure that it is not the like the roads in Honiara which are easily
ć	Water supply and alternative water sources to be installed before any construction start.	 damaged after heavy rain. On the issues recruitment of local workers, the sugges mitigation to have all recruitment in Honiara is not hell to local workers. Therefore a recruitment office for all k
ż	All access roads including those going to	workers must be established on site.
	communities to be sealed.	A concern was raised on the risk of dam failure and therefore to avoid the risk relocation is best option that should be considered for the community of Tina village.
ć	within the project affected area (not clinic).	" A concern by women is that during the consultations, relocation is an issue that they have raised (option they would support) but was not reflected in the mitigation
ż	Communities near the river including Tina village	measure being proposed.
ż	to be relocated to a new site. Scholarship scheme for	A comment was made requesting that examples of dams that have failed to be presented to the community. This is because they are not convinced the dam will not fail as this
;	all Bahomea communities	["] A recommendation was therefore made that the Dam and
C	established to include current settlers	Safety Panel visit the communities to further explain safety related issues.
ć ;	Rate School to upgraded to Form 1-7 levels	" A recommendation was made that despite of the dam being safe they would like to be relocated to a new site to avoid any form of fear and risk.
C	¿ A transport scheme to be established for land owners and project	^{°°} A request was made for copies of presentation by BRL to be provided.
	anected communities.	["] A request was made for a timetable of when agreements will be signed.
		A question was raised concerning why the landowner's council established is not functioning and not supported by the project office. Further clarification was sought as whether the landowner council will be re-established.
		[¨] A concern was made on the removal of taboo sites as it is culturally insensitive.
		["] The impact on current social structure of communities such as the church, women, youths and children needs to be reflected in the report.
		[•] A concern was raised on the need to do awareness on the impacts of the project on their culture. In particular, it should focus on all the aspects of modernity and foreign cultures.
00.00		A concern was raised on the need to rehabilitate youths who are affected by the recent civil unrest and also those involved in other anti-social behaviors.
06/02/2	014, 9-12 PM	Belaha Relocation School
" We Bra	lcome and Introduction by llyfrom the TRHDP office.	A question was raised on the environmental flow and how it will be managed. The concern is related to fish and the ecology between the dam and the power station.

Meeting and Workshops	Comments, issues , concerns and recommendations	
 The presentation was made by Eric Deneut of BRL with interpretation by Lawrence and minutes taken by Fred Patison. Final Remarks at end of presentation: 	 A comment was made that fish will not actually be depleted but rather adapt and increase in numbers. This will need to be further studied. A comment was made of the need for a full comprehensive study of the cultural heritage sites. This will include their location, description and if they are going to be threatened as result of the development. 	
 A general comment was made concerning the process in which the ESIA is being conducted. In particular where experts who understand the expected impacts and also solutions are continuously asking the community for solutions. The view shared was that the Solomon Islands Government and those participating in the ESIA process provide the environment and social solutions as experts. It is further stated that consideration to communities should focus on economic benefits and livelihood alternatives and for the people of Bahomea it is Cocoa farming. The Government should think seriously about enhancing Cocoa farmers livelihood in the area. It is stressed that education is the key issues for many people on Guadalcanal and that investment and support should focus on community 	 A recommendation for alternative protein sources needs to be provided as an option for the communities. A concern was raise from the previous experience that explosions from dynamite may result in the death of fish in the river. This is in reference to the construction of the Dam and the tunnel. A question was raised whether consideration will also be given to the Belaha communities in terms of employment at the project site. A recommendation was made for consideration to fish farms as an alternative. A question was raised whether the people of Bahomea will have access to free power. 	
06/02/2014, 1-5PM	Malango [–] Mataruka, J ob Varie š Residence	
 Welcome and Introduction by Brally from the TRHDP office. The presentation was made by Eric Deneut of BRL with interpretation by Lawrence and minutes taken by Fred Patison. Final Remarks at end of presentation were made purposely for the project office World Bank Representatives 	 A comment was made that there will be fish in the upstream of the Dam which will survive through adaptations and therefore the fish issues is not necessarily a serious issue. Further explanation was made by the BRL team on the migratory nature of the fish species studied at the river. A comment was made of the need for clear and precise example of the kind of fish pass that will be proposed for the Dam. A concern was raised on the oxygen level in the dam which will affect the biodiversity of the river in the Dam. This will 	

Meeting and Workshops	Comments, issues , concerns and recommendations
 There is considerable concern on the manner in which the project is currently being implemented. The communities of both Bahomea and Malango have established the landowner's council as a representative body for all the tribes within the project affected area. This body although still exist is no longer recognized by the Government and the project office. Instead certain individuals were courted by the project office and excluded the representative of Malango. Whilst it is a fact we will not be directly affected by the project as communities we will be affected as primary landowners as we are members of tribes that are within Bahomea and the project affected area. Our recommendation is that the land owners' council be re- established as the representative body of landowning groups. We are aware of the fact that other groups such as women, youths and settler's needs representation and that will have to be facilitated as well. This should be reflected in the review of the TOR for the LOC before its re-establishment. 	 A concern was raised on the removal of vegetation on the fringes of the lake and those that will be covered by the Dam. How will the mitigation measures address biomass decomposing in the lake which may affect the river systems for the first period of operation? The use of traditional knowledge and practice for the project site including the river needs to be documented and be reflected in the E SIA report. A question was raised in relation to the Monasavu Dam in Fiji. It has been observed that water quality remains very poor despite being operational for more than 20 years. The hydro dam was built in 1982 and the water quality remains very poor. The question is whether this dam will be the same? A question was raised with the people of Choro, Korepa and Senge will be relocated. A comment was made outlining the fact that the people of Bahomea and Malango actually came from same tribes that own land at the project site. Therefore equal involvement must be fully realized in order for the project to proceed successfully. A question was raised whether land acquisition will be made before the development. It is clarified that indeed that will have to occur. There are concerns that road access development also affected and therefore studies must be done to verify this. A concern was raised on ground water contamination from surface development activities. Also of concern is the surface run- off, the impacts on water bodies and other water tributaries. A major issue of concern is the Dam safety and associated risks. The guarantee of communities and landowners being given priority to work during the hydro development is a major concern. The experiences in the past have shown that this has not happen effectively. A woman expressed gratefulness that BRL presented the environment and social impacts of the project. The only concern is the need for alternative water supply to be prov

Meeting and Workshops	Comments, issues, concerns and recommendations
	["] A recommendation was made for a SWAT analysis to be done for all proposed impacts and mitigation measures.
	A recommendation was made that all taboo site destroyed be compensated by the developer or the S olomon Islands Government
08/02/2014, 9-12PM	GPPOL 1 HALL ⁻ Downstream Ngalibiu communities
 Welcome and Introduction by Brally and Fred Conning from the TRHDP office. The presentation was made by Eric Depent of BRL with 	" On the discussion on water quality monitoring and freshwater species studies. The downstream communities are concerned that the data collected is not independent and therefore it would be good if independent consultants representing downstream communities can be engaged.
interpretation by Lawrence and minutes taken by Fred Patison.	There is a need for the Ghaobata house of chief to be consulted in order for them to make their recommendations. In the regard it would be appropriate if a traditional ceremony (Chubu) be organized.
	There is concern that the project office have not been able to facilitate some of the request made by the Ghaobata house of Chiefs.
	A concern was raised on the safety of Dam and if it will stand cyclones and other severe weather conditions. This was clarified by the BRL team and also the project office.
	The downstream communities would like assistance to organize and undertake comprehensive awareness activities on the proposed project.
	A question was raised as whether the alternative water sources recommended would also include downstream communities. It is clarified that this will be part of the benefit sharing mechanism.
	A question was raised on the different fish species that are being studied.
	^{••} A concern was raised if chemicals such as lubricants will be used during operation for the generators.
	There is concern that gravel supply will be affected due to the Dam and also that the quality of gravel will be affected by siltation during construction. This will need further investigations.
	A concern was raised that fisheries will be affected due to the change in environment as result of the development. It is clarified that this has been considered and the option of a fish pass is being explored.
	A comment was made that the concerns of PE holders along the Ngalibiu river needs to be taken independently
	A question was raised on how long it will take for the Dam to be filled after construction.
	^o A request was made for representatives of landowners to attend a study tour of the similar projects.
	One of the concerns raised was the frequent change of PS and Minister within the Government which huge impediment to continuity in addressing outstanding issues.

Meeting and Workshops	Comments, issues , concerns and recommendations
	A recommendation for was made for an `environment bond_ to made in advance to a neutral account. This will only be accessed if there is an environment disaster.
	[•] A question was raised if climate change factors are being considered in the studies of the ESIA.
	[•] A concern was raised by a women representative on the need for alternative water sources to be provided.
	" There are concerns that similar experience with Gold Ridge will occur especially with the SIG not fulfilling their commitments.
	A recommendation was made for a representative body other than the Ghaobata house of Chiefs that represent the interest of women groups, youth and children.
08/02/2014, 1:30pm [–] 5pm	Rate School [–] Bahomea
"Welcome and Introduction by Brally and Fred Conning from	["] A recommendation was made on the need for an eco- tourism initiative to be part of the benefit package.
the TRHDP office. A formal welcome and remarks was made by the Paramount Chief of Bahomea. The presentation was made by Eric Deneut of BRL with interpretation by Lawrence and minutes taken by Fred Patison.	[•] A recommendation was made for the road access not to be acquired by the government or declared as a public road for access. This is to ensure that control of the road is managed by community to reduce any influx of settlers. Instead of declaring the road a public access road, the Bahomea house chief or a governing body should be establish to manage the access road.
	A recommendation was made for a gate to be established at the entrance of the project area and managed by both the company and landowners.
	A comment was made that the biggest threat to the project is the people and communities within the project area. They are the ones that invite settlers and intruders into the community and also are involved in illegal sale of land to those outside of the project area.
	A recommendation was made of the need to involve communities in landuse planning meetings and workshop in anticipation of the hydropower development. This should also involve the house of chiefs.
	The Bohomea house of chief capacity should be enhanced and supported so that they can support the project in planning and development phase.
	["] A recommendation was made that all access roads should sealed.
	A question was raised on the how many species of fish will be affected. A discussion was then made with photo of fish species observed being shown and local names were given to each of the species. Local communities have presented to the ESIA team the species that they would like to continue fishing upstream from the dam, as many villagers go to the upper catchment to fish for traditional events (the `upper catchment sampling area_as presented in the baseline is a fishing spots). Here are the results of communities opinion:

Meeting and Workshops	Comments, issues , concerns and recommendations
	¿ Gobiidae / Sicydiinae = Savutu et Vosu (in local language)
	¿ Eels = Mauvo (in local language)
	¿ Silver fish = Lae or Helu (in local language)
	A concern was raised on the voltage that the transmission line from the power house will carry towards Honiara. Further comments was made on the risk from vehicles accidently hitting the grid post as they are located along the access road. The suggestion was for alternative routes for the transmission lines to reduce the risk of being hit by vehicles and vandalism.
	^{••} A question was raised on how wide the road will be and the potential impact on vegetation. The concern is the impact on medicinal plants and other use plant species.
	["] It was recommended that the value of any medicinal plant and animal species within the road access area should be valued on monetary terms by local experts from the community.
	^{••} A request was made of a clear timeframe be in place for activities that will be undertaken from now until the completion of the Dam. This is to ensure that the communities are prepared and that implementation of the mitigation measures is being monitored.
	[•] A comment was made regarding the need to address the economic issues related to the project. It was clarified that the benefit sharing workshops will also be part of the process.
	[•] A concern was again raised concerning the safety of dam and potential risk it poses.
	[•] A concern was raised on the fact that current laws and regulations for the environment and management of the project are very weak and not being effectively enforced. Therefore there is a need for the enactment of a law that specifically focuses on the Tina Hydro Project. The enactment of the Act would also mean that the hydropower company or government can be held accountable for environment damages. This also means that all negotiations on benefits will be made under the framework of the proposed Act.
	A recommendation was made that all cultural heritage sites be compensated by monetary means if they are being disturbed or removed.

Annex 13 : List of participants to the Mitigation Workshops

Name	Organisation	Title	E mail contact
Fred Conning	TRHDP	Deputy Project Manager	fred.conning@tina-hydro.com
Phil Oreilly	SIEA	CFO	philo@ siea.com.sb
Norman Nicholls	SIEA	GM	norman.nicholls@siea.com.sb
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S cott McNamara	````	First Secretary	scott.mcNamara@dfat.gov.au
Mark F rance	TRHDP	Project Manager	mark.france@tina-hydro.com
Moses Virivolomo	MID	PS	mvirivolomo@gmail.com
Naoko Laka	JICA	Project Formulation Advisor	Laka.Naoko@ jica.go.jp
Paul Roughan	TRDHP Consultant	S afeguards Advisor	paul.roughan@tina-hydro.com
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R obson Hevalao	BRL	Aquatic S pecialist	fighers.hevas@gmail.com
Nester Nalangu	ADB	Admin Assistant	nnalangu.consultant@adb.org
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J erry Manele	MDPAC	PS	psamdpac.gov.sb
Barnabas Vote	MOFT	Policy Analyst	bvote@ mof.gov.sb
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Chris Becha	MHMS	US PHP	obecha@moh.gov.sb
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J ohn Korinihona	MMERE	Director - E nergy	john.korinihona@ yahoo.com
Paula Baleilevuka	ADB	Infrastructure S pecialist	P baleilevuka.consultant@ adb.org
J oel Maweni	World Bank	Operations Advisor	jmaweni@worldbank.org
Knut Opsal	World Bank	Lead Social Dev Spec	kopsal@worldbank.org
Erik J ohnson	World Bank	S enior Operations officer	ejohnsonI@ worldbank.org
Lawrence Foanaota	Freelance Researcher		foanaota.lawrence@gmail.com

Feb 4th2014, Heritage park, Ministries and Task force

Name	Organisation	Title	E mail contact
Gerard Fitzgerald	BRLi	Consultant/ Social	gerard@fitzegerald.co.nz
Eric Deneaut	BRLi	Consultant/Team Leader	
Hon S tephen Panga	Premier	Guadalcanal Province	
Noelyne Biliki	MEHRD	Director Planning	pcm@ mehrd.gov.sb
John Muria Jr	Attorney General š Chamber		jmuria@attorneygeneral.gov.sb
Richard Austin	S olomon Water	CEO	richard.austin@solomonwater.com.sb
J ulian Maka ă	TRHDP	Comms Officer	julian.maka@ tina-hydro.com

Feb 4th 2014, Heritage park, NGOs

Name	Organisation	Title	E mail contact
Philip Manakako	Transparency SI	RCO	pmanakako@gmail.com
Doris Puiahi	Live & Learn Environmental Education	Program Manager	doris.puiahi@livelearn.org
Rosemary Apa	ECD/MECDM	Chief Environment Officer	rosemary.apa@ mecdm.gov.sb
Wendy Boti	ECD/MECDM	E nvironment Officer	wendy.boti@mecm.gov.sb
Debra Potakana	ECD/MECDM	S enior E nvironment Officer	
Paul Roughan	TRHDP	S trategist Advisor	paul.roughan@tina-hydro.com
E dward Danitofea	ECD/MECDM	S enior E nvironmental Officer	edward.danitofea@gmail.com
Isaac Lekelalu	WRD/MMERE	Deputy Director (Water Resource)	I_lekelalu@hotmail.com
Willie Atu	The Nature Conservancy	Program Director	watu@TNC.ORG

176

Knut Opsal	World Bank	Lead Soc. Dev. Spec.	kopsal@worldbank.org
Fred S P	BRL/SES		fred.patison@gmail.com
R uth Liloqula	Gold Ridge Mining		
Deneut Eric	BRLi	Envir. Spec	eric.deneut@brl.fr
J ulian Maka ă	TRHDP	Comms Officer	julian.maka@tina-hydro.com

Feb 6th 2014, Ado

List of	female participants	List of male participants		
1.	Lucia Jorrick	1.	J ohn Batisi	
2.	Anna Cheka	2.	Francis Maesi	
3.	Pile	3.	Thomas Tona	
4.	Anna J aven	4.	Fred Lani	
5.	Vecho	5.	Kuki	
6.	Bere	6.	S imon R	
7.	Ellen	7.	Romando	
8.	Uliana	8.	Kasiano	
9.	Rita	9.	Peter Togovi	
10.	Patricia E	10.	Samuel Sapu	
11.	Salome Otary	11.	J immy P	
12.	J onita	12.	Morris Susa	
13.	Hilda	13.	Devis D	
14.	Odilia	14.	Leonsio	
15.	Monica	15.	Philip Veke	
16.	Sharon	16.	Peter Tanda	
17.	Teresa	17.	Christopher L	
18.	Esther	18.	Paul Bale	
19.	Lydia	19.	George Dick	
20.	S ololia	20.	Cypriano Vola	
21.	Malina	21.	Peter Lale	
22.	Francina	22.	Manuel	
23.	Placinda	23.	J ovino	
		24.	J effery	
		25.	Kerry	
		26.	E ddie	
		27.	R obert T otolo	
		28.	Mark Chuba	
		29.	Grey	
		30.	James	
		31.	Makario Kulo	
		32.	Anorld	
		33.	Grey Bobo	
		34.	Chris Sio	
		35.	Peter Siosi	
		36.	Bartholomew	
		37.	Mevin	

Feb 6th 2014, Mataruka

1 * 4			
List	of female participants	Listo	of male participants
1.	Vuvusi Patson	1.	Mislam S oma
2.	Mede Nesa	2.	l ustus Deni
3.	Emu Amos	3.	Thomas McKenzie
1		1	Herman Pilo
ч . с	Holon Cludo	- 1 .	Corny Macadi
5.	Felen Ciyde	5.	
6.	Eta	6.	Erastus Kokol
7.	Enini Oko	7.	J ethro Omi
8.	Victoria Vare	8.	Clodius rima
9.	Cavu Pilosi	9.	Lauvisu
10.	Anita Riu	10.	Urias Senge
11.	Sepa Toni	11.	Zibu Regeni
12	Vaelvn Timo	12	Lob Vari
13	Sovea Toni	13	lesmel Kesi
17	Sololo Urias	14	Nolson Konulu
14.		14.	
15.	Laga	15.	Ashley Pengua
16.	J and O so	16.	Stephen Chiria
17.	Rita Sae	17.	Gigiano Lou
18.	R en J eremiah	18.	Michael Igi
19.	Noela Gigiano	19.	J otham Kati
20.	Bethy Lack	20.	Genesis Oota
21	Lov Kiseni	21	Timothy Launi
22	Genda Riu	22	Nathaniel Obe
22.	Sandra Obo	22.	Malachi Rubo
25.		25.	
24.		24.	Michael west
25.	Beresia J ame	25.	James Peku
26.	J ocabeth S ammy	26.	Clyde Maeni
27.	Melda S teve	27.	Aaron Hotai
28.	Julan	28.	Brian Lugu
29.	Eileen Andrew	29.	l aphet Racha
30	Pretty Lovo	30	Lohn Adam
31	Mena Palo	31	Geoffrey Mak
22		22	Ziarah Gooffroy
22.	Sopia Lob	22.	Deter Mover
⊃4		22. 24	
34.	Irene Hendry	34.	Isaac Sunara
35.	Elsie Wovick	35.	Isaac Launigo
36.	Elisah Lau	36.	James Taniha
37.	Fancy Liong	37.	J osiah Frank
38.	Aroma Clyde	38.	Paul Branco
39.	Mechol Warick	39.	Kalona
40.	Delilah Oko	40.	William Manila
41	Ridah	41	Willy Taluga
12	Doris Asen	12	Amos Palo
72. 12	Agapha Amusiah	12.	Loromiah Matabasia
45.		45.	
44.	Testin Julas	44.	J uras Lobi
45.	Joan Michael	45.	Patson Kekegolo
46.	Mercy Kila	46.	Mangi Oro
47.	J udith R aes	47.	Philemon Mostyn
48.	Gillian Obe	48.	Dudley Pilo
49.	Grace Teke	49.	Bonny Saini
50	Lanet Oota	50	Hagah Pilo
50.	Charity Adam	51	Norman Amos
51.		51.	Acon Loni
52.		52.	Asen Loni
53.	Prudence Likona	53.	Bredly Sade
		54.	Eliton Sae
		55.	Lloyd Clyde
		56.	Howard
		57.	Wheatley Maeni
		58.	Wigan Palo

List of female participants	List of	f male participants
	59.	Zachariah Mete
	60.	Vicky Toni
	61.	Nicky Moni
	62.	Billy Maesedi
	63.	Gabriel
	64.	Ben Ege
	65.	Obed Ochele
	66.	Steve Gauna
	67.	J ordan Para

Feb 8th 2014, GPPOL community building

List of female and male participants						
1. Margaret Rava	38. Mose Karuku					
2. Frances Bosauni	39. Isaac Gagau					
3. Edlyn Lipa	40. J ohn Nawei					
4. Alifox Ulu	41. Allen Kigota					
5. Baddley Lagatia	42. Leon Thugea					
6. Coelins Sau	43. Samuel Bosawai					
7. Henry Hinui	44. William Utuzia					
8. Alfred Tora	45. Benedict Garimane					
9. Floyed Talu	46. Stephen Oma					
10. Andrew	47. Danny Nunuvia					
11. Fredrick Manengelea	48. Frances Thugea					
12. Miriam Vokia	49. Jacob Vuza					
13. Brandie Tavake	50. Seai Keta					
14. Pete Steve	51. Paul Vogithie					
15. Philip Garimane	52. Dudley Gani					
16. Charles Bunia	53. Philip Gusto					
17. J ohn S alo	54. Timothy Urobo					
18. Patterson Ngelea	55. Stephen Luke					
19. Michael kori	56. J immy Nollas					
20. Pete	57. J ohn Nunuvia					
21. Simon Lumasa	58. J ohn Kulu					
22. Mattew Mole	59. Jude Kekea					
23. Edmondson Tavea	60. Allen Tanasia					
24. Peter Kakava	61. Ben Pilopuso					
25. Daniel Poru	62. Steven Komopper					
26. J ames Tiva	63. J oshua Halu					
27. J ohn S eketala	64. Silas Pirona					
28. Nelson Matai	65. Nicholas Mekai					
29. J ohn Billy	66. Hoe Nanata					
30. James Pogula	67. Martha Bako					
31. Frames Garimane	68. Halida Tabala					
32. Alfred Lova	69. Annie Leana					
33. Selwyn Kulzar	70. Gwyneth Sekani					
34. Joseph Kukale	71. Michael Su8klu					
35. Miriam Kukale	72. Tome Koetevo					
36. John Nemei	73. Charles Kakamo					
37. Erick Ata	74. Nelson Ratu					

Feb 8th 2014, Rate school

List of female and male participants					
1. Denson Dii	16. Alen kula				
2. David Tabea	17. Michael Laosa				
3. Peter Rocky	18. Enoch Mark				

List of female and male participants						
4. Michael Litani	19. Asaraiah Sakeni					
5. Robert Para	20. Rickson (Principal)					
6. Ovea Piuna	21. Kathy Rickson					
7. Gravis Gesi	22. Para Byce					
8. Chuba Garusi	23. Luisa Mada					
9. Josiah Gesi	24. Alick Lua					
10. Qurusu	25. Selly Meki					
11. Gilbert Avoli	26. FRed Tani					
12. Alfred Bua	27. Sam Gasmate					
13. Muni Kau	28. Yanny					
14. Sosimo Kapini	29. Kevin					
15. Dipson Meki	30. Paul Heti					

Annex 14: Summary of community and landowner engagement and communication activities undertaken by the Project Office

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
1	2011: Overall Picture of Tina River Hydro	April	13 th - Women š 1-day workshop	Guadalcanal Women š Resource Centre	34	Benefits from the Hydro must be different from Gold Ridge	Women views on benefits
2		August:	18 th - CLA induction workshop	PO conference room	10	Introduced to the project and what it is	Introduction to work in the communities
3-14		Sept	14 th : 1 st awareness about the project in Bahomea and Malango	19 th : Namopila, 20 th : Verakuji 14 th :Marava 15 th : Tina 15 th : Vuramali Pamphylia Namoraoni 26 th : Mataruka 27 th : Belaha 26 th : Chichinge	35 73 20 33 53 34 50 64 75 55	Informed, updated, educated	Overall picture of the Project [–] history, rationale, ESIA, Benefits, timeline, Processes. Distributed copies of Tina Hydro booklet

REPORT FOR ALL COMMUNITY AND LANDOWNER CONSULTATIONS WITHIN BAHOMEA, MALANGO AND GHAOBATA CARRIED OUT BY THE TINA RIVER HYDRO DEVELOPMENT PROJECT FROM 2011 2016

183

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
15		October	4th ⁻ quick meeting at Marava re drilling at S enge with C harana tribe members	S enge, Koropa, C horo	7	Voiced their views	Community views on the hydro being in their area
16			5 ^{th –} a follow up on the previous updates - C harana	Marava Hall	7	Informed/updated	S ort out details of drilling
17			6/7 ^{th -} Debriefing on major awareness - Charana	Marava Hall	5	Informed/updated	Evaluate the major awareness in Sept for Lessons Learnt
18			10 ^{th –} presented report of awareness to members of the LOC	Flamingo, Honiara Hotel	27	Update LOC members	Give a general idea about the first awareness To see how they feel Option 6e
19			10 ^{th -} Interviews with Senge Community leaders 12 ^{th -} Helicopter flies drilling gear into Senge	Various Homes	7	Get their views on record S tart of drilling works	Asked about their views, where to move to if project was to be established

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
20			21 st : Drunken Roha men disturbed the drilling works	Riverbed drilling	Less than 10	Drilling stopped 2 days	Disagreed about the drilling, claiming they were the owners of the area
21			24 ^{th -} Reconciliation meeting, Roha and Charana	PO	11	S orted out differences in peace	Drilling concerns between tribes reconciled
22		November	21 st : Briefing for G Province Executive	Burns Creek Hall	20+	Informed/updated	1 st briefing for G Province Exec
23			26 th 27 th :2 nd Benefits Workshop 1 st group	Rate Primary/High S chool	132	Communities updated/informed	Get views of all communities on whether or not the project should continue/benefits/carbon credits/benefits from conservation.
24			28 th 29 ^{thL} :2md Benefits Workshop 2 nd group on same presentation	R ate P rimary/High S chool	100+	C ommunities updated/informed	All members signed to say the project should go ahead.
25		December	4 th : Taskforce meeting	Kitano/Menda na	10+	Informed/updated	Briefed them about drilling

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
26			5 -8 th : 2 nd Phase Workshop	Kitano/Menda na	100+	Updated/informe d	Inform landowners/stakeholders about the feasibility studies carried out in Oct/Nov
27	2012: .Extend to Downst	J anuary:	25 th : Meeting with Downstream reps	COM church leaf hut, Ngalimbiu	20+	Updated/educate d	First contact with downstream communities
28	G eotec h S tudies S afegu ards		31 st :1 st awareness for Ghaobata communities	Guadalcanal Plains Plantations Ltd, GPPOL 1 Hall	100+	Communities updated/educate d/aware	General picture of the Hydro Project , History, Location, Pre=feasibility studies, ESIA
	l eam Visit Feasibil ity S tudies						

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
29	SEP/Up dates of progres s	February:	1 st : SEP Consultations	Ado village	25	Discussed/agree d	Updates
30			2 nd : Collected and drew up a list of all tribes in the community	ΡΟ	10	Helpful for references	
31	-		3 rd : conducted awareness at Chichinge about an SEP for the Project	Chichinge	36	Most wanted more regular updates	Allow community put in ideas, if any
32			5 th : Drove J ean Williams into communities for assessment for her report	Bahomea Road	3	S een/collected info	Consultant on Social and Resettlement Framework Plan
33			7 th : Developed list of downstream communities	ΡΟ	10	For records <i>l</i> informati on	

No.	Year	Month	Activity	Venue	No of Participa	Output	Issue discussed
34			12 th : J oint meeting between Ghaobata Hoc and downstream CLAs	Kairos Conference C entre, Hyundai Mall	nts 13	Informed, updated, educated	S ort out misconception that project should also be launched downstream
35			16 th : Induction	Kairos Conf Centre	9	Updated/educate d	Briefing for CLAs on how they would work in their communities
36			19 th :	Valesala	13	Updated, informed	Feasibility2 results; permission for 6e; support for SEP
37	Feasibil ity study		20 th : Updates	Namopila community	40	Updated, informed	Feasibility 2 results; permission for 6e and support for SEP
38	results/ option 6e		21 st : Updates	Antioch	74	Informed/updated	Update was about the results 2 nd Feasibility S tudies; get support for option 6e and views about the S takeholder Engagement Plan
39			22 nd : Updates	Vuramali	80	Informed/updated	Same as above

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
40			23 rd : Updates	Tina	72	Informed/updated	Same as above
41			24 th : Updates	Kairos Conf Centre	13	Discussed/updat ed	Clarified misunderstanding about launching the project downstream
42			27 th : Updates	Mataruka meeting hut	70+		
43			28 th : Updates	Chichinge	45		
44			29 th : Updates	Volovua	80	· · · ·	、、、、
45		March:	8 th : J oint meeting between GHOC <i>I</i> Downstream CLAs	Compass Lounge, Honiara Hotel	13	Issues clarified/understo od	Help chiefs and CLA understand issues and pass them on to their communities afterwards.

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
46			10 th : Malango House of Chiefs Discuss land Id	Grassland	More than 10	Agreed on 7 criterions for land id process	MHOC and BHOC met separately to agree on the 7
47			19 th : Horohotu pilots Focus Group/mapping	Horohotu	9 men, 13 females	E mpowered, learned new way of identifying issues	criterions for primary owners, 4 for land users Trial was held after a three-day training on Focus Group Discussions
48		April	9 th : Updates	Komuporo	100+	Informed/updated	General updates on latest progress of the project
49			19 th : Updates	Antioch	-20	Updated/informe d	Land id, 3 rd feasibility study, ESIA studies, government support continues in classroom project, call for cooperation from communities; focus of awareness in Bahomea; benefit expert to arrive in the year
50		Мау	1 st : 1 st Updates for Katihana village	Katihana village	15	Updated/informe d	Land Id, ESIA, Feasibility studies expected within the month; water supply, road improvement, school support through whole of govt support

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
51			7 th : 1 st update for Namanu S ettlement village	Namanu S chool	30+	``````````````````````````````````````	
52			8 th : update for Namopila	Namopila church	-20	```	
53			9 th : update for New Koleula Settlement	New Koleula village	20+	、	、 、 、
54			23 rd : Meeting with landowners to discuss land concerns	PO	15	Discussed/agree d	A group of LOs led by Chris Tabea visited the office to discuss land ID process
55			25 th : 1 st Benefits Workshop	Flamingo, Honiara Hotel	80+	Discussed/updat ed	General workshop on potential benefits for landowners and landowners given opportunity to indicate their top priorities

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
56			25 th : Land acquisition meeting with downstream CLAs	Papangu village, GPOOL 1	10	Discussed/updat ed	Explained what the issues were, how to go about acquiring for the power lines, who to sign.
57			29 th : Briefing for members of the S olomon Islands C hamber of C ommerce and Industries, C C &I	Kitano/Menda na	100+	Briefed/updated	General info/updates about the project
58		June	5 th : Updates at Marava	Marava Hall	15	Informed/updated	PO to upgrade road from Marava to Managi; WB experts to visit Dam Site ;geological mapping to start in J uly; conduct geotech works in Aug; drilling in Sept
			6 th : Update for Antioch	Extension of Rate space	20+	Informed/updated	
59			10 th : update for Managi	Managi	25	Informed/updated	
			17 th : PO reps meet with Rocky/Litani about BLIC process	Sea King Restaurant	7	Briefed/informed	1 st briefing for PO staff about the progress of the BLIC Process
60 61			25 th : CLA assisted PO reps to map out communities on Google Earth	PO	12	Mapped all communities	The mapping was to help the PO develop an animated tour starting from the Airport to Blackpost going inland to all communities ending up at the dam site

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
62							
63		J uly	30 th : Awareness	Burns Creek Hall		Briefed, updated	General presentation for the executive members of the G Province ⁻ 1 st one
64		August	13 th : updates for Verakuji	Managikiki	More than 20	Updated, aware	Informed about a Safeguards team to visit later in the Month
65			21 st : Safeguards Team visits	Namopila	Less than 30 men, women and children	Discussed, updated, aware	Visit followed teamš flying to proposed dam area then discussions about their trip
66			21st: Safeguards Team Visit	Antioch	40+	Discussed, updated, aware	-
67			21 st : Safeguards Team Visit	Marava	-20	×	
68			21 st : Safeguards Team Visit	Tina	80+	`	`

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
69							
70			22 nd : Safeguards Team Visit	Belaha	70+	`	
71			23 rd : Safeguards Team Visit	Mataruka 1	150+ (C hiefs 28; women 45;		
			23 rd : Safeguards Team Visit	Vuramali	56	· · ·	
72		S eptembe r	4 th : Driller meets Charana	Marava Hall	7	Briefing/update	First consultation about drilling on 6e
73			17 th : Land meeting	Saba village, Ngalibiu	8	Negotiation progressed	Consultation was led by acquisition Officer J erry Tanito
74			20 th : Verakuji updates	Managikiki	73	Updated, aware	Updates on progress of project activities
75			27 th : CLA Training	PO	11	Informed/educate d	Training was on Geospatial * Social mapping using Google earth to map out the different communities of Bahomea and Malango

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No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
76		October	8 TH : Helicopter flies equipment in	Chaunahue	3	S ite ready for drilling	The first day in the geotech studies for option 6e.
77			9 ^{th -} 2 nd visit to see drilling	1 st hole on river bed	10	Started	1 st hole drilled on the riverbed.
78			15 th : another visit to see the drilling	C haunahue riverbed		Drilling progressed	2 nd drill on the river bed; visited and interviewed residents of Senge, Koropa, Choro
79		November	22 nd & 23 rd : LOC Members extended Access Agreement	Kitano/Menda na	27	Discussed/agree d/signed	Discussion on extension to access agreement
80		December	16 th : first workshop on benefits	Flamingo, Honiara	60 (LOC, HOC, elite LOs, Women and youth)	Exchanged ideas on benefits	Discussion of landowner benefits
No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
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8`	2013: Land Id, Land Acquisit ion, Proces s Agreem ent	J anuary	25 th : Updates for Tina Village	Tina meeting venue	30+	Informed/Update d	
82		February	8 th : Taskforce Team members visit	Marava, Managi, Antioch	3	Familiarized/infor med	A familiarization trip
83			21 st : WB(SI) presentation	HP Hotel	30+	Presented/promo ted	PO staff presented about the TRHDP in this one-day workshop hosted by the WB (S) office
84			23 rd : BLIC Meeting	Hilltop	7	Discussed/agree d	BLIC Members agreed they were on a good thing and should continue to the end
85		March	3 rd : Translation workshop for CLAs	Ngongoti	8	E ducated/informe d	This was to equip CLAs to translate difficult terms into the language

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
86			7 th : 3 Taskforce members visited communities	Managi, Antioch	5	Visited/discussed	This was the first such visit by members of the Taskforce (J Muria J r, AG Chambers; S Wale, PS Lands and Acquisition Officer J erry Tanito with PO staff). The team proceeded to Managi and Antioch to meet the communities and discuss the Project.
87			8 th : Ngongoti CLA translation half day workshop	Ngongoti Kindy	10	Trained/empower ed	Workshop to train the CLAs understand how to translate the big English terms used in the constant updates.

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
88							
			19 th : Updates	Antioch			
89			21st: Updates	Mataruka village			

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NO.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
90			21 st : Updates	Mataruka	30	Updated	Quick informal updates: road upgrading. Concentrated on water supply, road upgrades for Bahomea and status of land id process.
91							Informal updates: road upgrade, water supply, status of land id process.
92		April	8 ^{th –} Updates	Komuporo, downstream community	8	Updated	Seek the views of leaders about the need to install a river gauge at the mouth of Ngalimbiu, the downstream part of Tina River
93			22 nd : Updates	Managi	19	Informed/updated	Informal updates: road upgrade, . water supply, status of land Id process
			24 th : Updates	Antioch	19	Informed/updated	Informal updates: road, water supply, status of land id process

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
94							
95			25 th : Updates	Tina	20	Informed/updated	Informal updates about progress; residents expressed worry about the extension of SPL from Gold Ridge. They said they support the project, not Gold Ridge
			30 th : Updates	Vuramali	11	Informed/updated	Quick informal updates about progress/activities
96			30 th : Updates	Marava	26	Informed/updated	Quick informal updates about progress of the project: Road improvement, water supply, status
97							of land Id process update
99		Мау	1 st : Updates	Katihana		Informed/updated	Updates for Katihana villagers who were very happy about the visit and updates.
100							

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
101			7 th : Updates	Areatakiki/Na manu	30+	Informed/updated	Informed settlers from the weather coast of Guadalcanal about the project.
102			8 th : Updates	Namopila	17	Informed/updated	Quick informal updates about progress: road, water supply, status of land id process
			9 th : Updates	New Koleula	55		Discuss project with settlers from the Weather coast of Guadalcanal.
103		J une	6 th : Updates	Antioch village	20+	Informed/updated	Quick updates on progress
			10 th : Updates	Managi village	25+	Informed/updated	Quick updates on progress

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
105		J uly	11 th : updates	Mataruka village	20+	Informed/updated	Members were happy about hydro as it may bring tourism.
106			17 th : updates	Antioch village	15+	Informed/updated	Community members very happy about the updates. They said they were tired of hearing updates [–] they want work.
107			18 th : Updates about ESIA	Mataruka village	20+	Informed/updated	Community happy to hear about the latest updates, looked forward to supporting the ESIA when it comes around their area.
108			24 th : Updates on ESIA	Hotohotu village	20+	Informed/Update d	Community members happy but most important point raised was benefits for the communities; BLIC land Id process. This is another settlement by weather coast people of Guadalcanal.

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
109		August	1 st : Meeting of BLIC chiefs	Hilltop	10	Progressed work	CLO and Communications Officer called in to visit the BLIC team
			7 th : updates	Hilltop	43	Informed/updated	Briefing about the BRL Environment Impact Assessments for leaders of the BLIC process. Pledged to support the project.

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
111			Wed 21 st : BLIC Members Discussions	Doma	12	Brought to Doma/informed/u pdated	Chiefs were brought out of Bahomea to work with the PO and government agencies on the BLIC outcome to enable sensitive land discussions to take place. Met and discussed with J Muria J r of the AG Chambers on 21 st to understand the land acquisition process. Phase 2 discussed in the afternoon after arrival; finalized criterions for primary owners
112							
			Thur 22 nd : BLIC members leave Bahomea	Doma [–] am;		Arrived/settled	Endorsed/agreed on criterions for S ister tribes. C hiefs returned to Bahomea.
113							

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
114			Fri 23 rd : S ister Tribe C riterions	Doma		Discussed/endor sed	
			S at 24 th : BLIC meeting	Doma		Met/discussed/ed ucate	Tribal chiefs aware/informed about the Land Id process and its outcomes
115			Mon 26 th : Outcomes presentations to SIG	PO		Presented/discus sed/agreed	Govt endorsed/agreed on outcomes of the Land Id process, prepared for next stage.
116			28 th : Road inspection	Bahomea road upgrades	2	Visited/seen	Hydrologist and CO driven to check on road upgrading at Bahomea
117			30 th : Benefit Share workshop	Heritage Park Hotel	50+	Informed/updated	Benefit Share discussion by Raul of south America.

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
118	r	2 nd : BLIC updates Chiefs	Guadalcanal Women's Resource Centre beside the Honiara International Airport	20+	Informed/updated	Members of the BLIC process informed/updated tribal chiefs about the land identification process. PO explained about the land acquisition and 50-50 ownership between SIG and core land tribes.	
119			11 th : updates	Chichinge venue	27	Informed/updated	9{ L C⊤ LLOG OG∰ ╤╡∱∿ዄ₲↑Ĵ [LLT⊡ ! дሩ-CQOCATO XII . ⊤ ITr LC↑{ <i>D</i> LL↑
120			12 th : Updates	Mataruka	61	Informed/updated	Ст Ц҈ Сг Фि аिन्-२(↑СБОГ) [ЦПБ ! дሩ-СООСТОТОТОТОТ . т Пт ษ©а{ <i>D</i> Д [↑] т

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
121			17 th : Updates	Ado	70	Updated	全 金 blxtrorのData 和方(T CixoLtr(元 元) blxtrorのData 和方(T CixoLtr(元) cith(1) blxtrorのData 和方(T) cith(1) blxtrorのData 和方(T) blxtrorのData 和(1) blxtrornData
			10 th : updates	Antioch	40	Updated	9{[!
122		October					СтЦ()й ФФ;≕Ҳ∱©об() [ЦПБ!дሩ-Ѿ(ФФ)ХП .тПтЫФ{Д)ЦТ
123			11 th : updates	Marava	17	Updated	
124			21 st : WB team visit	PO		Visited/discussed	Team visited and chatted with the Project Manager
125			23 rd : Updates	Horohotu 2	44	、	

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
126		November	4 th : updates	Rate 1	100+	Informed/updated	#IXI I UUUA≑ixuî↑Ir()DaixixîXFa¶(OLU XIŞ ƏILUA (QUUA)SILA SILA TASA ILA (QUUA)SILA SILA TASA ILA (QUUA)SILA
127			5 th : updates	Rate 2	100+		9{IL ŵ
128			6 th : meeting with Roha tribe reps	Hilltop	-10	· · · ·	.[L⁄{тдт ≐ажыµШто ышоµШе‡ЦгIХ\$*ЖµШо г ≕1ЮгФФ бо ія̂Тҳ́дтţ‡11ХмЪЯЦ1́ті&
129			7 th : meeting with Charana reps	Marava hall	10+	Discussed/updat ed	* *
130			8 th : meeting with Buhu/Garo	Hilltop	-10	Discussed/updat ed	茶 茶
131			11 th : Meeting with core tribes	Ginger Beach, northwest Guadalcanal	19	Discussed/updat ed	₩Ĩℬ⅄⋭ℱⅅ⅄ℿℹℹℿ⅊ⅇ℄℧ŀℰℚⅆℾ
132			14 th : presentation of outcomes of BLIC work to C ore tribes	Kitano Mendana	-10	Discussed/agree d	Presented the details of the findings of BLIC to the potential core tribes

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
133			17 th : Core land tribe meeting	Antioch	-10		
			18 th : Roha Sign Drilling agreement	Kokonat Cafe	4	Agreed/signed Invited/attended	
134			21 st : Ngongoti Kindy closing	Ngongoti Kindy	1		¤₯」/IXI I (江口)(40,000) ↑T i\$T (T 正)TT (70) T h (江111/0) 月後3,000 E I& ↑DA() 月XI I (2001) ⇒ Å00 D = L() ix(1) T I& ↑0) IX(7)T LAD)₀i\$I%(1)LI() I& ↑0) I X+LAT இ
135							

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No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
136			22 nd : Clarification meeting	PO	8	Discussed/agree d	a ττ ΫΔΤΕ 2 LL ^A IXIX ^A IX ^A IX ^A JXE JUXI τ ^A AI&YIXDAL ^I IXEX [®] ½ JIL ^A C ^A D
137			24 th : Drilling started on new dam site	7C dam	10+	Almost a month long work started.	The work was supported by locals at the site
138			25 th : Buhu/Garo signs Process agreement	Volovua village	20+	Discussed/agree d/signed	The members signed after a meeting at Volovua village during which they asked questions and received clarifications from the PO.

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
139			29 th : Land meeting	Parole Board Room	15+	Discussed/agree d	Meeting convened to discuss claims and disputes by Kaipalipali, Koenihao and Roha over the Nala land in the dam site being drilled at the time. Roha agreed to pay money to a family whose relative was buried on the site
140		December	1 st : final briefing for community champions	PO	7	Briefed/updated	Poster with different work streams of the project for community champions to take and update communities with.
			11 th : Drilling on 7c completed	7C	10+	Completed	Drilling completed and drill equipment flown out from site

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
141			12 th : meeting with tribes	Bisivotu Beach	10+	Discussed/briefe d	Roha, Kaipalipali and Koenihao briefed about the BLIC outcome
142			13 th : meeting with additional tribes		4		Kochiabolo, Kaokao, Uluna get same briefing
143			14 th : PM Lilo flew over the dam site, visited Bahomea House of Chiefs in their meeting	7C , Marava,		Seen/discussed/i nformed	Prime Minister GD Lilo Minister Mines, Energy and Rural Electrification and Environment flew to the drilling site to see the work and landed at Marava to meet members of the Bahomea House of C hiefs who were having a meeting.
144	2014: Land Acquisit ion/ESI A consult ations	J anuary	22 nd : Updates for downstream CLAs/champions	Kairos Conf Centre	7	Informed/empow ered	Feasibility Studies /Land Id and ESIA consultations to start in Feb

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
145			23 rd :Updates disturbed	Marava	6	Discussed/agree d	Discussion of BHOC election and role in land ID process
146							
147			24 th : updates	Najilaku (Old Selwyn College)	16	Updated/informe d	Dam site confirmed; underground tunnel; 3.5km down to power house

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
148			25 th : sorted Marava grievances/disturbance , then updates for Tina C ommunity	Marava	20	Reconciled/agree d	Before proceeding for an update at Tina village, the PO team including some Malango chiefs and supporters stopped at Marava and presented a chupu to the chiefs and people of Marava to allow updates at Tina village
150			25 th : Updates	Tin	50+	Updated/informe d	Updates on progress of work : dam site confirmed; underground tunnel; road upgrades
151			27 th : Updates	Horohotu	25	Updated/informe d	Dam site confirmed; underground tunnel to link powerhouse 3.5km downstream; road
					1		

No.	Year	Month	Activity	Venue	No of Participa	Output	Issue discussed
					nts		
			28 th : discussion	PO	nts 3	Discussed/inform ed	Reconciliation between Bahomea House of Chiefs and BLIC.

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
152		February	10 th : Core Land discussion	PO	6	Discussed/updat ed	Meeting between F Conning, J Leua, E Gorapava,
153			11 th : Meeting between E ric, J efferson and D Una	PO	3	Discussed/updat ed	Update meeting for Roha rep on the progress of a cabinet paper;a TOR for the BLIC
154			11 th : Roha senior tribe agree to register Roha				
155		May	14 th : Initial discussion of Process Agreement with Roha	Honiara Hotel Conference Room Jacob Kinai (lawyer from LALS U) with Jen Radford (J R), Jefferson Leua (J L), Eric Garopova (EG) from PO	8 tribal represen tatives (at least one woman)	Amendments to draft Process Agreement	 Process of landowner identification discussed. Each clause of the draft process agreement read out and discussed in pijin. Tribe requested that rain gauge, flow gauge and road sites be treated separately to C ore land. S ome changes requested to draft including: Increase in goodwill payment Exclusion of secondary LO tribes and flow and rain gauge site tribes from agreement
156			15 th : Initial discussion of Process Agreement with Uluna Sutahuri	Honiara Hotel Conference Room	8 tribal represen tatives	Amendments to draft Process Agreement	 Process of landowner identification discussed. E ach clause of the draft process agreement read out and discussed in pijin.

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
				J acob Kinai (lawyer from LALSU) with J en Radford (J R), J efferson Leua (J L), E ric Garopova (E G) from PO			 Some changes requested to the draft. Other clauses supported. Changes requested included: Change in ownership of TCLC from 51/49 to 50/50 Greater clarity on benefit share clause Assistance in compensation distribution ⁻ no good spendim lo quaso
157			16 th : Initial discussion of Process Agreement with Buhu Garo	Honiara Hotel Conference Room Jacob Kinai (lawyer from LALSU) with Jen Radford (JR), Jefferson Leua (JL), Eric Garopova (EG) from PO	6 represen tatives (4 men and 2 women)	Amendments to draft Process Agreement	 Process of landowner identification discussed. Each clause of the draft process agreement read out and discussed in pijin. S ome clauses supported. Changes requested included: Change Garo Buhu to Buhu Garo More time is needed for tribes to consider and negotiate Only 5 tribes are real LOs R oha and Buhu Garo overlap to be resolved F uture payments from agreement should be paid by developer rather than SIG LALSU support is good C orporations will need training or support S econdary LO tribes should not be in clause 13

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
							 ¿ 50/50 rather than 51/49 TCLC share ¿ Need to hold tribal meetings before signing ¿ Increase goodwill payments
158			19 th : Initial discussion of Process Agreement with Vuralingi	Honiara Hotel Conference Room	S mall G roup	Amendments to draft Process Agreement	 E ach clause of the draft process agreement read out and discussed in pijin. S ome changes requested to the draft. Other clauses supported. Increase goodwill payment
159			19 th : Initial discussion of Process Agreement with Charana	Honiara Hotel Conference Room	7 tribal represen tatives including 1 woman	Amendments to draft Process Agreement	 E ach clause of the draft process agreement read out and discussed in pijin. S ome changes requested to the draft. Other clauses supported. T ribe noted that they have only one block of land (Tulahi) and this is the block that would be given up for the project
160			20 th : Initial discussion of Process Agreement with Kochiabolo	Honiara Hotel Conference Room Jacob Kinai (lawyer from LALSU) with J en Radford (J R), J efferson Leua (J L), Eric Garopova (EG) from PO	6-8 tribal represen tatives	Amendments to draft Process Agreement	 Each clause of the draft process agreement read out and discussed in pijin. Some changes requested to the draft. Other clauses supported. 51/49 TCLC shareholding not acceptable Need to finalise tribes before acquisition Increase goodwill payment The number of tribes involved should not be allowed to increase, the three extras

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
							 should come out. Only tribes with proven claims should be included. PS and Ministers should conduct negotiations to show their status Flow gauge land should be treated separately.
161			21st: Initial discussion of Process Agreement with Kaipalipali	Honiara Hotel Conference Room Jacob Kinai (lawyer from LALSU) with Jen Radford (JR), Jefferson Leua (JL), Eric Garopova (EG) from PO	6 tribal represen tatives (and 4 observer s)	Amendments to draft Process Agreement	 Each clause of the draft process agreement read out and discussed in pijin. Some changes requested to the draft. Other clauses supported. Discussions related to the flow gauge land Benefit share needs more detail Trust the BLIC process
162			22 nd : Meeting with Wilson S uharu of Koenihao	Project Office	1	Discussion	Land ID: Evidence and claims for Nala Land discussed
163		J une	3 rd : Meeting with Kochiabolo	Project Office	Tribal Represe ntatives	Discussion	Discussion of Process Agreement terms
164			5 th : Meeting with all Core Land Tribes to discuss Process Agreement	Project Office	15+ Tribal Represe ntatives	Amendments to Draft Process Agreement	 Each clause of the Process Agreement was read through and discussed in pijin. Changes made since last meeting emphasised

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
							 Request from tribes for a royalty payment Agreement for compulsory acquisition to proceed subject to finalising terms of PA
165			12 th : Meeting with the 4 Core Land Tribes to discuss Process Agreement	Project Office	15+ tribal represen tatives	Amendments to Draft Process Agreement	 Each clause of the Process Agreement was read through and discussed in pijin. Changes made since last meeting emphasised Requested a minimum compensation value
166			18 th : Process Agreement and investment/management advice with Roha	Project Office PO and Martin Housanau	6-8 Tribal Represe ntatives	Amendments to Draft Process Agreement and provision of management investment advice	 Martin Housanau discussed development and investment opportunities in other projects incl malaitia. Discussed Process Agreement terms
167			18 th : Process Agreement and investment/management advice with Kochiabolo and Virulingi	Project Office PO and Martin Housanau	Tribal reps and PO	Process Agreement and provision of management investment advice	Discussion of Process Agreement with powerpoint
168			19 th : Process Agreement and investment/management advice with Buhu Garo	Project Office	Tribal reps and PO	Process Agreement	Discussion of Process Agreement with powerpoint
169			19 th (approx.): Process Agreement and Land ID discussion with Vuralingi	Project Office	Tribal Reps	Discussion	Discussed signing Discussed nature of Vuralingi ownership as trust arrangements

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
170			23 rd (approx.): Process Agreement discussion with 4 Core Land Tribes (Viurulingi, Kochiabolo, Buhu Garo and Roha)	Project Office	Tribal Reps	Amendments to Process Agreement Draft	Each clause of the Process Agreement read and discussed in pijin, emphasising amendments made based on previous negotiation
171			25 th : Discussion of Process Agreement and Land ID with Roha	Project Office	Tribal Reps	Discussion	 Discussing land ownership boundaries within the Core Planning full tribe meeting to discuss Process Agreement
172			26 th : Full Roha Tribe meeting to confirm process agreement and land ID	Malango	70-100 including women, youth and men	Agreement to proceed with process agreement	 Power Point discussing terms of the agreement presented Questions and answers Consent of tribe sought to proceed
173			23 ^{rd -} 26 th : Roha Tribal Representatives signing Process Agreement	Project Office	7 Tribal Reps (5 men and 2 women)	Process Agreement signed	
174			23 ^{rd –} 26 th : Virulingi trustees signing Process Agreement	Project Office	4 named trustees and 3 witnesse s (includin g 2 women)	Process Agreement signed	
175			28 th : Buhu Garo full tribe meeting to discuss Process Agreement	Don Bosco (near residence of	40-50 women, men and children		Power Point presentation of process agreement and land boundaries

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
				S ir Paul Tovua)			
176			29 th : Meeting with family and witnesses of Vuralingi trustee to discuss Process Agreement	Residence of Napter Noveti, Bahomea	40-50 men, women and children	C onfirmation of Project Agreement signing and awareness of content and next steps	 Presentation of Power Point discussing terms of agreement Questions and answers Traditional feast
177			30 th : Meeting with Roha Tribal Reps to discuss boundary with Buhu Garo	Project Office	Approx 4	Discussion of internal land boundary location	[Land ID (internal boundary between Roha and Buhu Garo)
178		J uly	2 nd : Signatures to Process Agreement from Kochiabolo Trustees	Project Office	Tribal represen tatives (5 men and 2 women) ⁻ signed over differed dates leadin gup to 2/7	Signed Process Agreement	Kochiabolo Reps signing Process Agreement
179			4 th : meeting between Roha and Buhu/Garo	Don Bosco Technical Institute	50+		Both tribes met to discuss a way forward on claims by Buhu/Garo parts of their land were included in those of Rohaš. Both parties agreed to find their own time to settle the issue and then focused

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
							on when to sign the Process Agreement. After the meeting members of the Roha tribe presented a Chupu (traditional gift) to the chief and members of Buhu/Garo as a mark of respect.
180			9 th (approx.): Buhu/Garo Chief and leader Signed Process Agreement in PMš Residence		PM Gordon Darcy Lilo R esidenc e, Vavaya Ridge	30+	
181			12 th : Updates	GP Womenš Resource Centre, Henderson	30+	Discussed/agree d	Proposed updates for communities of Bahomea disturbed by individuals from Marava. However, many interested members of the community dropped by into the PO to get the updates.
182			14 th : Meeting between R oha and Buhu Garo tribal representatives, elders and story tellers to discuss land boundary	Bisivotu at Poha	25	Land boundary discussed and negotiated	 Old court cases and custom stories discussed Agreement reached on part of boundary
183			22 nd , 23 rd : distributed updates	Various			

No.	Year	Month	Activity	Venue	No of	Output	Issue discussed
					Participa nts		
184		August	18 th : Discussion of compensation claim preparation with Virulingi Tribe	Project Office		Discussion of compensation claim boundaries	 Confirm customary boundaries for claim Tribe confirmed no dispute as to boundary between Kochiabolo and Virulingi.
185			22 nd : Meeting with representatives of the 4 Core Land Tribes to discuss tribal awareness of acquisition process	Project Office		Discussion	 Need for awareness of acquisition and claims process to go down to community level J acob Kinai to assist tribes to prepare compensation claims
186		S eptembe r	9 th : Meeting with all Core Land Tribes (date approx.)	LALS U/Hyund ai Mall	J acob Kinai from LALS U, PO and reps of 4 tribes	Discussion of compensation claim process and legal rights to appeal	 J K explained public purpose quashing appeal option J K explained that he will assist Core Land Tribes to prepare claims but not competing tribes (conflict of interest) Compensation claim process How to prepare compensation claims Right of appeal from COL to High Court
187			25 th : Meeting with representatives for Core Land Tribes to discuss compensation claim preparation	LALSU	J acob Kinai, Chris Tabea, Paul Tovua, J en Radford and J efferson Leua	Discussion	Tribes asked to start preparing claim evidence

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
188		November	3 rd : Meeting with Daniel Una to discuss compensation claim boundary for Roha	Project Office	1	Discussion of claim	Land boundaries (internal)
189			17 th : Meeting between Buhu Garo and Roha to discuss internal boundary	Project Office	13	Internal Boundary Resolution	Settlement discussion
190			20 th : Meeting with Daniel Una of Roha to assist with compensation claim preparation	Project Office	1	Completed claim	Discussion of draft claim and customary evidence
191		December	2 ^{nd -} 9 th : Team of 11 community reps carried out community consultations in Bahomea and Malango on behalf of the PO	2 nd : Namoraoni 3 rd : Kaimomosa 3 rd : Marava 4 th : Pamphylia Mataruka 5 th : Chichinge 6 th : Namopila Managi 8 th : Antioch 8 th : Tina 9 th : Horohotu	30 39 34 25 29 21 27 39 72 42 67	Updated, E ducated of projectš progress	Project still progressing Benefits J S DF support Build confidence and trust for communities
	2015						
	Core Land Tribes	January					

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
	Cooper ative Compa nies						
192		March	30 th : Update of claims process	Project Office	R eps from C ore Land Tribes		 Option for land in place of monetary compensation S trength of partnership C ore Land Tribes confirmed preference for compulsory acquisition process
193		J une	10 th : Discussion with Uluna S utahuri rep re protection of customary lands	Project Office		Discussion of catchment and Protected Area	 Protected areas on customary land need the approval of the tribes Uluna could lead the way to setting up a PA on undisputed land Benefit share discussed and the opportunity to focus it towards a PA
194		J uly	1 st : Meeting with representatives from Kochiabolo, Viurulingi and Buhu Garo (Roha not present). Date Approx.	Project Office		Compensation Officers disucssed	 Valuation of land Plan for transfer of title to joint venture company Confirming timing of offer Legal appeal options discussed
195			29 th : briefing for Tina Hydro Champions	PO	14	Briefed	Livelihood Restoration; Core land Company structure: Community Benefit Share Arrangement; Tribal Registration; PPA; JSDF ⁻ water/sanitation project

No.	Year	Month	Activity	Venue	No of Participa	Output	Issue discussed
196		August	11 th : Meeting with Kochiabolo reps re compensation offers	Project Office	Tribal reps ⁻ 7 men, women reps requeste d but did not attend	Compensation offer discussed	 Terms of offer discussed Land swap not accepted Legal appeal options and timing discussed
197			11 th : Meeting with Roha reps re compensation offers	Project Office	Tribal reps [–] 4 men and 2 women	Compensation offer discussed	 Terms of offer discussed Legal appeal options and timing discussed Land swap not favoured Process Agreement provisions for compensation discussed
198			11 th : Meeting with Buhu Garo reps re compensation offers		Tribal reps [–] women not available due to church camp	Compensation offer discussed	 □ Terms of offer discussed □ Legal appeal options and timing discussed □ Land swap not favoured. Tribe already has abundant land.
199			12 th : Meeting with Vuralingi reps re compensation offers		trustees	Compensation offer discussed	 □ Terms of offer discussed □ Legal appeal options discussed □ Land swap not favoured.

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
200		August	13 th : two S enior WB S ocial Development officer and E nvironment C onsultant visit communities	Manangi, Antioh	-20	Discussed briefly/informed/s een communities	First visit to familiarize themselves with the area and communities
201			13 th : ``` 25 th : Roha meeting	Marava Haimomosa	11		
202							
203			28 th : Meeting with Uluna S utahuri to discuss offer of compensation	Project Office	6-8 male reps	Compensation offer discussed	Update and responses to questions
204		S eptembe r	7 th : Registration of Sarahi Members	Managi	35+	Discussed/registe red	Sarahi now agreed to register all tribe members after Paramount Chief Peter Rocky had refused this earlier
205			9 th : updates for Uluna/S utahuri	Red House, Grassland	80+	Informed/updated	Inform members about their being the 5 th tribe in the C ore Land

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
206		October	8 th : Updates	Marava	20+	Updated/informe d	Inform about the A Developer; Road and asset recording/payments; J S DF
207			7 th : Meeting with Roha rep re co-operative society	Project Office	1	Initial consultation on co-ops	 Overview of co-op ideas Lifetime shareholding/ matrilineal committee for new members/possible spending allocations A manager or administrator is essential. Tribe does not have accountants. Not enough trust for people within the tribe to handle the money. Tribe can handle a milling operation if someone external handles money.
208			9 th : Meeting with Roha Reps for co-op formation consultation	Project Office	4	Consultation on tribal corporation	 Power Point presentation given on the proposed tribal corporation Comments: Rights to land have gone but we now see the benefits Important that people understand the rules/finances/audit guidelines Business is important to the future. But our understanding doesn't go beyond a small canteen. We need to leave money aside to grow this and we need rules that prevent people borrowing or taking money from

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
							the fund. Hard to say no in custom.
209			13 th : updates	Antioch	42	Updated/informe d	Developer; Route, asset record/payments; J S DF
210			14 th : Updates	Zimri Launi House, top floor	18	Informed/updated	· · · ·
211			15 [™] : Updates/Clarifications	Managi	35	Discussed/updat ed	Residents confused about pegs put by surveyors ⁻ anticipated relocation. PO stressed there wouldn t any relocation
212			20 th : updates	Namopila	55	Updated/informe d	Developer/ Route, records, payments; J S DF
213			21 st : Meeting with Kochiabolo Reps for co- op formation consultation	Project Office	4	Consultation on tribal corporation	Power Point presentation given on proposed corporate structure Comments: ⊡ Need an appeal option for any tribal members not on register

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
							 Could leaders have special shares/special provisions Like the idea of a corporation based in custom Directors need to change regularly. Too long and things go wrong A corp will remove the pressure leaders receive from tribal members asking for money. Want this in place before we sign/receive compensation Can't sign to accept offer without support of tribe. When we signed the process agreement our authority came from the tribe. Not from us. This needs to be the same.
214			22 nd : Meeting with Uluna S utahuri R eps for co-op formation consultation	Project Office	6-7	Consultation on tribal corporation	 Power Point presentation given on proposed corporation structure Comments: Core Area Committee had previously agreed to open an account with POB for the money. Tribe previously divided Gold Ridge money as 50% dividends, 40% business, 10% administration costs. 40% for a business is still in the tribes term deposit account.
			27 TH : Updates	Tina	53	Updated/informe d	Developer/ Route, records, payments; J S DF
No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
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215							
216			30 th : Meeting with women of Roha Tribe	Project Office	20 women	Consultation on co-operative society	Power Point presentation given on proposed corporation structure
217		November	3 rd : Updates	Vuramali	28	Updated/informe d	Developer/ Route, records, payments; J S DF
210			10 th : Updates	Horohotu	22	· · ·	
210			14 th : Updates	Marava	18	````	
219			17th: Updates	Horohotu 2	20+		
220							
221			25 th : Meeting with R oha Tribe for co-op workshop	Anglican Church of Melanesia Hall, Honiara	10 male and 10 female represen tatives. Project Office team: FC, BT, LF, J M, J R	C onsultation on C o-ops	Updated Power Point presentation by J R on proposed corporate structure. J ames from GPPOL discussed challenges and successes of the GPPOL LOs corporate business and social benefits entities. S mall group break out activity with 2 groups of women and 2 of men to discuss objectives and outcomes for the corporation. C omments:

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
222		December	2 nd : Meeting with Roha Reps to finalise co-op rules	Project Office	5 men, 2 women	Roha Co- operative Rules agreed and co- operative establishment documents prepared	 Invest for future generations Provide employment opportunities Gender balance and female leadership (from both women and men) Access to higher income Access to a clinic or health facility closer than Honiara Invest in education S tart with small business and build up using current skills Training needed for successful business Consulting with reps on the co- operative rules Discussion re percentage of profits for discretionary cultural requirements as distinct from evenly distributed dividends Women requested a higher percentage of profit to go into evenly distributed dividends. E xternal administrator considered best person to make a final decision on whether to proceed with a business investment
223			4 th : Updates	Grassland	21	Updated/informe d	Developer/ Route, records, payments; J S DF
						1	

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
224	2016: Cooper ative Societie s for Core Landow ners	J anuary	19 th ; Banks meet Roha tribe members	Grassland	100+	Updated/informe d	A first time ever for the ANZ and POB banks to get out to meet communities of Central Guadalcanal where they promoted themselves to the tribe members in readiness for the payment of their individual dividends into their personal accounts.
225			25 th : First Roha Tribe AGM/Id photo session	``````````````````````````````````````	150+	Discussed/ agreed/informed	Tribe members discussed about and elected an executive to lead their Cooperative Society and approved their method of sharing their money. Members also had their id photos taken by the PO team.
226			27 th : Awareness about sharing their dividends and funds/id photo session	`	100+	Discussed/agree d/informed	Members discussed and agreed on sharing of their money from the government. Those yet to get id photos had theirs taken.
227			28 th : Banks and Roha members meet/id photo session		100+	Discussed/agree d	Members listened and chose what bank to register with for their dividends.

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
228		February	3 rd : 1 st Roha Coop Exec Meeting	PO	7	Discussed/agree d	Discussed about accounts, corrected names on the list, review of registration names, bank account and so forth.
229			4 th : Id photo session	Red House	100+	Photographed	Continuation of id photo sessions for individual bank accounts for the Cooperative Society
230			8 th : Uluna/S utahuri exec meeting		11	Discussed/agree d	Discussion about tribal sharing of money from the government for their land
			12 th : Michael Litani explained about land to Uluna/S utahuri members.	Red House	160	Discussed/inform ed/educate	Mr Litani requested this meeting from the PO to explain about the handover of the Barahau Longa land to his mother by Labuchovi.
232							

No.	Year	Month	Activity	Venue	No of Participa	Output	Issue discussed
					nts		
233			16 th : Briefing for Uluna/S tribe members/id photo session	Red House	170	Discussed/updat ed/informed	Tribe members informed of how much money was coming to them from the government, sharing formula and other information about the Coop. Also done photo ids for members for their bank accounts.
234			19 th : Roha Exec meet Administrator	PO	7	Discussed/updat ed	Introductory meeting, constitution, distribution methods etc.
235			23 rd : Banks/ Id photo session for Uluna/S utahuri 26 th : Id P hoto sessions/Banks with Uluna/S utahuri	Red House	100+	Ids photos taken	Continued to take Id photos for Uluna/S utahuri tribe members
236		March	3 rd : Roha AGM	Red House	120+	Discussed/agree d	To allow members approve two new clauses and take 10 non tribe members out of the dividend list.
237			4 th : Roha given Chupu	Kaimomosa village	200+	Witnessed/record ed	Tribes gave and were given chupu to and from the members of the Roha Tribe in readiness for receiving their dividends.

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
238			9 th : Roha Exec Meet	PO	7	Discussed/agree d	Culture Obligation Sharing formulae ANZ outstanding bills Verify final membership list
239			9 th : Roha Special Meeting with Administrator	Morris/S oj conference room			ANZ Arrears on individual members savings discussed. Familiarization with the Administrator by the 7 executive members. Commissioner of Lands was also present to sign and deliver the \$6.973m for distribution.
240		April	5 th : Una Meki Reconcile	Marava village	43	Apologised/recon ciled	D Una provided record of this where Roha and Charana members reconciled on differences over Tulahi land.
241			7 th : Meki and sons apologize	PO	4	Discussed/agree d	Marava leaders to explain their involvement in an incident at Marava in March and offer their apologies and recommendations for a way forward.
242			9 th : Uluna/S utahuri meeting	PO	10+	Discussed/agree d	List of tribal registration Awareness on what co-operation is and how it will administer money for the tribe

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
242							Customary obligation fund. Election of executive committee.
243			10 th : Uluna/S utahuri AGM	Red House	200+	Discussed/agree d/elected	Tribe elected its executive to manage their affairs in their Cooperative Society.
244			12 th : Gender Meeting	Tina Village	20	Updated/informe d	Gender Consultant J en S cott met and discussed about gender issues in the Project
245			20 th : Uluna/S utahuri exec meeting	PO	7	Discussed/agree d	Their preparations to work on their members [°] bank accounts and other matters.
			20 th : Water Survey team	PO	4	Discussed/agree d	Deputy Project Manager Fred Conning met/discussed with two appointed people to head the water project for the Malango/Bahomea communities.

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
247			20 th : Roha Exec committee meeting	PO	7	Discussed/agree d	The meeting was purposely to hear a presentation of a representative of the Value Added Timber Association to help the Roha Executive have a clear idea about how to proceed with their investment in timber milling.
248		Мау	06 th : S pecial Uluna/S utahuri Meeting	Red House	150+	Discussed/agree d	To finalize outstanding issues that needed fixing so members could work on accounts for their money.
			24 th : MID Awareness	Tina village	15+	Informed/updated	Update about 50m road concept design by Cardno of Australia. Team leader was Primo Chapa.
250		J uly	23 rd : Uluna/S utahuri Meeting	Red House			Announcements; Review membership list; Breakdown of Cultural Obligation component

No.	Year	Month	Activity	Venue	No of Participa nts	Output	Issue discussed
251		August	22 nd : update for C ommunity C hampions	ΡΟ	10+	Updated/informe d	To plan out a review of the project could be best displayed; Updated and mentored champions about Benefits for the Community through the J S DF. Preparing them for community consultations about this component that should happen before construction of the dam.
ZJZ			24 th : Community Champions meeting	PO	10+	E mpowered/educ ated	A thorough discussion about the different components of the Benefit S hare to empower the champions equipped for their community consultations later.

Annex 15 : Local community perceptions

PROJECT IMPACT CONCERNS

Each village community surveyed for the SIA raised issues that could require attention. The following table presents the key points for each village community that relate to Option 7C⁷⁴. These were recorded in the participatory workshops and in the follow-up mitigation workshops. [The villages within each community, and the clan affiliations of the households, are listed in the Baseline Report.]

COMMUNITIES	PROJECT CONCERNS
SENGE COMMUNITY (DIA)	Restricted access to fishing, hunting, and gardening areas in project area Decline in fishing in river if reduced flow. Impact on valuable wild plants (e.g. for food, medicine, magic, hunting etc) in project area.
	Cultural sites permanently lost or damaged (tambu pool, sacred streams, grave sites, former habitation sites).
	Construction noise, vibration, etc from construction activities, e.g. tunnelling. Water pollution downstream of the dam construction.
	Possible disruption to culture, customs, and way of life by outside workers. Potential landowner and tribal conflicts over compensation, royalties etc.
	Fear of permanent loss of traditional cultural quiet way of life, income, and health.
PACHUKI COMMUNITY	Noise, dust etc from construction of powerhouse, and access road, especially for Habusi (approx. 500 metres away).
(DSA)	Long term reduction in ability to transport float timber from upstream due to diversion of flow
	Dangers to river users from tailrace flow from the power station.
	construction of dam and nearby powerhouse.
	Anxiety about danger of dam failure/earthquakes, and possible need to relocate.
NAMOPILA COMMUNITY (DSA)	Loss of utility and amenity of the river due to reduced/unreliable river flow ; Long term reduction in ability to float timber from upstream due to diversion of flow, with possible loss of income;
	Loss of fishing holes, and reduced access to hunting & gathering areas in upper catchment
	Loss of clean water supply during construction.
	Few benefits to indigenous owners of the resources (river and land) being exploited by the project.
	Possible cumulative impacts with mining and logging
	owners;
	Family problems arising from increased access to money.
VERAKUJI /MANAGIKIKI COMMUNITY	Physical effects of road development (dust, noise , vibration) and road use Damage or disturbance to homes/buildings adjacent to road from roadworks and road use- may require re-siting of some buildings
(ISA)	Disturbance to gravesites
	Danger to children, pedestrians and local traffic from project transport
	Loss of fishing holes, reduced access to hunting & gathering areas Damage to/loss of food gardens and forest resources from building damsite access
	Possible damage to water supply sources from road building etc

Table 2 Tina catchment communities concerns relating to Option 7C

^{Λδ}¤Dσ ϯ**Ϣ**ϗϝϝ ૨ΊΧͺϔΟΙΙΧ,ϔͺΊΧΧΑΫΤΟ ЦͳʹΫΟσ ΙΧΫΑΤΙΡΟLΙΊΧΙ ΙΧΙΔΙΫΣΙ ΙΧΙΔΙΊΣΟ ЦΙΟ Ц ΠΑΦΙΧΙΙΛΌΤ, ΌΓΕ ΠΗΧ Η ΙΆΦΙΧΙΛΟ Չ 10σ μΙΧΙμτ ΤΙζ 10μΙζ 2τ ΤΤ ĴΙΧ μΟωμ 11ΧΗ ΙΆΦΙΧΙΖΟ ΟμΙζΙ ΓΤΤ ΠΙΧΙΟΥΤΟ Οσ ΤΤ 22

PROJECT CONCERNS
Disturbances to way of life from outsiders.
Reduced amenity of the river due to reduced/unreliable river flow and water quality; Long term reduction in ability to float timber from upstream of the power station, with possible loss of income; Loss of fishing holes, and reduced access to hunting & gathering areas in upper catchment Loss of clean drinking water supply during construction Inappropriate behaviour, social disorder, new diseases, changes in lifestyle and
potential loss of culture and customs if outside workers live in the area.
Loss of utility and amenity of the river due to reduced/unreliable river flow and reduced water quality; Loss of drinking water supply during construction Long term reduction in ability to float milled timber from upstream of the power station Loss of fishing/diving holes Loss of access to fishing, hunting and gathering areas upstream of dam and reduced availability of bush materials Negative impact of outside workers ⁻ disrespect for culture and for women (as seen at Gold Ridge), and reduced personal and home security Potential water pollution from project facilities (sewerage etc) due to presence of outsiders Problems of rubbish disposal and sanitation (ref to Gold Ridge), and possible increased gastrointestinal infections. C ultural inappropriateness of female workers ⁻ clothing (shorts/trousers) Fear of dam failure or overtopping due to earthquake and landslide
Distrust of government re agreements and promises of benefits to local people.
Loss of utility and amenity of the river due to reduced/unreliable river flow and water quality; Long term reduction in ability to float milled timber from upstream of the power station Loss of fishing, hunting & gathering areas upstream of dam Pollution of drinking water supply Loss of forest resources in project area/s Lifestyle change / influence from construction-related outsiders and others Social and behavioural problems associated with outside workers (disrespect to locals and women), Safety of children from project traffic Increased risk to children from river level fluctuations Fear of devastation from dam failure ⁻ with possible need to relocate away from river. Contamination of hunting / fishing areas from oil & chemicals Fear of conflict over compensation and landowners access to project benefits. Physical effects of road development (dust, noise , vibration etc.) and
Negative impact on households of increased road use
Disturbance to local gravesites and tambu areas. Damage or disturbance to homes, facilities, and gardens adjacent to road from roadworks Damage and/or loss of access to fishing, hunting & gathering areas upstream of dam. Reduced fish stocks in river generally Danger from traffic and heavy vehicles on Tina Road Possible damage to water supply streams from road building etc. Social and cultural problems from outside workers, including safety of women and children, increased drugs and alcohol in community etc.,

COMMUNITIES	PROJECT CONCERNS
	Potential social problems among local families arising from increased availability of cash from projected-related employment.
VERA-ANDE COMMUNITY (ISA)	Dust, noise, and fumes from increased road use ⁻ with possible health effects Possible damage to water supply areas and wells from road building and road use Damage or disturbance to homes, facilities, and gardens adjacent to road from roadworks and road use. Possible need to re-site houses back from the road. Danger from traffic and heavy vehicles speeding past villages Disturbances to way of life from outsiders Fear of increased social disorder due to alcohol use.

Table 3 Bahomea Settler and Ghaobata Communities downstream communities concerns relating to

Option 7C

COMMUNITIES	PROJECT CONCERNS
VERAKABIKABI COMMUNITY (ISA)	Physical effects of road development (dust, noise , vibration etc.) and increased road use on local households Potential for damage to gardens areas and a cemetery near road Risk of road accidents involving project vehicles - especially safety of school children Lack of own transport Fear of dam failure General concerns about negative impact on incomes and food security. Need more information on project.
HOROHUTU I (DSA)	Increased noise and dust from traffic/trucks on the road Social problems and bad influences from outsiders coming to the area, and from badly behaved drunk young people and associated disturbance Negative cultural influences from project workers
OLD SELWYN COMMUNITY (DSA)	Loss of utility and amenity of the river due to reduced/unreliable river flow and water quality; Fear of reduction in natural supply of river gravel, and associated loss of income from sales Fear of decrease in ground water levels, especially in dry season Fear of dam failure and its consequences Water pollution from oil and fuel spills Potential conflict with project and government over water ownership, royalties and compensation Lack of inclusion of downstream communities in project planning to date.
RAVU COMMUNITY (DSA)	Water pollution and reduced river flow, especially during construction and during dry season, with negative impact on all river water uses. Fear of reduction in natural supply of river gravel, and associated loss of income from sales Fear of decrease in ground water levels (wells), especially in dry season Water pollution from oil and fuel spills, especially during construction Fear of dam failure and flooding during big cyclone or earthquake. Potential conflict with government and other communities over water ownership, royalties, compensation, and access to project benefits Lack of inclusion of downstream communities in project planning to date.

Table 4 Indigenous Landowners outside Project area concerns relating to Option 7C

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COMMUNITIES	PROJECT CONCERNS			

MATARUKA COMMUNITY	Potential social and cultural problems from outsiders and expats working on the project or others coming attracted to the Bahomea and Malango area. Potential conflicts over ownership rights, royalties, compensation, and access to project benefits, including construction jobs. Loss of fishing spots and access to hunting areas etc in project area Damage to Tenaru River catchment from routing and construction of dam access road Conflicts over land identification and ownership Damage to/loss of cultural sites from construction and storage reservoir
BELAHA	Loss of hunting / fishing areas (at dam site and above) to which they have access
COMMUNITY	rights
	Loss of medicinal and cultural plants in project areas
	Reduced supply of timber from their own lands for building
	Demand on time for consultations and negotiations with developers
	Potential conflicts over compensation and access to project benefits, including construction jobs
	Potential social and cultural problems from outsiders and expats working on the project.
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PROJECT BENEFITS ANTICIPATED BY LOCAL COMMUNITIES

The anticipated or perceived local-level benefits or positive impacts of the TRHDP are presented below. Many of the anticipated benefits derive from (assumed) access and compensation payments, government benefit sharing programmes or projects, and TRHDP-related infrastructure development.

COMMUNITY	PROJECT BENEFITS
SENGE COMMUNITY (DIA)	E lectricity supply and associated benefits to quality of life, and small business opportunities. Protected forest area. Possible employment on the project. More accessible and improved health and educational facilities and services. New business opportunities involving the lake/reservoir (e.g. ecotourism, sightseeing)
PACHUKI COMMUNITY (DSA)	New houses, with road access and water supply (assuming relocation required for Habusi and Pachuki).
NAMOPILA COMMUNITY (DSA)	Income from royalties and compensation, with flow on benefits such as improved housing, consumer goods, and business creation.
VERAKUJI /MANAGIKIKI COMMUNITY (ISA)	Income from royalties and compensation, with flow on benefits. E lectricity supply - with significant improvement in the quality of life e.g. lighting, refrigeration, entertainment, use of home appliances and creation of home industries such as sewing and joinery workshop). Improved road transport and associated access to services.
ANTIOCH COMMUNITY (DSA)	C reation of protected forest area (eliminating risk of mining and/or further logging in the catchment). Local electricity supply and associated opportunities. Improved water supply. Improved roads. Direct and indirect project employment opportunities.
TINA COMMUNITY (DSA)	Direct and indirect employment opportunities on the project for local men and women, with job training. Local electricity supply and associated livelihoods opportunities and improved quality of life

Table 5 Tina Catchment communities views of project benefits

COMMUNITY	PROJECT BENEFITS
	New business opportunities involving the lake/reservoir. More income and investment opportunities from anticipated royalties/rents or other payments from the developer. Improved water supply Improved road and transport services
	government support programmes.
VURAMALI COMMUNITY	Local electricity supply and associated livelihoods opportunities and improved quality of life.
(DSA)	Improvement to water supply.
	Improved roads and transport.
	Improved social and other services and facilities.
MARAVA COMMUNITY	Local electricity supply and associated livelihoods opportunities and improved quality of life.
(ISA)	Direct project and indirect employment and small business opportunities, and associated increased incomes
	Opportunity for job training
	Potentially improved relationship between communities and central government.
VERA-ANDE COMMUNITY	Local electricity supply and associated livelihoods opportunities and improved quality of life
(ISA)	(e.g. water pumping, appliances, electrical equipment, lighting, entertainment). Improved roads and associated better access to public transport, health services, markets etc.
	Employment opportunities and Improved income.
	Government improvement to services and identities.

Table 6 Bhaomea Settler communities and Ghaobata Communities downstream views of project benefits

COMMUNITY	PROJECT BENEFITS
HOROHUTU I (DSA)	Direct and indirect employment opportunities, especially for young people. Improved road and transportation, and associated better access to services. Alternative and better water supply. E lectricity supply. Indirect improvement to standard of living.
VERAKABIKABI COMMUNITY (ISA)	Direct and indirect employment opportunities, and associated improvements in income. Improved roads and transportation and associated better access to services. Alternative and better water supply. E lectricity supply Overall improvement to standard of living and economic circumstances.
OLD SELWYN COMMUNITY (DSA)	Direct and indirect employment opportunities. E lectricity supply re-established. Assistance with improving village water supply or re-establishing reticulated supply improved roads.
RAVU COMMUNITY (DSA)	Possible better flood control for flood-prone R avu area. Electricity supplies (free) and associated improvement in the quality of life. Employment opportunities with possible job training and capacity building. Participation in benefit sharing programmes.

	lable / Indigenous Landowners outside the Project area	
COMMUNITY	PROJECT BENEFITS	
		_
MATARUKA	Improvements to quality of life and standard of living for kinsmen in the Tina catchment	
COMMUNITY	Electricity supply to the landowners, and associated benefits.	
	Improved water supply.	
	Employment, small business, and training opportunities for the landowners.	
	Income earning opportunities for women.	
BELAHA	Employment and training opportunities for the land owners.	
COMMUNITY	Electricity supply (free) to the land owning communities.	
	Government improvement to services and facilities.	
	Improved roads.	
	Improved water supply local villages.	
	Improved standard of living and quality of life.	

Annex 16: A summary of the situation of women in the Solomon Islands and the Project Area

Reports of the situation of women since 2003 (i.e., the post-Tension period) paint a grim picture by international standards. In 2005, UNICEF summarised the situation as follows:

The status of women in Solomon Islands tends to be low, as are contraceptive prevalence levels. This contributes to high fertility levels that stretch the capacity of rural people engaged in subsistence to provide for their families. Domestic violence is widespread, as are sexually transmitted infections, and girl children and the disabled tend to be disadvantaged compared with healthy boys. . . The major concerns for children, youth and women are under-resourced health services and schools, especially in rural areas, scarcity of cash earning opportunities for both men and women, and scarcity of employment opportunities and lack of career structures for youth. (McMurray, 2005,:viii)

Women have little say in family decision-making. Even where land is inherited matrilineally, as in Guadalcanal, decisions as to the management and allocation of the land still tend to be made by men, and female landowners are not expected to oppose the wishes of their menfolk (McMurray, 2005:40)

In the absence of village level data from the 2009 census, it is difficult to get the full picture of the social and economic situation of women in the project area. However, data is available at the provincial and ward level. The key indicators of women's situation and development in Guadalcanal (and Malango ward) are as follows:

- ["] females make up 48% of Guadalcanal province s population;
- " their life expectancy is 73 years (c.f. 66 years for males);
- " the average annual female population growth rate is 4.5% (c.f. 4.3% for males)
- ["] 14% of private households are headed up by females;
- " the median age for females is comparatively low at 19.4 years (c.f. 19.1 years for males);
- " the median age at first marriage is 23 (c.f. 27 for males), and 14% married as teenagers;
- The labour force participation rate for females is 63%, the same as for males, although only 28 % of the economically active females are in paid employment (32% in Malango ward). 46% of economically active females aged 14 and over are engaged in subsistence production (24% in Malango), and 14% produce goods for sale (18% in Malango);
- ^{••} 25% of females aged 12 and over have either had no school or very limited primary education (c.f. 15% of males). Females have a lower literacy rate than males, and;
- " In Malango Ward the majority of females and males-
 - ¿ live in houses that they own, and located on land that that they :own `freehold or by custom. These houses typically have 1-2 rooms, traditional thatched roofs, wooden floors, and wooden or traditional bush material walls;
 - *i* 30% rely on rivers and streams for their drinking water supply, 13% on wells, and 24% on community of individual tanks;
 - ¿ 57% rely on rivers, streams, ponds etc to do their washing, and
 - ¿ for sanitation, 44% use private or shared pit latrines, and 15% have no toilet facilities, and
 - ¿ over three quarters reply on kerosene lamps for lighting (although low wattage solar lighting has recently become available to most householders), and 90% rely for cooking on wood and coconut shells.

The data on household facilities is highly relevant when considering the workload of women in the villages of the project area (see below) and when considering potential impact mitigations and benefits sharing.

The 2007 national demographic and health survey provides basic indicators of the situation for women in the S olomon Islands:

- " among women aged 15 to 49, 21% were recorded as not being able to read compared with 11% of men;
- " in terms of paid employment only 42% of married woman had been employed in the previous 12 months compared with 87% of men. Over half of the woman who were employed were not paid in either in cash or kind;
- ^{21%} of adult females are not able to read (of 11% of males), with illiteracy higher in rural areas;
- " only 28% of married woman reported they were able to make their own healthcare decisions independently;
- " only 20% reported they had the main decision-making power regarding their visits to their family and friends;
- " only 55% of married woman usually participate in household decisions about major purchases, healthcare, and family relationships, and;
- 69% of women believe that physical violence against them by their partner is justified in some case. 63% of men believe that violence against women is justified for a range of reasons ⁻ with younger men more likely to justify such violence.

A 2012 report by the National Council of Women (in association with 10 national NGOS) confirmed the poor socio-economic situation for most women, noting that the critical issues for women are violence, corruption and its effects, and the lack of support and services for women with disabilities:

The conflict in S olomon Islands from 1999-2003 was a period of increased violence against women, both in public and private. Although there are many cultural taboos against women talking about sexual violence, the Women's S ubmission to the Solomon Islands Truth and Reconciliation C ommission reports that a high number women and young women, married and single, were raped during the tension, resulting in physical and psychological trauma and unwanted pregnanciesů Domestic violence also increased during the tension, with women reporting regular physical abuse resulting in fractured arms, legs and bodies and the destruction of personal belongings and clothing. Violence against children, including girls, also increased. Other women were forcibly detained. The levels of violence against women and girls have remained high following the tensions. (National C ouncil of Women, 2012:9).

Such observations were confirmed during our discussions with women in the project communities.

With respect to women's status in decision making about land and resources, the 2012 report from the National Council of Women noted:

In all provinces, regardless of customary law, in practice men exercise decision-making rights over land use and over income generated from the land (e.g. royalties from logging and mining operations) \check{u} Young women are particularly discriminated against in community decision-making processes about land use. In most communities, women and especially young women are not permitted to speak during community meetings about land use. Despite the fact that women are concerned about the impacts that unrestricted logging is having on traditional land, and that they have land ownership rights, women are prevented from participating in decision-making about the use of that land (National Council of Women, 2012:35)

Monson (2010) has researched the situation of women in matters of ownership and resource management in a northern Guadalcanal community, and summarised it as follows:

While it is common for Guadalcanal people to assert that 'women are the real landowners of land on Guadalcanal, land records and court records generally record the names of a small number of male leaders thus solidifying their formal control over land. The state legal system tends to recognize the small number of individuals that have customary authority to speak about land inside a public arena, therefore turning the customary :right to speak `into effective ownership. This has operated to the detriment of many landowners, particularly women, who often lack the formal education or customary authority required to speak in public arenas (Monson, 2010:5).

As seen in the SIA Baseline Report, the same issues for women and young people are present in the communities of the project area, and there seem to be few if any programmes designed to improve their situation.

WOMEN'S HEALTH

While national fertility levels have been decreasing over the past 20 years, rural Solomon Islands woman still have an average of 4.8 children in the course of their lives. Child bearing starts early, and in 2007, young woman from Guadalcanal were more likely than others to have begun child bearing in their teenage years. The median age for a woman having her first child is 21 years, compared with 22 years for Solomon Islands as a whole. Women in Guadalcanal were also more likely than others to have their children at home (29%) rather than at hospital, and only 69% of births were likely to be attended by skilled provider compared with 86% nationally. Among rural Guadalcanal women aged 15-49, 52% were found in 2007 to be anemic (Demographic and Health S urvey, 2007). 97% of women Guadalcanal in the 2007 survey reported at least one serious problem in accessing health care, typically concern about having no provider, no transport, or not having sufficient money for treatment.

DIVISION OF LABOUR

	Male adults	Female adults	Male teens	Female teens	Male children	Female children
Fetching Drinking Water	55%	93%	27%	52%	11%	16%
Doing the Laundry	9%	95%	34%	7%	2%	5%
Preparing and Cooking Food	30%	95%	9%	30%	0%	0%
Fetching Firewood	52%	82%	18%	27%	5%	7%
Caring for the Yard	25%	95%	11%	32%	2%	2%
Cleaning the House	9%	89%	5%	30%	5%	5%
Building and Maintaining House	91%	9%	11%	0%	5%	0%
Feeding Pigs and Chickens	25%	52%	11%	20%	5%	2%
Child Minding	45%	98%	14%	25%	2%	5%
Taking Children to School	11%	36%	0%	2%	5%	5%
Clearing Forest for Gardens	86%	50%	5%	2%	5%	5%
Cultivating the Gardens	66%	82%	9%	9%	2%	2%
Harvesting Planted Crops	48%	93%	5%	14%	2%	2%
Hunting	48%	2%	5%	0%	2%	0%
Catching Fish/Eels in the River	61%	32%	20%	9%	9%	2%
Collecting Wild Fruit etc.	45%	50%	18%	20%	5%	7%
Selling Produce/Cash Crops	18%	86%	5%	7%	0%	0%
Looking after Household Finances	50%	82%	0%	0%	0%	0%
Buying Food/Supplies	45%	82%	2%	5%	0%	0%
Attending Community Meetings	68%	93%	2%	2%	0%	0%
Deciding on Land Issues	75%	41%	0%	0%	2%	2%

Table 8 Percentage of households in which each group is involved in the activity.



Figure 1 Division of Labour-Percentage of households in which each group is involved in the activity



















Annex 17 : Water supplies



Figure 2 The locations of the water supply for Verakabikabi and the proposed road at Rate
Annex 18 : Protocol and Guidelines for Cultural Heritage Management for the TRHDP and code of conduct for workers

269

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PROTECTION OF TAMBU SITES PRIOR TO CONSTRUCTION

The following is provided by way of guidance in the preparation of a cultural heritage policy and procedure by the future TRHDP developer and contractor/s.

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Destruction or Disturbance of Tambu Sites	Compensation rates (Solomon Dollars)
Major S cale	\$50,000
Minor S cale	\$20,000
Disturbances:	
50 meters from Sites	\$10,000
100 meters from Sites	\$15,000
Graves in Cemetery (per grave)	\$10,000

Note that disturbances are caused when trees fall into nearby tambu sites, and machines or employees pass through these sites during construction work even though they might not cause any physical damage to them.

CODE OF CONDUCT FOR LOCAL AND NON-LOCAL PROJ ECT WORKERS

The project developer and construction contractors will be expected, in advance of any construction work commencing on the project, to prepare and promulgate a code of conduct for its workers (and related visitors), including locals, other S olomon Islanders, and immigrants/expats. Induction training should include a cultural induction, delivered with the help of local knowledgeable elders.

WORKERS CODE OF CONDUCT FOR LOCAL AND NON-LOCAL PROJECT WORKERS

The project developer and construction contractors will be expected, in advance of any construction work commencing on the project, to promulgate this code of conduct for its workers (and related visitors), including locals, other Solomon Islanders, and immigrants/expats. Induction training shall include a cultural induction, delivered with the help of local knowledgeable elders.

The following is the code of conduct :

- Prior to entering a village or hamlet for the first time, the Chief, a leader from a church, or the head of a family (usually the father) shall be met for the construction contractor to show his respect.
- All workers must always consult the Chiefs, and community leaders (such as a church pastor or an elder) about any issues that may not be clear in the local culture.
- " If no male members of the community are present, the outsider/visitor must not enter and talk to women, especially young girls and married women. This will help avoid any unnecessary arguments arising between a man and his wife or parents with their daughters.
- When talking or shaking hands with someone (whether a man or woman) do not look straight at them in the eyes or press their hands strongly because to some it is disrespectful, shameful or could mean something different, especially to a woman.
- Custom requires that women visitors who enter a village publically are suitably attired, that is, in clothing traditionally associated with women. Male-style work clothing (overalls, trousers, boots, and shorts) on women is not acceptable to many. This does not apply to female construction workers where safety is prevailing.
- Do not criticize someone openly but always call the person aside and talk to him or her separately to avoid any ill feelings. S uch incidents may even escalate to a stage where other relatives may become involved.
- Saturdays and Sundays are days when some people in the communities go to Church and so there will be no work. Death and funerals are also times when work and other activities stop in the community. Always seek advice and clearance from the Chiefs or community leaders in such cases whether work should continue on or temporarily stop.

- No alcohol or any form of drugs shall be consumed in the communities by any project employees. The contractor/developer should have and enforce an alcohol and drug-free policy (in the work place, while driving vehicles, or use of the access roads). The company policy should develop a position on the use of betel nut in the workplace.
- All employees should respect the local custom or culture of the people. For example one must always ask before taking any produce growing in the area, such as bananas, kumara, cassava/root crops, nuts, fruits from trees, and coconuts etc. There is always someone in the community who owns them. Picking something without asking first is regarded as disrespect for the owner, or stealing, and may require payment of compensation to the owner.
- Workers and visitors should not make any disrespectful gestures or use any swearing words to anyone either in the community, or along the access road, especially to women or co-workers in the company workforce. These may lead to demand for compensation fees from communities.
- " No unlicensed person shall drive work vehicles. Drivers shall be tested prior to starting work on the project, and have a valid license.
- Construction Company vehicles or trucks shall not be permitted to pick up anyone who is not an employee of the Project, except in case of an emergency.
- Heavy machinery shall only be operated by those who have the license and proven skills to use those types of machines. This shall be embedded in the recruitment and other policies of the contractor/s. This will help avoid health and safety problems and the unnecessary destruction of property, resources, and tambu sites.
- "Workers and visitors shall drive slowly when passing villages that are very close to the access roadside or a pedestrian walking along the side of the road.
- " Drivers and passengers shall watch out for domesticated animals or people crossing the access road.
- Take Prior Consultation, Careful Listening, and Paying Respect (PC-CL-PR) seriously because they are the key to avoiding conflict. S uch incidents can easily escalate into company-community conflicts..

IMPLICATIONS OF THE PROJECT FOR THE MORO FOLLOWERS IN THE HAMLETS IN THE IMPACT AREA

The Moro (or Gaena'alu) Movement's has two main ongoing objectives:

- " the establishment of a socio-political organization (initially headed by Moro) based on their traditional belief, and;
- " the launching of a number of co-operative economic enterprises aimed at elevating the standard of living of the movement's followers.

The followers of the Moro/Gaena'alu Movement in the hamlets located in the project area regard the TRHDP as fulfilling these objectives. Today, even though they still keep some of their traditional way of life, they also depend on outside material goods such as money, clothes, cooking utensils, medicines, and some imported foods. They are also members of one of the Christian churches. They only wear the traditional attire when visitors call in their hamlets.

The general view the Movement's followers, including those in these hamlets in the Project Impact Area, is that such development should proceed as long as their traditional beliefs, practices, lifestyle, tambu sites, and personal property and resources are respected, and the impacts, if any, are mitigated or compensated for.

It is important that, along with other communities in the project area, that:

- this particular cultural minority are well informed of the consequences and impacts of this kind of development in their area prior to the project proceeding;
- " that the Government and the Developer must keep all of the promises they make with the people, regarding any form of assistance they decide to provide;

- " that the Government and the Developer must respect local culture, and;
- " respond quickly to any grievances that may arise due to the construction and operation of the project.

The project needs to take into consideration the wish of those followers who are present in the Impact Area for having alternative income generating activities that will mitigate or compensate some of the losses they may have because of the project. One example would be to assist them with ecotourism or home-stay type operations (such as at Senge). When they see there is something good coming out of such development that will benefit them, they would certainly be happy because this will be in line with their Movement's objectives.

The late Moro, who founded this movement, regarded development as a means through which the people can improve and raise their living standard but only in accordance to their culture and beliefs. Any development that goes against these they will not accept. The Moro people in the project area strongly believe, from their founders teaching, that if people can get the material goods they need, they can bring together the two customs (the Western and the island Melanesian) in a new unity of prosperity and progress.

The implication for the Project of the followers of the Moro/Gaena alu Movement residing in the Impact Area would be that the project could offer a path to an improved standard of living, including better schools, health facilities and material wealth. The Project Office/developer should continue to brie f local Moro followers and consult on the kinds of benefit they would derive from the TRHDP when it is completed and operating. This will require a targeted awareness raising and ongoing consultation by the developer.

Annex 19 : Impact significance method for environmental components

Impacts significance is studied using a standardized method based on the integration of 6 criteria:

- 1. identification of impact sources
- 2. determination of affected components value
- 3. Impact duration
- 4. Impact extent
- 5. Impact intensity
- 6. Impact occurrence probability

Criteria #1 Impact sources

An impact identification matrix presents activities (in lines) as well as components (in columns) and identifies all sources of impacts.

Criteria #2 Environmental and Social Components value

Each component of the natural environment will be analysed according to their value in the study area. Value assessment will be based on Experts knowledge on the component, field surveys, public consultation, etc.

Value analysis does not take into account foreseen impacts, it is purely based on the component intrinsic value.

Three threshold levels are defined : Low, Moderately and Highly valued components.

Criteria #3 Impact duration

Each impact is identified according to its duration. Temporary and permanent impacts can be distinguished based on their reversibility: temporary are reversible and permanent are irreversible (or will last all through the Project lifespan).

Criteria #4 Impact extent

Each impact is defined by its geographical extent. Three levels are established: point source impact (punctual), local impact and regional impact.

Point source impacts affect a component on a very small scale of the study area, i.e. a small proportion of the study area species population.

Local impacts affect a component on the entire or the majority of the detailed study area in opposition to regional impacts that affect a component on a larger scale such as the entire extended study area or outside its boundaries.

Criteria #5 Impact intensity

Impact intensity refers to level of disruption on the component. Disruption of natural component refers to death of species, displacement, fragmentation and loss of habitats.

Three threshold levels of intensities are defined: Minor, Moderate and Major.

Impact significance determination

Impact significance is based on the four previous criteria. The following table presents the impact significance determination.

Positive impact are assessed using the same four criteria.

Intensity	Extent	Duration	E nvironmenta	l and Social Co	mponent value
			Low	Moderate	High

		Permanent		
	Regional	Temporary		
Major		Permanent		
Major	Local	Temporary		
		Permanent		
	Punctual	Temporary		
		Permanent		
	Regional	Temporary		
Moderate		Permanent		
Moderate	Local	Temporary		
	Punctual	Permanent		
		Temporary		
	Regional	Permanent		
		Temporary		
Minor		Permanent		
	Local	Temporary		
		Permanent		
	Punctual	Temporary		
	Major		-	
Impact	Moderate			
significance	Minor			
-	Negligible	1		

Major impacts represent high level of perturbation of the component, these impacts are seldom mitigable and most of the times require compensation or offsets, followed by measurable monitoring measures.

Moderate impacts represent noticeable perturbation of the component, however these impacts can be mitigated and need to be monitored.

Minor impacts most of the time only require mitigation measures without the need for monitoring.

Negligible impacts do not require any particular measures.

Criteria #6: Impact occurrence probability

Assessment of the probability that an impact will take place will be based on the expert's experience on similar assignments.

Three thresholds will be used.

High probability	Analysis of the baseline coupled with Project characteristics concludes that the impact will take place
Potential occurrence	Based on previous experiences, it is possible that the impact will occur.
Risk (low probability)	Analysis of baseline coupled with Project characteristics only reveals a risk of impact occurrence.

Residual impact

After the implementation of measures, residual impact is assessed and impact significance reevaluate.

Annex 20 : Land Acquisition Process



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APPENDICES

This report includes all Appendices to the ESIA Main Report. It contains valuable information such as analysis of mitigation measures, analysis of protected area opportunities, and a review of the adoption of community feedback, etc. Appendix sequence in this report is classified in a chronological order and reflect the time at which information was gathered or obtained.

APPENDICES

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Appendix A

Terrestrial Ecosystem Sampling Stations

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Appendix A Terrestrial Ecosystem Sampling Stations

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Coordinates of each terrestrial ecology sampling station are described herein, and coincide with the map below - Location of Aquatic, Fauna and Flora sampling Stations. Station numbers are related to their spatial distribution. Station #1 is the most upstream station and station #24 is the farthest from the TRHDP.

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Upper Stream areas were primarily covered by undisturbed forests; most terrain was quite steep.

- Fauna & Flora #1: Primary lowland forest Riparian vegetation; site is located adjacent to a cliff area and is surrounded by undisturbed forest and the river.
- Fauna & Flora #2: Primary lowland forest Riparian vegetation; site is located at a confluence of Vohara and Mbeambea rivers; surrounding areas were forested however there is evidence of past village settlement.
- Fauna & Flora 3: Primary lowland forest Riparian vegetation; site is located close to Njarimbisu River.

Conditions during the sampling of these stations were wet to cloudy and were deemed not optimal for observing fauna as the conditions would limit the movement of species.

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- Fauna & Flora #4: Lowland forest Riparian vegetation; site is located in forest with slight disturbance and evidence of timber extraction.
- Fauna & Flora #5: Lowland forest Secondary regrowth; site is located on a steep slope and covered by forest, with evidence of disturbance through timber harvesting and past garden use.
- Fauna & Flora #6: Lowland forest overlapping secondary vegetation; site is located adjacent to a village area and is surrounded by gardens and remnant forest.
- Fauna & Flora #7: Lowland forest Secondary regrowth and riparian vegetation; site is located on a flat area that is forested. However, there is evidence of disturbance through timber harvesting.
- Fauna & Flora #8: Lowland forest and riparian vegetation; site is located in a very steep area that is forested, with evidence of past timber harvesting.
- Fauna & Flora #9: Secondary lowland forest; is located in forested areas, with disturbance due to current timber harvesting.
- Fauna & Flora #10: Cliff areas are mainly covered in distinct cliff vegetation that lacked larger canopy trees but covered with smaller plants such as ferns and shrubs. The site is located on a very steep slope adjacent to the water.
- Fauna & Flora #11: Old Garden Area Secondary forest; site is located on a slight slope and covered with gardens and fallow brush land from past garden use.
- Fauna & Flora #12: Lowland forest on ridge top; site is located on a ridge adjacent to a steep slope to the Tina River. It is surrounded by relatively undisturbed forest with the presence of large canopy trees.
- Fauna & Flora #13: Riparian Vegetation; site is located on a steep slope that is forested. However, there is evidence of disturbances through past timber harvesting.

- Fauna & Flora #14: Cliff areas are mainly covered in distinct cliff vegetation that lacks larger canopy trees. It is covered with smaller plants such as ferns and shrubs. The site is located on a very steep slope adjacent to the water.
- Fauna & Flora #15: Lowland forest on ridge top; site is located in Sengue old Tina meander.
- Fauna & Flora #16: Lowland forest Secondary Vegetation; site is located in disturbed forest, with evidence of past and current timber harvesting.
- Fauna & Flora #17: Lowland forest; site is located on a small hill covered by forest with evidences of timber harvesting and some relatively undisturbed areas.
- Fauna & Flora #18: Lowland forest secondary and riparian vegetation; site is located on a flat areas that is surrounded by gardens with crops of betelnut, banana and coconut. Fallow brush land is also evident.
- Fauna & Flora #19: Lowland rainforest on ridgetop; site is located on a hill slope surrounded by forest with evidence of disturbance such as past timber harvesting.

Conditions during sampling were clear to cloudy and were deemed optimal for observing fauna.

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- Fauna & Flora #20: Secondary vegetation on open ridgetop overlapping grasslands; Site is located in remnant forest.
- Fauna & Flora #21: Lowland forest open vegetation secondary regrowths; site is located between grassland, gardens and remnant forest dominated by Canarium nut trees. Site is located along the future transmission line.
- Fauna & Flora #22: Open grassland Secondary vegetation; site is located on roadside. Site located along the future transmission line.
- Fauna & Flora #23: Secondary vegetation on grassland; site is located between oil palm plantations and grassland inter-mixed with gardens. Site is located along the future transmission line.
- Fauna & Flora #24: Secondary vegetation on grassland; Site is located between oil palm plantation and fallow bush dominated by paper mulberry trees. Site is located along the future transmission line.

Conditions during sampling were clear to cloudy and were deemed optimal for observing fauna.

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Fauna and Flora was also characterized in the ESIA Scoping Study prepared by Entura (2013) during a rapid flora assessment. Results were obtained for the current ESIA. The following station description comes from the ESIA Scoping.

- Site A: The vegetation cover in this site is comprised of lowland primary forest trees, riparian species and elements of steep ridge forests decorated by different species of palms, grass and shrubs. The overall forest canopy cover is about 80%.
- Site B: This site appears to be disturbed by human activities such as gardening and is located next to Koropa village. As such, the vegetation cover is mainly lowland secondary forest with some big, old trees, colonized with ferns and palms. The overall forest canopy cover is about 60%.
- Site C: Contains a thin riparian forest belt about ten metres wide next to a very steep ridge with recent land slide on the lower part of Senge village. The site appears to be a flood plain and is occupied by secondary regrowth of small to medium size trees. The overall canopy cover is about 50%.

The ESIA Scoping report provides a list of plant species identified at these three sites. These plants were added to the ESIA flora survey list (see table next section). However, it did not specify in which plants were observed by sample site, in the flora table next section they are all gather under `ES stations_(ESIA Scoping Stations).

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The following table lists all stations coordinates. Since these stations are terrestrial, river chainage is not shown

Full name	S hort na me	Coordinate*	Full name	S hort name	Coordinate*
Fauna & Flora 24	F&F24	S09,44763 E160,10069	Fauna & Flora 10	F&F10	S 09,55326 E 160,07375
Fauna & Flora 23	F&F23	S09,46438 E160,10502	Fauna & Flora 9	F&F9	S 09,55332 E 160,08220
Fauna & Flora 22	F&F22	S09,48518 E160,11072	Fauna & Flora 8	F&F8	S 09,55342 E 160,07919
Fauna & Flora 21	F&F21	S09,52470 E160,09351	Fauna & Flora 7	F&F7	S 09,55546 E 160,07742
Fauna & Flora 20	F&F20	S09,53821 E160,08854	Fauna & Flora 6	F&F6	S 09,55573 E 160,07180
Fauna & Flora 19	F&F19	S09,54159 E160,08024	Fauna & Flora 5	F&F5	S 09,55717 E 160,06947
Fauna & Flora 18	F&F18	S09,54177 E160,08936	Fauna & Flora 4	F&F4	S 09,55823 E 160,06667
Fauna & Flora 17	F&F17	S09,54286 E160,08677	Fauna & Flora 3	F&F3	S 09,59459 E 160,03574
Fauna & Flora 16	F&F16	S09,54466 E160,08835	Fauna & Flora 2	F&F2	S 09,59487 E 160,03055
Fauna & Flora 15	F&F15	S09,54511 E160,08156	Fauna & Flora 1	F&F1	S 09,59513 E 160,03469
Fauna & Flora 14	F&F14	S09,54994 E160,08048	S tation S ite C	S tation S ite C	S 9,32.812 E 160,05.060
Fauna & Flora 13	F&F13	S09,55086 E160,08124	Station Site B	S tation S ite B	S 9,33.557 E 160,03.805
Fauna & Flora 12	F&F12	S09,55143 E160,07822	Station Site A	S tation S ite A	S 9,35.487 E 160,01.802
Fauna & Flora 11	F&F11	S09,55270 E160,08060			

Table 1 Station Coordinates

Appendix B

List of Amphibian Species Occurring in TRHDP Study Area [this page left intentionally blank]

Appendix B

List of Amphibian Species Occurring in TRHDP Study Area

S pecies name	Common name	Observed at station	Potential Presence	Migratory	Endemic	IUCN Red List Category	CITES Appendix	1998 Act	Population Trend	Local Uses	River Dependent
Bufonidae TRUE	TOADS										
Bufo marinus	Cane Toad	F&F24, F&F7, F&F6, F&F5, F&F4, F&F9, F&F1	PP	-	I	LC	-	-	Ι	-	-
Ceratobatrachida	ie										
Batrachylodes vertebralis	Fauro S tic ky-toed F rog	F&F6, F&F5, F&F4, F&F9, F&F11	PP	-	-	LC	-	п	S	-	-
Batrachylodes elegans	E legant S tic ky-toed F rog		SSa, SSb	-	-	LC	-	-	S	-	-
Ceratobatrachus guentheri	S olomon Islands E yelash F rog	F&F5, F&F9	PP, GR	-	-	LC	-	п	s	-	-
Discodeles guppyi	Giant Webbed Frog		PP, SSa, SSb, GR, LK	-	-	LC	-	-	S	F	x
Discodeles malakuna	Malakuna Webbed Frog	F&F1	SSa, SSb	-	SI	DD	-	-	s	-	-
Platymantis guppyi	S olomon Islands Giant Treefrog	F&F1	SSa, SSb, GR, PP	-	-	LC	-	-	s	-	-
Platymantis solomonis	S olomon Wrinkled G round F rog		SSa, PP	-	-	LC	-	I	s	-	-
Platymantis weberi	Weber's Wrinkled Ground Frog	F&F6, F&F9	SSa, PP	-	-	LC	-		S	-	-
Hylidae TREEFR	UGS Solomon			1	1			1			
Litoria lutea	Island š Treefrog		SSa	-	-	vu	-	-	S	-	-
Litoria thesaurensis	Treasury Island Treefrog	F&F6	PP	-	-	LC	-	-	S	-	-
Litoria sp.		F&F5	SS, GR	-	-	-	-	-	S	-	-

Amphibians of the Study area

S pecies name	Common name	Observed at station	Potential Presence	Migratory	Endemic	IUCN Red List	СIТЕЅ Appendix	1998 Act	Population Trend	Local Uses	River Dependent
Ranidae TRUE F	ROGS		•								
Hylarana kreffti	S an C ristobal T reefrog	F&F1	GR, PP	-	-	LC	-	-	S	-	х

Potential Species: TRHDP ESIA Scoping Study = SSa=site A, SSb=site B, SSc=site C; Frogs of the SI = PP, Gold Ridge Report = GR, Local Knowledge = LK

Endemic: Guadalcanal = G, Solomon Islands = SI, Introduced = I

IUCN Red List Category: Least Concern = LC, Vulnerable = VU & Data Deficient = DD

Population Trend: Increasing =I & Stable =S (according to IUCN Red List Category)

Local Uses: Food =F (bush meat)

1998 Act = Wildlife Protection and Management Act 1998 Schedule I lists the species that are prohibited to export, Schedule II lists the regulated and controlled species for which a valid permit to export such specimen is required

Appendix C

List of Reptile Species Occurring in the TRHDP Study Area [this page left intentionally blank]

Appendix C

List of Reptile Species Occurring in the TRHDP Study Area

S pecies name	Common name	Observed at station	Potential Presence	Migratory	Endemic	IUCN Red List Category	CITES Appendix	1998 Act	Population Trend	Local uses / Venomous	River Dependent
Gekkonidae GEC	KOS	•									
Cyrtodactylus salomonensis	S olomons Bent-toed Gecko		MM, G R	-	SI	NT	-	Π	s	-	-
Cyrtodactylus biordinis	Guadalcanal Bow-fingered Gecko		MM, LK	-	G	LC	-	-	s	-	-
Gehyra oceanica	Oceanic Gecko		MM,	-	-	LC	-		S	-	-
Gekko vittatus	Sago Gecko		ММ	-	-	LC	-	П	s	-	-
Nactus multicarinatus	S olomons S lender-toed Gecko	F&F4, F&F9	ММ	-	-	LC	-	-	s	-	-
Scincidae SKINK	S	1		1							
Corucia zebrata	Prehensile- tailed S kink		SSa, SSb MM, LK	-	SI	NT	Π	Π	D	F	-
E moia cyanogaster	Greeen-Bellied Tree Skink		MM, S S a, S S b	-	-	LC	-	-	S	-	-
E moia cyanura	Brown-tailed Copper-striped S kink	F&F21, F&F19	MM, SSa, SSb, SSc, GR	-	-	LC	-	Π	s	-	-
E moia nigra	Pacific Black Skink	F&F24, F&F19, F&F1, F&F13, F&F9	MM, SSa, SSb, SSc, GR, LK	-	-	LC	-	-	S	-	-
E moia pseudocyanura	S olomons Blue-tailed S kink	F&F20, F&F19, F&F18, F&F17, F&F13, F&F2, F&F1	MM, SS, GR	-	SI	LC	-	-	S	-	-
E ugongylus albofas ciolatus	White-banded Giant Skink		MM	-	-	LC	-	-	S	-	-
Lipinia noctua	IVIOTN S KINK			-	-	LC	-	-	5	-	-
Lamprolepsis smaragdina	E merald Tree S kink		SSb, SSc	-	-	LC	-	Π	s	-	-
Prasinohaema virens	G reen-blooded S kink		MM, G R	-	-	LC	-	Π	s	-	-

Reptiles of the Study area

S pecies name	Common name	Observed at station	Potential Presence	Migratory	Endemic	IUCN Red List Category	CITES Appendix	1998 Act	Population Trend	Local uses / Venomous	River Dependent
S phenomorphus bignelli			MM	-	SI	LC	-	-	S	-	-
S phenomorphus concinnatus	E legant Forest S kink		MM, G R	-	-	LC	-	Π	S	-	-
S phenomorphus solomonis			MM, G R	-	-	LC	-	Π	S	-	-
S phenomorphus cranei	Crane š Skink		MM, G R	-	-	LC	-	-	S	-	-
Tribolonotus schmidti	S chmidt š C rocodile S kink		MM, G R	-	G	LC	-	-	S	-	-
Boidae BOAS											
Candoia paulsoni	S olomons G round Boa		MM, SS, GR, LK	-	-	LC	Π	-	S	-	-
Colubridae COLU	JBRID SNAKES										
Boiga irregularis	Brown Tree S nake		SSa, GR	-	-	LC	ŀ	-	S	۷	-
Dendrelaphis salomonis	S olomons Tree S nake	F&F20	MM, GR, LK	-	-	LC	-	-	S	-	-
Elapidae ELAPID	SNAKES		-								
S alomonelaps par	Solomons Red Krait		MM, SSa, GR, LK	-	-	LC	-	-	S	V	-

Potential Species: TRHDP ESIA Scoping Study = SSa=site A, SSb=site B, SSc=site C; Reptiles of the Solomon Islands = MM, Gold Ridge Report = GR, Local Knowledge = LK

Endemic: Guadalcanal = G, Solomon Islands = SI

IUCN Red List Category: Least Concern = LC, Near Threatened = NT

CITES Appendix for international trade of species: II = may be authorized by the granting of an export permit

Population Trend: Decreasing =D & Stable =S (according to IUCN Red List Category)

Local Uses / Venomous, Food =F (bush meat), V= Venomous

1998 Act: Wildlife Protection and Management Act 1998. Schedule I lists the species that are prohibited to exports, Schedule II lists the regulated and controlled species for which a valid permit to export such specimen is required

Appendix D

List of Bird Species and Subspecies Occurring in the TRHDP Study Area and Their Status / Vulnerability

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Appendix D

List of Bird Species Occurring in the TRHDP Study Area and Their Status / Vulnerability

S pecies name	Common name	Observed at station	Potential Presence	Migratory	Endemic	IUCN Red List	СПЕS Appendix	1998 A ct	Population Trend	Local uses	Habitat
Ardeidae HERO	NS. Diet: mainly f	fish, but also amph	ibian, rep	tile, s	mall	mamı	mal, i	nsect	t		
Nycticorax caledonicus mandibularis	Nankeen Night Heron	F&F6, F&F5, F&F4, F&F10	SSa, SSb, SSc, GD, MT	-	-	LC	-		S	-	R
Egretta s. sacra	Pacific Reef Heron	F&F22	GD	-	-	LC	-		S	-	R
Phalacrocoracid	ae CORMORAN	TS. Diet: mainly fis	sh, but als	so an	hphib	ian ar	id aqı	uatic	insec	ts	
Microcarbo m. melanoleucos	Little Pied Cormorant	F&F7, F&F6, F&F5, F&F4, F&F2	SSa, SSb, SSc GD	-	-	LC	-		S	-	R
Anatidae DUCKS	5. Diet: detritivore	25		1							
Anas superciliosa	Pacific Black Duck		SSa, SSb, SSc, MT, GD	_	_	LC	_		S	F	R
Accipitridae HAV	WKS and EAGL	ES. Diet: fish, large	insects,	birds	, mai	nmals	s, am	phibia	ans		
Haliastur indus flavirostris	Brahminy Kite	F&F5, F&F12	SSb, SSc, MT, GD, GR	-	SI	LC	П		D	-	U
Aviceda subcristata proxima	Pacific Baza		MT, GD, LK	-	SI	LC	П		S	-	U
Accipiter novaehollandia e pulchellus	Variable G oshawk	F&F2	MT, G D	-	G	LC	П		D	-	U

Birds of the Study area

S pecies name	Common name	Observed at station	Potential Presence	Migratory	Endemic	IUCN Red List	CITES Appendix	1998 Act	Population Trend	Local uses	Habitat
Accipiter meyerianus	Meyer š G oshawk	F&F22	MT, GD, GR	-	-	LC	п	I	D	-	U
Haliaeetus sanfordi	S olomon S ea-E agle	F&F20, F&F2	MT, GD	-	SI	V U	П	Ι	D	-	U
Megapodiidae M	EGAPODES.Di	et: fruits, seeds, ins	sects and	othe	r inve	ertebra	ates				
Megapodius eremita	Melanesian S crub Fowl		S S a, S S b, MT, G D, LK	-	-	LC	-		D	F	F
Turnicidae BUTT	ONQUAILS. Die	et: invertebrates	1	I	I		I	I	I		
Turnix maculosa salamonis	Red-backed Button-Quail		MT, G D	-	SI	LC	_		D	F	-
Rallidae RAILS.	Diet: herbivores,	omnivores	<u> </u>								
G allirallus philippensis christophori	Buff-banded Rail	F&F22	MT, GD, LK	-	SI	LC	-		S	F	-
Nesoclopeus w. woodfordi	W oodford š R ail	F&F24, F&F22	MT, GD, LK	-	G	N T	-	Ι	D	F	F
Amaurornis moluccanus sp.	Pale-vented Bush-hen	F&F6	MT, GD, LK	-	SI	LC	-		S	F	F
Porphyrio p. samoensis	Purple S wamp hen	F&F22	G D, S S b, S S c, L K	-	-					F	R
Scolopacidae SA	NDPIPERS and	CURLEWS. Diet:	S mall fis	h, crı	ustac	eans,	frogs		1		
Actitis hypoleucos	C ommon S andpiper	F&F7, F&F5, F&F4	MT, GD, LK	x	-	LC	-		D	CI	R
Columbidae PIG	EONS . Diet: See	ds and fruits		•				•	•		
P tilinopus s. superbus	S uperb F ruit- Dove		MT, GD, GR	-	-	LC	-		S	F	F
S pecies name	Common name	Observed at station	Potential Presence	Migratory	Endemic	IUCN Red List	CITES Appendix	1998 Act	Population Trend	Local uses	Habitat
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P tilinopus solomonensis ocularis	Yellow- bibbed Fruit- Dove		MT, GD, GR	-	G	LC	-	Ι	S	F	F
Ptilinopus viridis lewisii	C laret- breasted F ruit-Dove		MT, GD, GR	-	-	LC	-		S	F	F
Ducula rubricera rufigila	R ed-knobbed Imperial Pigeon	F&F21, F&F19, F&F12, F&F18, F&F17, F&F6, F&F5, F&F9, F&F16	SSa, SSb, MT, GD, GR, LK	-	SI	N T	-		D	F	F
Ducula p. pistrinaria	Island Imperial Pigeon		MT, G D	-	-	LC	-		S	F	F
G ymnophaps solomonensis	Pale Mountain Pigeon		MT, G D	-	-	LC	-		S	F	F
Macropygia mackinlayi arossi	Mackinlay's Cuckoo-Dove	F&F8, F&F2, F&F1	SSa, SSb, MT, GD	-	-	LC	-		S	F	F
R einwardtoena crassirostris	Crested Cuckoo-Dove	F&F16	S S a, MT , G D	-	-	N T	-		D	F	F
C halcophaps stephani mortoni	S tephan š Dove		S S b, S S c, MT, G D, G R	-	SI	LC	-		S	F	F
Cacatuidae COCKATOOS. Diet: seeds and fruits											
C acatua duc orpsi	Ducorp`š C ockatoo	F&F20, F&F19, F&F2, F&F1	SSa, SSb, SSc, MT, CD, GR	-	-	-	II	Ш	S	-	U
Psittacidae PARROTS. Diet: seeds, nuts, fruits											

S pecies name	Common name	Observed at station	Potential Presence	Migratory	Endemic	IUCN Red List	СПТЕS Appendix	1998 Act	Population Trend	Local uses	Habitat
C halcopsitta cardinalis	Cardinal Lory		SSa, SSb, SSc, MT, GD, GR, LK	-	SI	LC	П	П	S	-	U
Trichoglossus haematodus massena	Coconut Lorikeet	F&F21, F&F16, F&F2, F&F1	SSa, SSb, SSc, MT, GD, LK	-	-	LC	П	П	D	-	U
Lorius chlorocercus	Yellow- bibbed Lory	F&F18, F&F17, F&F7, F&F5, F&F9, F&F1	SSa, SSb, MT, GD, GR, LK	-	SI	LC	Ш	П	S	-	F
C harmosyna margarethae	Duchess Lorikeet		MT, GD, GR	-	-	N T	П	Ι	D	-	F
Micropsitta finschii aolae	Finsch š Pigmy Parrot	F&F16	MT, GD, GR, LK	-	SI	LC	П	Ι	S	-	F
E clectus roratus solomonensis	E clectus Parrot	F&F1	SSa, SSb, MT, GD, GR, LK	-	-	LC	П	П	D	-	U
Geoffroyus h. heteroclitus	Song Parrot		MT, GD, GR	-	-	LC	П	I	S	-	U
Cuculidae CUCK	OOS. Diet: insee	ct									
Cacomantis variolos us addendus	Brush Cuckoo		MT, GD, GR	-	-	LC	-		S	-	U

S pecies name	Common name	Observed at station	Potential Presence	Migratory	Endemic	IUCN Red List	CITES Appendix	1998 Act	Population Trend	Local uses	Habitat
Centropus m. milo	Buff-headed Coucal	F&F22, F&F21, F&F20, F&F19, F&F18, F&F9	SSa, SSb, MT, GD, GR	-	SI	LC	-		S	-	F
Strigidae OWLS.	Diet: insect and	small mammal	1	1	I		I		I		
Ninox jacquinoti granti	G uadalcanal Boobook		MT, GD, GR	-	G	LC	П		S	-	U
Apodidae SWIFT	S. Diet: insect	I	I				1			<u> </u>	
Aerodramus vanikorensis lugubris	Uniform S wiftlet	F&F24, F&F22, F&F9, F&F1,	MT, G D	-	-	LC	-		S	-	U
Collocalia esculenta becki	G lossy S wiftlet	F&F6, F&F5, F&F4, F&F9, F&F8, F&F14, F&F10, F&F2, F&F1	SSa, SSb, SSc, MT, GD, GR,	-	SI	LC	-		S	-	U
Hemiprocnidae	REESWIFTS.D	iet: insect			I		I			<u> </u>	
Hemiprocne mystacea woodfordiana	Moustached T ree-S wift		MT, GD, GR	-	-	LC	-		S	-	G
Coraciidae ROLI	ERS. Diet: insed	ct	I							<u> </u>	
E urystomus orientalis solomonensis	Dollar Bird		MT, CD, GR	-	-	LC	-		D	-	U
Bucerotidae HORNBILLS. Diet: fruits (figs) and small animals											
Aceros plicatus mendanae	Blyth š Hornbill	F&F7, F&F5, F&F18, F&F9, F&F11, F&F8, F&F2, F&F1	SSa, SSb, SSc, MT, GD, GR, LK	-	SI	LC	П		D	-	F
Alcedinidae KINGFISHERS. Diet: mainly fish but also wetland insects											

S pecies name	Common name	Observed at station	Potential Presence	Migratory	Endemic	IUCN Red List	CITES Appendix	1998 Act	Population Trend	Local uses	Habitat
Alcedo atthis salomonensis	Common (River) Kingfisher	F&F1	SSa, SSb, SSc, MT, GD, GR	-	-	LC	-		S	-	R
Ceyx lepidus nigromaxilla	Variable Dwarf Kingfisher	F&F5, F&F8	MT, GD, GR	-	G	LC	-		D	-	R
Todiramphus chloris alberti	Collared Kingfisher		MT, GD, GR	-	-	LC	-		D	-	R
Todiramphus leucopygius	Ultramarine Kingfisher		MT, GD, GR	-	-	LC	-		S	-	R
Hirundinidae SWALLOWS . Diet: insect											
Hirundo tahitica subfusca	Pacific S wallow		SSb, SSc, MT, GD	-	-	LC	-		Ι	-	G
Campephagidae	CUCKOOSHRI	ES and TRILLER	S . Diet: i	nsect	t						
Coracina lineata pusilla	Barred C uckoo- shrike		MT, GD, GR	-	-	LC	-		S	-	U
Coracina papuensis elegans	White-bellied Cuckoo- Shrike	F&F21	S S b, S S c, MT, G D, G R	-	SI	LC	-		I	-	U
Coracina h. holopolia	S olomon C uckoo- S hrike		MT, GD, GR	-	-	N T	-		D	-	U
Coracina tenuirostris erythropygia	Common Cicadabird	F&F6	MT, GD, GR	-	SI	LC	-		S	-	F
Rhipiduridae FANTAILS. Diet: insect											

S pecies name	Common name	Observed at station	Potential Presence	Migratory	Endemic	IUCN Red List	CITES Appendix	1998 Act	Population Trend	Local uses	Habitat
R hipidura leucophrys melaleuca	Willie Wagtail	F&F5, F&F4, F&F8, F&F14, F&F2, F&F1	SSa, SSb, SSc, MT, GD, GR	-	-	LC	-		Ι	-	G
R hipidura c. cockerelli	Cockerell š Fantail		MT, GD, GR	-	G	N T	-		D	-	F
R hipidura rufifrons rufofronta	R ufous F antail		MT, GD, GR	-	G	LC	-		D	-	F
Monarchidae MC	NARCHS. Diet:	insect									
Monarcha c. castaneiventris	C hestnut- bellied Monarch	F&F5, F&F8	SSa, SSb, MT, GD, GR, LK	-	SI	LC	-		D	-	U
Monarcha b. barbatus	S olomons Monarch	F&F5, F&F9	MT, GD, GR, LK	-	SI	N T	-		D	-	F
Myiagra f. ferrocyanea	S teel-blue F lycatcher	F&F5, F&F1	MT, GD, GR	-	SI	LC	-		S	-	U
Pachycephalidae	WHISTLERS.[Diet: insect	1	1		1	1				
Pachycephala pectoralis cinnamomea	G olden W histler	F&F17, F&F6, F&F4, F&F9	SSa, SSb, MT, GD, GR, LK	-	G	LC	-		S	-	F
Dicaeidae FLOW	Dicaeidae FLOWERPECKERS. Diet: insect and fruits										
Dicaeum aeneum becki	Midget Flowerpecker	F&F12, F&F7, F&F5, F&F4, F&F9, F&F14, F&F10, F&F1	MT, GD, GR	-	G	LC	-		S	-	U
Nectariniidae SUNBIRDS. Diet: nectar and insect											

S pecies name	Common name	Observed at station	Potential Presence	Migratory	Endemic	IUCN Red List	CITES Appendix	1998 Act	Population Trend	Local uses	Habitat
Nectarinia jugularis flavigastra	Olive-backed S unbird	F&F21, F&F2	SSa, SSb, SSc, MT, GD	-	-	LC	-		S	-	U
Meliphagidae HC	DNEYEATERS.	Diet: nectar	1	I	I	1	1	I	I	I	
Myzomela melanocephala	Black-headed Myzomela	F&F9, F&F8, F&F1	MT, GD, GR	-	G	LC	-		D	-	U
Sturnidae STAR	LINGS . Diet: inse	ect and fruits	I								
Aplornis cantoroides	S inging S tarling		SSa, SSb, MT, GD, GR	-	-	LC	-		S	-	U
Aplornis grandis macrura	Brown- winged S tarling	F&F6, F&F5, F&F10	MT, GD, GR	-	G	LC	-		S	-	U
Aplornis metallicus nitida	Metallic S tarling	F&F5, F&F9	SSa, SSb, MT, GD	-	-	LC	-		S	-	U
Aplornis brunneicapilla	W hite-eyed S tarling		MT, GD, GR	-	SI	E N	-		D	-	U
Acridotheres tristis	C ommon Myna	F&F22	MT, G D	-	Ι	LC	-		Ι	-	U
Mino kreffti sanfordi	Long-tailed Myna	F&F21, F&F20, F&F19, F&F17, F&F5	SS, MT, GD, GR	-	SI	LC	-		S	-	U
Corvidae CROW	S. Diet: omnivore	25						1			<u></u>
C orvus woodfordi	White-billed C row	F&F12, F&F18, F&F16, F&F1	SSa, SSb, MT, GD, GR, LK	-	SI	LC	-		S	-	F

Potential Species: TRHDP ESIA Scoping Study = SSa=site A, SSb=site B, SSc=site C; Birds of Melanesia = GD, Guadalcanal Island Bird Checklist = MT, Gold Ridge Report = GR, Local Knowledge = LK

Endemic: Guadalcanal = G, Solomon Islands = SI, Introduced = I

- IUCN Red List Category, Least Concern = LC, Near Threatened = NT, Vulnerable = VU, Endangered = EN & Data Deficient = DD
- CITES Appendix for international trade of species, II = may be authorized by the granting of an export permit
- Population Trend: Increasing =I, Decreasing =D & Stable =S (according to IUCN Red List Category)
- Local Uses: Food =F (bush meat) & Cultural Importance = CI
- 1998 Act: Wildlife Protection and Management Act 1998. Schedule I lists the species that are prohibited to exports, Schedule II lists the regulated and controlled species for which a valid permit to export such specimen is required
- Habitat: R: river dependent, U: Ubiquist (forest edge, grassland, riverine), F: forest interior, G:Grassland

The most important bird species and subspecies based on their CITES or IUCN (Red List) status, or endemicity, are identified below, along with their relative vulnerability to the Project:

. éā úððā . øó÷ī (ð Ħđā ∟ Ŀìī øì đĦéκ ì é uði fā øì h þ éā í øê i ué Ħah∠ ฏ4÷øh ê øff øh í ðð þ ði ði duð ó ville op ē dĦ éā ī ê ði éi hð dò ø h í ðē ðā í ðā ì ð dā ī÷ð Ħajð ĦhLhīð þ ∉ij ÷ð Ħð øi òðð í h dā hþ é uð vah÷ éā í h÷ Ħap ē ∉ éa í ê ði éi hð ī÷ð hi ê ฏeði øð høh e uhd é 3 duði þ dā) huéa í h ða í ð þ øi L\$ i īhdā ⊕ ⊡⊡⊡⊻ [4÷øh ÷ð Ħđā øh òdi ā í ì uð hð ī d ij éi ð Hæði Pēði øé ulle é uð ā ó Hajð Ħh ij øi÷ òd Ħð hīð í ð þ øi L\$ i īhdā ⊕ ⊡⊡⊡⊻ [4÷øh ÷ð Ħđā øh òdi ā í ì uð hð ī d ij éi ð Hæði Pēði øé ulle é uð að Hajð Ħh ij øi÷ òd Hð hīð í þ é Ho øa h∉n ì ÷ éh ī÷ð 4 øa é 2 øjð Ħ keá í øh òdi ā í øa Ħæé Hæá i ÷éê øi ei h [4÷ði òd uð di i j øi ð ei dð é ÷ð Ħdā òd dī ē Haā ī ij éh dê hð Ħ jð í í i Hæó ī÷ð ò vað u héþ ē uæa ó "d hh dò÷éê ø éi òd Hê Hð ðí øa ó éa í òðð í æi ó òd Ħī÷øh ħēði øð hþ éle dì ì i Ħí i ð ī d O Ħd vði ī ì dā ħi Ħ ì ī ødā éì ī djø øð h [(dij ð IJð Ħ ∓÷ð ì Ħð ei rødā do é Hð hð Hjð ø hþ éle @aì Ħð hēð þ ø Ħð ∰ ée ø ei ħ òd Hð hððði øa ó .]

Nankeen Night Heron foot print



, øī tið 0 øðí #đĦþ đhéāī ∟ øi hťi éhêđ þ "Þ ði éa điði ì đh∠j4 ÷ øhê øff øhí ððþ ðí ði đi di ó á éilu: «Þēđh éāī êði éi hð dò øhí ðē ðā í ðā ið đā ī ÷ð Højð HhLhīðþ «Jj ÷ð Hð øiðð í hđa hþ éili vah÷ éā í h÷ Høþē Jī øh ddi a í éid að i éhðð Højð Hhéā í að hīh øai i éhðð ī Hððhêð heíði á ði jéið HL\$i i hda (±1111) 4÷ øhi dHþ dhéāī øh ddi a í øai Hæé Hæá ÷ éê øi éī hJ dhh dò ÷ éê øi éi dd Hê Hðð í øa ó éa í dðð í øa ó dd H ī ÷ øh hēði øðh þ éL di ì i Hí i ð ī dē Hdùðiī ì da hī Hì røda éi ī øj ø øð hJ di jð Jð Ha÷ði bei øda dò é Hðhð Hjdø Hþ éL og i hð éhð þøh th £ éê øi éi hdð Hððói í øa ó J

0 éì aòaì " üéì ú \$ i ì ú LL ā éħ ħ ēðĦ aŭadhé ∠ ฏ4÷aħ êa f ah íððþ ðí ði düdóa) éüL aþ ēdĦ éāī êði éi ħð dò að híðēðā íðā ìð dā ī÷ð Ħa JðĦħLħīðþ òd Ħòððí aā ó éā í êĦððí aā ó L\$ i īħdā ᡧ⊒⊡⊡⊡/L 4÷aħ í i ì ú aħ éuħd ÷i āīðí dēēdĦ i ā aħī a) éüL éħ é ħdi Ħ ð dò òddí êL aā ÷éêa éāīħ dò üdì éü ì dþ þ i ā ar aðh])ī aħ òdi ā í aā Ħaē éĦaéā ÷éêa éīħ J, dħħ dò ÷éêa éī òd Ħī÷aħ ħēði aðh þ éL dì ì i Ħ í i ð īd ēĦdùði ī ì dā ħīĦ ì īadā éi īa Jaraðh J(dij ðIJðĦ ‡÷ð ì Ħðéī adā dò é ĦðħðĦJdaĦ þ éL ì Ħðéīð þ a) Ħð ∯éêa éiħ òd Hòððí aā ó J

" Ħé÷þ cāĿ + oīð L (éuzéhī i Ħ cāí i ħ ò cé IJ of Hāh∠ ĝ 4 ÷ofn ê off ofn í ðöþ ðí ði didó oð éuù op ē đĦ éāī ê ði éi hð dò oā h #)4%3 ē Ħđī ði ī odā hī éī i ħ L5. %0 ĝ #- # ⇔⊡⊡⊡⊡ ∠éāí ê ði éi hð of ofn éuhđ é 3 did þ dā) huéāí ħ ðāí ð þoì L\$ i ī hđā ⇔⊡⊡⊡⊡ 2000 ĝ #- # ⇔⊡⊡⊡⊡ ∠éāí ê ði éi hð of ofn 3 did þ dā) huéāí ħ éāí ofn òdi āí ī ÷ Ħđi ó ÷ di ī é ij ofð Ħéāðð dò ÷ éê of eī h⇔oāi u í oā ó ī ÷ ð ðāī of fð 3 did þ dā) huéāí ħ éāí ofn òdi āí ī ÷ Ħđi ó ÷ di ī é ij ofð Ħéāðð dò ÷ éê of eī h⇔oāi u í oā ó ī ÷ ð ðāī offð hī i í L é Ħð é ∯ ÷ ofn Ħéēī d Hòððí ħ þ éoā u dā ħþ éuð Ħê off ħ ∬ī ofn ā dī ī ÷ Ħð éī ðāðí ∯ ÷ ð O Ħdùðiī i joiu uó döu ÷ éI]ð dā u þ oā op éu op ē éiī dā ī ÷ ofn ħēði oðħ dò ê off ∬

0 éi ởà " él é LL Jpà ðí é hi êì Hohī éī é ē Hđk op é ∠A + oh ê o f ơh i ðöþ ðí ði đườ dò eù Leop e đ H éā ī êði éi hð đò of h#)4%3 ē Hohī ði īodā hī éī i hL5 . %0 A #- # ≪ETETEZ éā í êði éi hð of oh éind ða í ðþo) īdī ÷ð 3 đườ þ đā) hư éa í hL\$ i ī h đā ⊡ETETZ) īon éi dþ þ đā hēði oð hòdi a í oa ò d Hohī ÷ éê of éi h≪ei ī þ éL éuh đ êð đê hở HJðí ī÷ Holi o ÷ đi īī ÷ ð ðaī of Đ Héā óð dòī ÷ ð hī i í Lé Hobé A ÷ oh Héēī d Hòððí h þ éos iL đā hþ éuð Hêorf h éa í uol éff h Jī oh a dī ī÷ Hobeī ða ðí (A ÷ ð 0 Hohðiī i jou uou ðu L÷ éIJð đã u þ osop éi op e éi ī đã ī÷ oh hēði oð h dòê of f

6 é Hazée üð 'dh÷éijú LLì) azē ar ð Hādījé ð÷di u é ar ú éðē ēi u ÷ðu h∠ <u>î</u>4÷ah ê af ah íðð þðí ði du do ar éu he e d H éaī êði éi hð dò ar h#)4%3 ē Hotīðiī adā hī éīi hL5. %0 <u>n</u> #-#⇔⊡⊡⊡⊻éa í êði éi hð ar ah éu het ða íð þai īd 'i éi éu éa éu L\$iīh dā ⇔⊡⊡⊡⊻[4+ðì dþþdāð hī ÷éijú as ī÷ð Hðó adā ⇔ar ah òdi ā í as òd Hothī ÷ée ar éi h⇔éā í ah dò ðā êð hððā ī÷Hoti ó÷diīī+ð ðāī ar bheta óð dò ī÷ð hīií Lé Hoté [4+àn Héeī d Hòðði hþéasu: dā hþéuð Héa af héā í uð éffh]jī ah ādīī+Hotéīðaðí 4+ð 0 Hotóðiī ij au u au áu be í a da do da da þþéu að heði af heta í uð éffh]jī ah ādīī+Hotéī ðaðí [

Meyer's Goshawk



3đượp đã 38é ∯ «é cửô L (é uế é ð ði nh é ā ừ đ H ∞ (A + đ nê đ H đ ní ð ð pði ði đươ có é ui L d pē đ H é ā ī ê ði é nhờ đò đ h #) 4% ē H đi ði ī đ đā hi é ī nh L5. % O A # # & E TE TE 2 ⁄ É ā í đ h I Ji uã ð H É É d d L É î + ð) 5 #. 2 ð í , đ i é hhð h þ ð ā ī L 5 #. E TE TE 2 Ji đ h é d h d pē đ H é ā ī í i ð ī đ đ ê ð đa ó ð ā í ð þ à ī đ ī + ð 3 đượp đā) hưé ā í h L\$ i ī h đā ⇔ TE TE 2 Ji đ h é d d pē đ H é ā ī í i ð ī đ đ ê ð đa ó ð ā í ð þ à ī đ ī + ð 3 đượp đā) hưé ā í h L\$ i ī h đā ⇔ TE TE 2 Ji đ h é d d pē đ H é ā í á ð cá ð d ð i a e ú é ā í à d H ð hi h kéā í đ à chi a í ī + H d i c + d i ī ī + ð ð ā ī đ H ð h i í L é H ð é Ji ờ ð ð í h þ é da i L d a ē do ð d ā h ∉ d I ð h ⇔ à d + ở h h þ h é ā í uð é H h Jī đ i dā h á ð H ð í T d ê ð H H Đ Ji A 0 H d ù ð i ī i d u u u ú ð u ÷ é I Jð đa u þ da þ é u d ē e i ī dā ī + ð h he ð i d ð h d o ê d f J

2 ðí ĝréi úðí " i īīđā ĝri écü L4 i Ħāox þéì i üðhi h héüðþ đāoh∠ ĝ4÷oh hēði oðh đò ěi écü oò òði āí oā ó Ħéhhuéāí L\$ i īhđā ⇔⊡⊡⊡⊻∭ī oh üði éüL: ìðþ þðā ≪êi ī þéL: éühd êð üði éüL: ī÷Ħðéīðāðí í i ð īð ÷éêor éī í ohī i Ħêéā ìð éā í đēē đĦ i āohīoì ÷i āīoa ó êL: oā ÷éêor éā īh đò üði éüì dþ þi āor oðh òð Ħòdð í ∯ ÷ð 0 Ħðùði ī ijoüü uáuðuL: ÷é∐ð đā ùL: þoā oþéü oþēi īða ī÷oh hēði oðh ðò êoh f

'ı éí éü éā éü 2 éaü LL Lēđī éðā af af i gat át i dat i dat að af af í ðð þór í ði duð ó a éu L aþēđ h féā í êði éi hððā í ð þoiīd'i éi éu éā éu L\$I ī h đā ∉⊡⊡⊡ kéā í ah i ú h haðað í éh êð aā ó. ð éh 4 ÷ h ð éi ð á í êL)5 #. ♣2ði , ahī L)5 #. ∉⊡⊡⊡ kí að að að að að að að að i ú eh haðað í éL aā ÷ éê af éā ī dò uð h éu dþ þiā af að h éh é h di h ð dò dð dí (4 ÷ ð aþē éi ī h dòī ÷ ð ÷ Lí h ð eði j ð h e h ði i dā ī ÷ ah h éh éi í i é h éa í i ÷ h é að h éh é h di h ð dò dð dí (4 ÷ ð aþē éi ī h dòī ÷ ð ÷ Lí h ð eði j ð h e h di h ð dò dð dí (4 ÷ ð aþē éi ī h dòī ÷ ð ÷ Lí h ð eði j ð h e h ði i da ī ÷ ah h éh éa í ī ÷ h ð éi ð aā í ÷ ð í tí êð þa aþ éi í i ð ī ð þa aþé éi aþē éi i h ī ÷ éī ē h ð ið i a ð kēði ī ð í ī d ÷ éi Jð dā ī ÷ ð ó h éh h i eá í ÷ éê af éi i j ÷ ð h ð i ÷ ð h h ēði að h dì i h ∬

Common S and piper



9ðüiðij ĝe æêðí & Ħø ĝt đIJð LDī où vai dēi hhơi ử þaðā hơh đìi ứ Hơh∠ j4 ÷oh ê o Hí oh íðð þối ði đừ đó ở é ữ Li ope đ H é āī ê ði éi hði of oh ðā íð þoi īđ'i éi éi éa é ữ L\$I ī hơtā ⇔⊡⊡⊡∠Dī oh é ữ hơi đē ē đ Hi ā oh ī oh é ữ Li ÷i ā īðí ê Lionā ÷ éê of é ā ī hơi ở i éi ì đþ þi ā of oð ði é h é hơi hì ði ðo ò đơi [4÷oh í đIJð oh ò đi ā í ona i ē ữ é ā í ÷ é ê of é ī h é ā í ò ððí ho đā ờ Hi of héā íāi ī h.Dī oh ā đī ī ÷ Hồ é ī ðā O Hơi ờ li jó vữ ữ vàu vàu vàu vàu ba củ ape é ci pi đã ī ÷ oh hē ði oð hơi dò ê of [4÷ð O Hơi ờ li jó vữ ữ vàu vàu ba củ bi éi vàu ba củ ape é ci pi đã ī ÷ oh hē ði vàu ba chi a chi a chi a chi ba chi a ch

\$ i ì đhẽ tại Hơi úếi đđ L#éì éī i é í i ì đhẽ hợ∠ (14÷ đa ê đa f đa í ðö þðí đì đừ đó à é từ cả pê đh téā i éði éi hð đò đa h #)4%3 ē Hơi ðì ī đơ a hĩ éī i h L5. %0 (17 #- #⇔⊡⊡⊡⊡‰-éā í é thơi ê ði éi hð đi đã i ối ái đã b đa i hiếi i h L5 i ĩ hơi đa ⊕⊡⊡⊡⊡ (14÷ đa ì dì úéī đơi đa ì dà i da ì đã i đa ì đã i đã b đhì é tố đa ì hiếa i h L\$ i ĩ hơi đ⊕ đa ì đi úéī đơi đa ì dà úéī đơi đa à da i đi úéī đơi đa ì đã i đã b đhì é tối ái a i ha i hơi a i đã ⇔⊡⊡⊡⊡ (14÷ đa ì dì úéī đơi đa ì dà i đã à đa ì đi úéī đơi đa ì đã i đã b đhì é tối ái a i hơi a i cá i đã i e thơi ái i ái i cá i đã i e thơi é từ ÷éê đi thi dà i dà úéī đơi đa ì đã i é thời é tối a i hoài a i cá i đai e é thoi é tối đã i hiệt à hì đã i é thời a i thoài a i cá i hoài a i cá i đã i é thời a i hoài a i cá i đã i é thời ê thời a i thoài a i cá i dà i e é thời thi i i dã i é da i a i hoài (14÷ da ì dì úéī đơi dòài h đã dhi a i theài i hoài h thời i i dã i é dhi theài i i giữu cá dù cá i e é lið đã iù hoài a i thoài i thoài i thoài i i giữu cá dù cải e hoài a i e hoài a i theài a i theài að hē ði að hiệt dà i theài a i theài að hēði að hiệt ởi hoài i i giữu cá dù cải e hoài a i thoài i theài a i theài að hiệt dà i theài að i a i thoài i i giữu cá dù chiết dà choài i theài a i theài að hēði að hiệt dù chiết dà choài i theài a i theài að hēði að hiệt dù chiết dà choài i i giữu cá dù chiết dà choài i theài a i theài að hēði að hiệt dù chiết dà choài i theài a i theài að hēði að hiệt dù chiết dà choài i theài a i theài að hēði að hiệt dù chiết dà chiết dà i theài i theài að hēði að hiệt dù chiết dà chiết dà i theài að hēði að hiệt dù chiết dài chiết dà chiết dài theài að hēði að hiệt dù chiết dài chiết dài i theài að i hoài i thoài i thoài i theài að hiệt dù chiết dài chiết dài chiết dài i theài að i a i theài að hiệt dù chiết dài chiết dài chiết dài i theài að hiệt dù chiết dài chiết dài i theài að hiệt dù chiết dài chi theài aòi að hi dù chiết dài chi chi theài chiết dài chiết

#dì đā īī, đHz úððī L4 Hzi ÷dó ud hhi h ÷éð þéīđí i h þé hhðā é∠ ĝ4÷ah ê aff ah íðð þðí ði đư đó zi éu Laped He ar í áði éi hð dò ar h #)4%3 ē Ho tā i rái h L5. %0 ĝ7 #- #⇔⊡⊡⊡⊡∠ L\$ i ī hđā ⇔⊡⊡⊡⊡⊻∰ ÷ah éêi ā í éāī ud Hzúððī ah di ā í ī ÷Ho i ó ÷di ī éu ÷éê ai éī ī Lēðhaāī ÷ð hī i í L éHo é ≪áā í ÷éh é ē Ho do HuéHo ð du di jð Haā ó d Hoh ar ar ar að aði í ÷ho e aff an aði ī ÷ho e aði í 4 ÷ð 0 Ho di ī i jau u au du La é aði Laped e a aði e ar aði aði í tið aði da aði í ti ta aði tið aði í ta aði í ta aði ta aði í ta aði aði í ta aði í ta

\$ i ì ÷ðħħ, đHzúððī L#÷éĦp dħĿāé þ éĦbéĦbī÷éð∠ ฏ4÷aħ êaf aħ í ððþ ðí ðì dữdóa éữu: aþ ēdħféāī êðì éi ħð dòaāħ #)4%3 ēĦdīðì īadā ħī éī i ħ L5. %0 ฏ7 #- # ⇐쿄ᠠш⊻L\$ i īħđā ⇐쿄□ш⊻L\$ 4÷aħ ħēðì aðħ aħ éŭħd ïaħīðí éħ. ðéĦ4÷Ħðéīðāðí êĿ)5 #. ♣ 2ðí , aħī L)5 #. ⇐쿄ᠠш⊻L\$ i ñħuðħā aā i ēïéāí ÷éêa éīħðħēðì aéüL dā òïdij ðĦzāó īĦððħ,₿÷ðĦðàdĦð ⊲aī þ éL êð éòàði īðí êL àdĦðħī ì uðéĦzāó éidāó ī÷ð éi ì ðħħĦdéí ħ.∬

&@āħì ÷ ♣0Ŀóþ Ŀ 0éĦĦī Ŀ @ĦĦēħøīé ò@āħì ÷øvéđüéð∠j¥÷ðħêøff ðħí ððþ ðí ðì düdó@ éüĿ ¢pēdĦéāī êðì éi ħð dòøħ #)4%3 ēĦtīðì īødā ħī éī i ħL5. %0 j? #- # ↔ ETETE™ éāí éthd êðì éi ħð ø ðħðāí ðþ @i tðī ÷ð 3düdþ dā)ħúéāí ħL\$ i īħdā ↔ ETETE™ ¥ ÷ðħēéĦĦī ðħòdi āí @ā òdĦðħī ÷éêøéīħ éāí òððí ħ dā ħþ éüüīðĦþ øðħòdi āí @āī÷ð êéĦú dòiéĦbð òdĦðħī īĦððħ ¼÷ðħì ðþ þ dā ħēðì øðħ ðħādī ī÷Ħðéīðāðí J4÷ð 0Ħdùðiī ij øüiúeúðiĿ ÷éIJð dā iĿ þ @a øþ éuøþ ēéì ī dā ī÷ðħħēðì øðħdòêðf []

% üðiīi ħ 0 éĦĦĨ L‰ üðiīi ħ ĦđĦéīi ħ ħđudþ đāðā ħøh∠ĝ4÷øh êøff øh íððþ ðí ði dùdó á éuù «pēđĦ éāī êði éi ħð dò øħ #)4%3 ēĦđī ðiī ødā ħī éīi ħ L5. %0 ĝ #- # ≪ETETEZ AB ÷øh øh é ì dþ þ đā ēéĦĦdīī÷ éī ì éā êð òdi ā í øā é ij øð ð I jéĦbðīL dò ÷ éê ø éīħ «àĦđþ òd Ħðħīħī đó éĦ ðāħ «éāí òððí ħ dā ij øuí éāí ì i uð Jéīðí òĦ øħ «ħiì ÷ éħ ê éā éā é ♣ L\$ i īħ đā ≪ETETEZ Dī øh ā dīī÷Ħð éīðāðí AB ÷ð OĦđùðiī ij øui wáuðu: ÷ éI Jð dā u: þ øā øþ éu øþ ē éìī dāī÷øħħēði øðħ dò ê øf 〔]

3đā ó 0 éĦĦđī Ľ ð đờờ HđLi h÷ ()÷ðī ð Hđì ửa i h∠ ()4 ÷ah ê a f ah í ðð þðí ði đư đo ai eite aþē đ H éāī êði éi hð đò a h#)4 %3 ē Hđī ði ī adā hī éī i hL5. %0 (2) #- # ≪ E⊡ EEZ (4) ÷ah ah éā i ā i dþþ đā ē é H đī ī ÷ éī ì éā êð ờ di ā í aā é ij aí ð I J é Haðī L dò ÷ é ê ai éī hờ Hđþ ờ đ Hðhī hī đó é H ð ā h≪ eā í ờð ði h đā ờ H ai h éā í hðð í h dò ī H ðð L\$ i ī h đā ≪ E⊡ EEZ (1) ī ah ā dī ī ÷ H ð éī ðāð í (4) ÷ ð 0 H đừði ī ij au ú aú ðu ÷ éI Jð đã u þaā aþé u apé éu a ī dā ī ÷ah hē ði að h dò ê a f ()

'ı éí éü éā éü "đđê đđú ∟ vā đk ó Héāī ø∠ ĝ4÷ of ê of fon í ðö þðí ði dữ dó và éüL op ē dHéāī êði éi hð dò of h#)4%3 ē Hotīðiī odā hī éī i hL5. %0 ĝ7 #- #⇔⊡⊡⊡⊡∠eéāí éühd êði éi hð of of ðā íð þoi ī d'i éi ú éā éüL\$I ī hđā ⇔⊡⊡⊡⊡∠Q4÷ of dī ji uohì dþ þ dā vai od Hothī ÷ éê of eī h⇔ij ÷ ðHð of òððí h dā vai hði ī h,∬ī of ó ú dê éüL IJI úa ð Héê úð Q4÷ð 0 Hotùðiī i jou úvá úL ÷ éIJð dā úL þoa op é ú op ē éi ī dā ī÷ of hēði voh dò ê of ∫

" ù ī ÷ ∔ (đ Ħā ê cũu Lìð Ħđh ē củ éī i h þðā í éā éð ∠ ĝ 4 ÷ oh ê of foh íðð þðí ði đươi ó vi eiu op ē đ Ħ éāī ê ði éi hð đò o ħ #)4%3 ē Ħđīði ī odā hī éī i h L5. %0 ĝ #- # ⊡ ⊡ ⊡ ½ éā í é thơi ê ði éi hð or oh ðā í ð þoi ī đī ÷ ð 3 đươi þdā) hư éā í h L\$ i ī hơiā ⊡ ⊡⊡ ½ + oh ì đ þ þ đā ÷ đ Ħā ê củ oh ò ai a í oa ò d Ħ ð hi ÷ éê or éī h éā í oh ā dī ì đā hoi ð Ħð í éhī ÷ Ħð éī ðā ðí ∬ī ò ð ðí h đā ò d Ħð h éā í ā i ī h ∰ ÷ ð O Ħ ð hi i jou u úð củ ÷ é IJð đa ủ þoā op é củ op ē é ì ī đa ī ÷ oh ħē ði oð h đò ê of []

#đþ þ đã L2 øJð Ħ∠+ øā ó ò phi ÷ð Ħ LL ù ðí đ é ī ī ÷ phi hé ừ đþ đã ðā ħ phí ∠ ĝ 4 ÷ phi ê phi í đó þ ðí ðì đừ đó phi é uh the the transformation transformation the transformation transformation the transformation transformation the transformation transformatic transformation transformatic transformation transforma 6 é Hzéê üð \$ ij é Hồ + oā ó òzh ÷ ð H L#ðLĸ üð ē of i hā a of Hđ þé κoũ i é ∠ ① 4 ÷ oh ê of for i ð ð þối ði đữ đó a é üL op ē đ H é āī ê ði éi hð đò og híð ē ð ā í ð ā ā ī ÷ ð Hzjð H hL hīð þéā í é üh đê ði éi hð or oh ð ā í ð þoi ī d' i é í ú é ā é üL\$ i ī h đā ⇔ E E E E V (4 ÷ oh ú oa ó òzh ÷ ð Hzjð H hL hīð þéā í á úh dê ði éi hð or oh ð ā í ð þoi ī d' i é í ú é ā é a é a e E E E E V (4 ÷ oh ú oa ó òzh ÷ ð Hzjð H hL hīð þéā í á í à é ā í ì é ā ê ð ò di ā í ê ð hoi ð hī Hð é þhoi a Hzē é Hzéā ÷ é ê or é ī hL bðð ē ÷ dī d ∠ ① ī oh ā dī ī ÷ Hð é ī ð ā ð á í .) d hh dò þoi H 1 ∬ ð ī ú é ā í hí dijā hī Hð é þi a Hzē é Hzéā ÷ é ê or é ī hL bðð ē ÷ dī d ∠ ① ī oh ā dī ī ÷ Hð é ī ð ā ð í .) d hh dò þoi H 1 ∬ ð ī ú é ā í hí dijā hī Hð é þoi ī ÷ ð í é þí i ð ī dē H Huðði ī dē ð Hế ī od ā ⇔ é ā í ú d hh dò òzh÷ ē Hđ í i ì ī od Joī L i ē hī Hð é þ dò ī ÷ ð í é þoi òzh ÷ ē é hhé óð oh ā dī þéoz ī í e a ā í í oð ī e h í ni oz ā ī ÷ ð í oh é ē ē ð é Hé ā ì ð dò ī ÷ oh ú a ā ó òzh ÷ ð H ờ H ð þi ē ÷ ð i ē ē ð H ì é ī ì ÷ þðāī ⇔ hoā ì ð or h í oð ī oh þéoz ù L ì dþē Hzhð í dò ùzh÷ ∬

Variable Dwarf Kingfisher



#đì úð Hồ từa & & éāī éoù L2 ÷oēor i Hé ì ∬ì đì úð Hồ từa∠ ĝ4 ÷oh êo f oh í ðð þôí ôi đừ đó à étù «pēđ Héāī êði éi hồ oi oh ðā í ð þoi ī d' i éi éù éā éù oh tiếā (L\$ i ī hđā (≢⊡⊡⊡⊻[4 ÷oh i ā) đ þ þ đā à éāī éoù Hồ ěi oh bì i ā í ohī i Hêði à thếhĩ ÷éê oi éi (ii ÷ð Hồ) lì àð ối h đã os hồi ī h.∬ī oh ī ÷ Hồ ei ðā ối ê L ֎ê oi éi í ðó Héi éī odā [,4 ÷ð Hồà Hồ (apē ē éi ī h é Hohosi ó ở thệ ē Hơi àði ì ì đã hĩ Hì ī odā éi ī ol jor ob čhi é Hohosi ô thể pê thể thết à thết

2ı òđi ħ & éāī é œi L2 ÷ œi ∅ i Ħé Ħ ò œờ Hđā ħ Ħ ò đờ Hđā ī é ∠ ฏ 4 ÷ øħ ê ø f øň í ðð þ ðí ði đư đó ø é üL φ ē đĦ éāī ê ði éi ħð øħ ðā í ð þ øi ī d' i é í é û éā é üL\$i ī ħ đā ⊕ ⊡⊡⊡⊻[4 ÷ øħ ò eāī é œi øħ ì dþ þ đā øā ờ đĦ ð ħī ðí ÷ é ê øi éī ħ ↔ ij ÷ ð Ħð øi ò ðð í ħ đā øā ħ ði ī ħ . Ŋī é ē ē ð é Ħħ ā dī ī đ ê ðī ÷ Ħð éī ðā ðí . [(dij ð I Jð Ħ ⇔ φ ē ei ī ħ ờ Ħ ð ē Ħ dù i ī ì dā ħī Ħ ì ī ø dā ei ī ø Jø øð h é Ħð ē dħ ħ œi ð ...

/ Ħađừð 7 ÷ahī ửð Ħ LO éì ÷ Lìðē ÷ é ửé đ Hađừ đaíð hìna ā á éþ đþ ðé ∠ ฏ4 ÷ah ê a fí áð þðí ði đừ đó à é ữ Lapēđ Ħ éāī êði éi hð ar ahðā íð þaiīđ'i éi é û éā é ữ L\$II Thơtā ఈ TETEY243 ÷ðij ÷ahī ửð H ahìđ þþ đā anai ò đ Hô hī ÷ é ê ar é ī h⇔ij ÷ð Hô ar ò ðði hīđā ana hði ī h. J)ī þé Lêðī ÷ Hô éi ðāði í iðīđ ÷ é ê ar éi ữ đ hh. Jþē éi ī hò Hothpē Hotùðiī ì đa hī Hìī andā éi ī ad Jar að hé Hôtē ð đ hha ê ứð . J

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Appendix E

List of Mammal Species Occurring in the TRHDP Study Area and Their Status / Vulnerability

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Appendix E

List of Mammal Species Occurring in the TRHDP Study Area and Their Status / Vulnerability

S pecies name	C ommon name	Observed at station	Potential Presence	Migratory	Endemic	IUCN Red List	CITES Appendix	1998 Act	Population Trend	Local uses	River Dependent
Pteropodidae FR	UIT BATS										
Macroglossus minimus	Northern Common Blossom Bat		G R , S S a, S S b, S S c	-	-	LC	-	-	S	F	-
Melonycteris fardoulisi	Fardoulis's Blossom Bat		GR	-	SI	LC	-	-	D	F	-
Nyctimene major	Island Tube-nosed Fruit Bat	F&F6, F&F5, F&F4	GR	-	-	LC	-	-	s	F	-
Pteropus rayneri	Solomon`s Flying Fox	F&F5, F&F11	SSa, SSb, LK	-	-	NT	п	I	D	F	-
P teropus admiralitatum	Island Flying Fox		SSa, SSb, LK	-	-	LC	п	I	D	F	-
R ous ettus amplexicaudatus	R ousette Bat	F&F5, F&F4	GR	-	-	LC	-	-	S	F	-
Hipposideridae L	EAF-NOSED E	BATS									
Aselliscus tricuspidatus	Trident Leaf-nosed Bat		GR	-	-	LC	-	-	s	F	-
Hipposideros cervinus	Fawn Leaf- nosed Bat	F&F5		-	-	LC	-	-	S	F	-
Hipposideros diadema	Diadem Leaf-nosed Bat		GR	-	-	LC	-	-	s	F	-
Muridae RODENTS											

Mammals of the Study area

S pecies name	Common name	Observed at station	Potential Presence	Migratory	Endemic	IUCN Red List	СПЕЅ Appendix	1998 Act	Population Trend	Local uses	River Dependent
Rattus exulans	Polynesian Rat		GR	-	Ι	LC	-	-	S	-	-
Rattus rattus	House Rat		GR	-	Ι	LC	-	-	S	-	-
Uromys rex	King Rat		SSa, LK	-	G	ΕN	-	I	D	-	-
Uromys imperator	E mperor R at		LK	-	G	CR	-	Ι	D	-	-
Suidae PIGS	·						•				
Sus scrofa	Wild Pig	F&F17, F&F16, F&F5	LK	-	-	LC	-	-	S	F	-
Phalangeridae NOCTURNAL MARSUPIALS											
P halanger orientalis	Northern Common Cuscus		LK	-	-	LC	-	-	S	F	-

Potential Species: TRHDP ESIA Scoping Study = SS, SSa=site A, SSb=site B, SSc=site C; Local Knowledge = LK, Gold Ridge Report = GR

Endemic: Guadalcanal = G, Solomon Islands = SI, Introduced = I

IUCN Red List Category: Least Concern = LC, Near Threatened = NT, Endangered = EN & Critically Endangered = CR

CITES Appendix for international trade of species: II = may be authorized by the granting of an export permit

Population Trend: Decreasing =D & Stable =S (according to IUCN Red List Category)

Local Uses: Food =F (bush meat)

1998 Act: Wildlife Protection and Management Act 1998. Schedule I lists the species that are prohibited to exports, Schedule II lists the regulated and controlled species for which a valid permit to export such specimen is required

Appendix F

Habitat Value Analysis

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Appendix F Habitat Value Analysis

The following table provides an analysis of habitat value by habitat type, defines the habitat vegetation and characteristics, and provides photographs to illustrate how habitat typically appears in Guadalcanal.

Habitat	Ecological value	Explanation	Photograph of the habitat in the study area
Grandand	Madarata	Grassland refers to habitats that are dominated by grasses and cover the lower lying hills toward the plain. These are natural habitats formed from the locally dryer climate and less fertile soils. Since human density is higher in grassland, and plant species of concern are rarer, they have moderate ecological value. However, they support unique wildlife and bird species that are adapted to open spaces not found in forests.	
Grassland	Moderate	The most common species (indicator species) identified during plant survey were Pennisetum polystachyon, Pueraria lobata, Sida rhombifolia and Mimosa pudica. The invasive species Mikania Micanthra is also present.	
		Grassland dominates the landscape along the existing Black Post road, future access road to the Project site and where the transmission line will be installed. In the Tina River catchment, this habitat is however only present at its Northernmost end.	

Habitat value analysis

Habitat	E cological value	Explanation	Photograph of the habitat in the study area
Undisturbed forest (primary lowland forest)	High	Refers to forested areas that have undergone relatively no disturbance by human activities. These forest areas are in pristine condition and have a high ecological value. They are home to a wide variety of species and the intactness of the forest supports great biodiversity. From S engue upstream, the Project area is solely made of lowland forests. Primary forest (undisturbed forest) becomes increasingly important moving upstream as logging company encroachment becomes scares. Primary forest is characterized by tall canopy trees. However, regrowth species are also common due to occasional cyclones which make canopy uneven. Most fruit trees are found in lowland forests (FAO, 2009). Indicator species include: Ficus sp., Dysoxylum excelsum and Cyathea sp. (Tree Fern). As shown in the previous section, plant survey stations carried out in undisturbed forests, have a high proportion of plant species of concern. This habitat covers the majority of Tina River's catchment at altitude below 600 m.	

Habitat	Ecological value	Explanation	Photograph of the habitat in the study area
Undisturbed forest, montane forest	High	Montane forest refers to habitats further inland and of a higher altitude (starting at 600masl). Upland areas are usually of a pristine nature due to the distance from human habitation and influence. They also are home to many unique and rare species and this habitat is therefore of high ecological value. Recent studies in Malaysia suggest that montane forests in the region are better at sequestering carbon than lowland forest since montane forests have moister and richer organic soils due to higher rainfall. This gives montane forests an additional ecological value (J eyanny et al., 2013). Indicator species include: Syzygium sp, Metrosideros sp., Ardisia sp., Ficus, R hododendron, Dacrydium spp ,Podocarpus pilgeri (WWF, 2005) There is no montane forest that will be directly impacted by the Project. In Tina Riverš catchment, this habitat is the most important one in terms of surface coverage.	

Habitat	Ecological value	Explanation	Photograph of the habitat in the study area
Disturbed forest (secondary lowland forest)	Moderate	R efers to forested areas that have undergone relatively recent disturbance by human activities, such as timber extraction. These forest areas are not in pristine condition and have a moderate ecological value mainly because of logging disturbances. S econdary forest (disturbed forest that have regenerated) were affected by logging activities in the study area. These forests are dominated by regrowth species such as Ficus sp., P ometia pinnata and C alophyllum sp. S hrubs include the Macaranga species. C ommon non- ligneous species include Alpinia purpurata, C alamus sp. These are indicator species. This habitat becomes important from C horo moving downstream. R egeneration in the S olomon Islands is fast as long as soil remains available. In disturbed forests, logging roads are quickly colonized by regrowth species of shrubs, plants and trees. However, in such forests some of the key functions of primary forest are degraded due to deforestation: Forests are guardian of water catchment integrity: forested areas protect water sources and ensure water quality by providing soil stability. Unfortunately, deforestation brings erosion, and soil losses in watercourses.	

Habitat	Ecological value	Explanation	Photograph of the habitat in the study area
		 Forests are important for biodiversity conservation. Deforestation opens the canopy and fragmentize habitats, locally increasing temperature and reducing humidity which reduces the attractiveness for many species that thrive in moist habitat such as amphibians. Fragmentation also exposes wildlife to predators and feral animal, exposes soils to erosion, etc. Degraded lowland forests have lower bird diversity and other 'strict-interior species_ as shown in fauna surveys and scientific articles (Hossein et al., 2009) Forests are important nutrient pools not only for tree regeneration but for all plants regeneration through topsoil recycling and tree decaying. Unfortunately, deforestation deplete soil from its nutrients as well as its capacity to sequester carbon (Imai et al. 2010, Lal, 2005). 	

Habitat	Ecological value	Explanation	Photograph of the habitat in the study area
Remnant forest (secondary forest colonized by pioneer species)	Moderate	This habitat refers to forested areas that have undergone extensive disturbance with remaining large trees such as Canarium nut trees left on purpose. These forest areas are not in pristine condition and have moderate ecological value. They are home to a variety of species but are highly modified landscapes by people. Increasing light has modified plant composition under the canopy.	

Habitat	Ecological value	Explanation	Photograph of the habitat in the study area
Riparian	High	R iparian refers to habitats along and adjacent to Tina River and other waterways. These habitats are of high ecological value because they are home to many unique species that are dependent on the water ecosystems such as aquatic insects and amphibians. Riparian habitats at a greater distance from settlement areas are in pristine conditions. This habitat is typical along rivers such as Tina River. It is made of many epiphytic plants and orchids, vines (climbers and creepers shrubs) as well as fern trees that are indicator species. Many medium sized trees and shrubs are present. The natural water regime of rivers allows many microwetlands to be created, trapped by large boulders or sand bars, which add value to riparian habitat. Their extent and location regurarly change with Tina flows. Along Tina River, riparian habitats only cover limited areas due to the rivers steep slopes.	

Habitat	Ecological value	Explanation	Photograph of the habitat in the study area
Cliffs	High	Cliff refers to habitats on and adjacent to very steep areas (vertical slopes), usually adjacent to the river as well. Cliffs seem to be habitats that are created by the river systems and are fed by many small waterfalls (small tributaries). They are of high ecological value because they house unique species that may use the cliffs as feeding and breeding habitats. They are of a relatively pristine nature because cliff areas are hard to be modified by local peoples. Tree fern (Cyathea), ficus, palm, epiphytic orchids and ferns are common on cliffs. Other indicator species include : Pholidota sp., Macaranga sp., Timonius timon, Alpinia purpurata, etc.	

Habitat	Ecological value	Explanation	Photograph of the habitat in the study area
Garden	Low	Garden refers to human cultivated habitats such as food crops. These habitats are of low ecological value as they are human created landscapes. However, they do provide certain feeding habitats for some species, mainly opportunistic species, insects and reptiles.	

Habitat	Ecological value	Explanation	Photograph of the habitat in the study area
Fallow brush land	Low	Refers to habitats that were cultivated in the past but have been left to fallow in recent years. These are areas similar to remnant forest however, they have undergone complete cultivation as in the form on a garden and have been left to fallow/regrow. They are of a weak ecological value because they host a minimal number of species.	

Habitat	Ecological value	Explanation	Photograph of the habitat in the study area
Oil palm	Low	Refers to habitats that are homogenously cultivated with oil palm. These areas are of low ecological value as they are human created landscapes and are dominated by introduced palms. However, some wildlife species have learned to adapt and take advantage of this habitat such as bats and birds. Plant composition under palm plantation are uniform and made of several heliophilous plants.	

Habitat	E cological value	Explanation	Photograph of the habitat in the study area
Settlements	Low	Refers to habitats in and around village areas. These areas are of a low ecological value and the presence of domesticated animals such as cats, dogs and pigs threaten wildlife native species. Opening in the canopy allows for invasive plant species to settle such as the Mikania micrantha and colonize nearby natural habitats.	

Appendix G

Mitigation Measures for Facilitating Upstream Fish Migration [THIS PAGE LEFT INTENTIONALLY BLANK]

Appendix G

Mitigation Measures for Facilitating Upstream Fish Migration

The dam will create a barrier to the passage of migratory fish species to the catchment upstream of the dam. It is possible to provide fish passage past the dam for most species. The options include a natural stream fish pass (if there is sufficient space), or a trap-and-haul system. These systems are used in New Zealand for a variety of climbing species and in UK, France, and the US for eels (Paterson & Boubee 2010, Solomon & Beach 2004). Fish pass systems developed in Europe and North America for salmonids and similar species are expensive and will not necessarily suit the Tina River species. The 5 m operating range of the reservoir would necessitate a complicated system of hydraulic structures at the upstream end of a conventional fish pass to maintain a constant flow under the range of reservoir levels.

Because of their climbing ability, it is relatively easy to provide effective upstream passage for gobies and eels using either a natural stream channel¹ pass, or trap-and-haul system. It is likely that a trap-and-haul system will be the least costly and most practical option for fish passage. A simplified diagram of the trap is shown in Figure G-1. Fish from the trap can and should be released in or upstream of the reservoir at a location that will avoid the possibility of fish being entrained by spillway or power station flows. The ramp allows migratory fish to climb to the trap, where they remain until transferred to an upstream location.

One advantage of a trap-and-haul system is that fish caught in the trap can be identified and counted before they are transferred to areas upstream of the dam. Thus, a trap system will provide very useful monitoring data on the state of the goby and eel populations which is very difficult, if not impossible to obtain by other means.

Neither a trap-and-haul system, or natural fish pass, is likely to provide passage for kuhlia and grunters, both of which are a swimming species. Kuhlia appear to be reluctant to use fish passes (Lewis & Hogan 1987). However, if kuhlia and/or grunters accumulate at either the powerhouse tailrace or the base of the dam, it will be possible to net them and transfer them to a more suitable environment such as the Toni River or upstream Tina River. This is, in and of itself, another form of trap-and-haul system. The former would be more preferable because some mortality would occur when the adult fish migrate from the upper Tina River to the estuary area to spawn. An adaptive management approach will be implemented with the fish passage system to monitor and adapt the system as appropriate.

Figure G-2 shows the trap system with ramp leading to a holding tank and piped water supply installed at Waitaki Dam, New Zealand. The ramp can be lined with bristles, gravel or a drainage product called Miradrain or Cordrain (Patterson & Boubee 2010). The optimum slope is about 15 degrees.

While bristles appear to best for eels, gravel or drainage products suit both gobies and eels. New Zealand traps have been used to collect eels, galaxiids, redfin bully (Gobiomorphus huttoni) and to a lesser degree torrentfish (Cheimarrichthys fosteri). The ramp should also have a transverse slope to provide deep water on one side and shallow water on the other to provide a choice of velocities and depths for the fish that move up the ramp. The climbing abilities and modes of locomotion of these New Zealand species are the same as those used by crawling and climbing species in the Solomon Islands, as described in the ESIA.

¹ A gravel/cobble channel similar to a riffle which would zig-zag up the dam face or abutments with resting pools at the changes of direction.



Figure G-2: Example of trap installation at dam


Appendix H

Mitigation Measures for Protecting Downstream Migrating Fish [THIS PAGE LEFT INTENTIONALLY BLANK]

Appendix H

Mitigation Measures for Protecting Downstream Migrating Fish

H.1 Rationale for Installing a System for Protecting Downstream Migrating Fish

Gobies spawn on substrate in the area in which they live. When the eggs hatch the larvae are carried passively downstream. It is not clear whether goby spawning is seasonal, or occurs all through the year. It is possible that spawning seasonality varies between species. Larval fish return to the estuary during the dry season and this indicates that spawning and downstream migration takes place early in the wet season. Thus, it is likely that hatching and downstream movement occurs during floods and freshes with the high flows ensuring rapid and safe transport to the sea. If so, the dam may be spilling and larval fish will pass over the spillway.

Although there are very few studies of larval survival through turbines, it is well known that the length of fish is the primary determinant of survival (e.g., Larinier and Travade 2002) and with larval fish potential mortality caused by striking the turbine blades or wicket gates will be low. Morris et al. (1985) describe quantitative data on entrainment mortalities that were gathered at the Ludington Hydro Plant on Lake Michigan, which has a head of 110m. S urvival tests on 9 species of larval fishes indicated that passage through the Ludington turbines decreased survival rates by an average of 15%. Large smelt larvae (15-42 mm) experienced much greater mortality than did smaller (<15 mm) smelt larvae. Some larvae were apparently robust and seemed to survive turbine passage (i.e., ninespine stickleback, lake whitefish, turbot larvae). Goby larvae are small (<10mm) and there is unlikely to be significant mortality through the turbines.

Although the gobies in the Solomon Islands are generally considered diadromous, large numbers of 10 mm gobies were observed in the shallow low velocity margins of the river between the dam and power house sites on 11-15 J uly 2016. It is unlikely that fish of this size have the swimming ability to make the 25 km journey from the sea and this suggests that these fish are rearing in the river rather than the sea. Shallow low velocity margins are the type of rearing habitat used by non-diadromous bullies in New Zealand.

Adult eels migrate to the sea at the beginning of the wet season. They are likely to migrate on the first fresh so that the deeper swift flowing water facilitates their passage to the sea, similar to the migration of New Zealand eels. The mortality of adult eels through turbines is significant, and there does not seem to be any easy way of screening or diverting adult eels. However, if they are migrating during a flood, a proportion of the migrating population may be carried over the spillway rather than through the turbines. Consideration should be given to increasing the normal operating level to near full supply level, during the first month of the wet season, to facilitate the downstream movement of adult eels over the spillway during floods. The loss of generation resulting from increasing spill would be partially offset by the increased generation from the extra head on the turbines. Consideration could be given to the possibility of 15-25 mm screens in front of the intake structure to prevent the ingress of large eels.

H.1.1 The TRHDP: a Barrier to the Downstream Migration of Silver Eels and Amphidromous Larvae

As mentioned above, all native fish species in the Tina River are migratory species with a life cycle that shifts between the sea and the river.

All species that utilise the Tina River enter into the river mouth as juveniles and undertake upstream migration to colonize the whole watershed and mature to adults.

The downstream migration follows two patterns:

- [•] For catadromous species (eels Anguilla marmorata, A. megastoma and A. reinhardti), the adults at a certain stage of their cycles (silver eels) return to the sea to spawn in deep marine areas, after which they die.
- For amphidromous species (Syciinidae and other Gobbidae, Eleotridae, Paleomonidae), spawning occurs in in the river. After hatching, the larvae are passively flushed down to the sea within a few days of hatching, where they grow for a period of several weeks/months before migrating back upstream.

Unlike salmonidss, these species do not follow a homing behavior. J uveniles can colonize any river, not only their natal stream.

Assuming that an efficient fish trap and haul system is emplaced for the Project (see Appendix A) allowing upstream migration of juvenile eels and target amphidromous species (Syciinids, other Gobiids, prawns), thereby ensuring that fish grow to adulthood upstream of the dam, the ecological continuity for these species would be fully achieved if silver eels and gobidae/prawn larvae are able to successfully migration back to the sea.

In the absence of appropriate mitigation measures, the TRHDP facilities will potentially impair the downstream migration. A proportion of fish will be entrained into the power intake tunnel and passed through the turbines. The passage through the turbines is likely to cause mortalities due to pressure fluctuation, turbulence and cavitation (affecting both silver-eels and larvae) plus physical damage when struck by the runners blades. However, Francis turbines, which are less damaging than Pelton turbines, have been proposed by Entura (March 2014).

H.1.2 Facilitating Downstream Migration of Silver Eels and Amphidromous Larvae

To move achieve full ecological continuity for target species by balancing upstream and downstream migrations, different mitigation measures can be considered for protecting outward migrating fish. This includes physical barriers (i.e., fish screens), behavioral barriers (i.e., light, acoustic, electric or hydrodynamic fields) and fish-friendly turbines. These are presented in the following sections with a discussion on their suitability for the Tina River context.

H.1.2.1 Fish Screens in the context of reservoir spills

Mature eels, also referred to as silver eels, may reach more than 1m in length and 10kg in weight for the most common species A. marmorata. Other species may grow to be larger.

One solution considered to prevent eels from being entrained into the power intake and thereby passed through the turbines, is to install fish screens on the power intakes. The screens should have a mesh size or inter-bar spacing of a 2cm to 5cm. In this scenario, attention would need to be paid to: (i) slecting a sufficiently wide mesh to prevent fish from being stuck against the screen; (ii) a bypass outlet to allow fish to swim away from the screen covered power intake, and (iii) an automatic cleaning system to keep the screens free from fouling.

The efficacy and impact of this option has been considered in relation to the fact of reservoir spills occurring regularly in the context of river freshes, which silver eel migration has been observed to occur timed to coincide with.

During such events of silver eel migration, the reservoir level at a level to spill water over the spillway, thereby providing a route for eels to migrate downstream, and reduce the need for screens.

It is considered preferable to permit this spill option to be relied on for the downstream migration of the eel species.

H.1.2.2 Behavioral Barriers

These systems are based on the response of fish to visual, auditory, electrical or hydrodynamic stimuli. Many systems have been experimented with, including light screens, bubble screens, and other methods. However, these systems are usually specific to a particular fish species or taxa.

Prawn larvae are known to be attracted by light (phototaxis). Fievet et al. (2000), inspired from works in Japan, implemented a pilot system on a dam in the French West indies, which consisted of streetlights on the bank opposite to the power intake structure to entice the larvae to the downstream fish pass. The results appear promising, though they vary widely in relation to natural light (moonlight / sunlight), turbidity, and waves on the reservoir. However, the most attractive wave-length may differ according to prawn species. Unfortunately, phototaxis has not been highlighted for Goobidae larvae, and light has a repellent effect on eels.

Therefore, implementing behavioral screens would need to be preceded by technical studies on the targeted species to estimate the most effective system.

H.1.2.3 `Fish Friendly_ Turbines

As mentioned above, fish passing through hydraulic turbines are subject to various forms of stress and physical damage that is likely to cause high mortality.

A new type of turbine (Alden) conceived as `fish-friendly_ has undergone pilot stage testing in North America and E urope. This system has a lower rotation speed than other types of turbines, thereby reducing the risk of mortality from physical contact shocks or overpressure.

However, fish friendly turbines are at an early stage of field application and have been mainly tested on salmonids. Their effects on eels and fish / prawn larvae are unknown. Futhermore, fully installed equipment price is roughly 35% to 40% higher than with conventional Francis turbines.

H.1.2.4 Conclusions Regarding Downstream Fish Barrier Systems

Even if several solutions exist to prevent mortality during the downstream migration, the only method recommended is reliance on the high frequency of uncontrolled reservoir spills to provide regular down migration opportunities to the eel species.

Notwithstanding that measures aimed at reducing mortality to eels and fish larvae in the turbines may not be readily achievable with current technologies, considering the absence of homing behavior in native fish species, the Tina River watershed will be continuously stocked by upstream migration of juveniles that have spent part of their life cycle in other coastal rivers in the S olomon Islands.

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Flow (m³&)	Width (m)	Depth (m)	Velocity (m&)
1	18.0	0.36	0.23
2	20.1	0.40	0.29
3	21.0	0.44	0.35
4	21.4	0.47	0.42
5	21.8	0.50	0.47
6	22.3	0.53	0.52
7	22.7	0.55	0.57
8	23.1	0.57	0.61
9	23.5	0.58	0.65
10	23.9	0.60	0.69
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Appendix J

Free, Prior and Informed Consent

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Appendix J

Free, Prior and Informed Consent

There is no single internationally agreed definition of FPIC and `no single, nor a one-size fits all mechanism for its implementation_(UN Collaborative Program on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries, 2013). International development agencies define FPIC as follow:

- ^{••} `Free_- implies the absence of coercion, intimidation or manipulation (including bribery or rewards).
- " 'Prior_- implies that sufficient time is provided to indigenous communities and stakeholders during consultations and decision-making processes. This allows community members and stakeholders to receive adequate information, come together, discuss the proposal, and make decisions prior to providing any formal response (e.g., consent).
- ^{••} Informed_- implies that the affected communities and stakeholders have access to relevant information on the project to engage in consultations and decision-making processes. Providing :access to information implies that the information is:
 - in a form and language that is suitable for the particular communities and stakeholders;
 - ¿ accurate;
 - ¿ delivered in a culturally appropriate and inclusive way; and
 - ¿ made available to every member of the community.
- " 'Consultation_ refers to an inclusive and fair process of interaction, engagement, and dialogue between various stakeholders with respect to a proposed development or activity. The intention is to achieve a clear shared understanding of the proposal, the issues and concerns of all parties, and of any future actions and decisions. It does not imply common agreement or consensus as an outcome.
- Consent, in the context of IFC PS, refers to a 'broad agreement_within and between the affected communities and stakeholders that the proposed project or activity can proceed, as determined through local customary decision-making practice. It does not imply universal agreement amongst stakeholders or all members of a community.

Appendix K

Analysis of Opportunities to Improve Conservation of the Upper Tina River Catchment [this page left intentionally blank]

Appendix K

ANALYSIS OF OPPORTUNITIES TO IMPROVE CONSERVATION OF THE UPPER TINA RIVER CATCHMENT

K.1 Protection of the Upper Tina River Catchment

The upper catchment area is defined as the area upstream of the proposed TRHDP dam. It covers an area of 125km₂, and represents 83% of the total Tina/Ngalimbiu catchment area. The Tina River upper catchment is characterized by mountainous terrain, with peaks ranging from 800masl to 2300masl.

Approximately 60% of the catchment is higher than 800masl. The Tina River headwaters (270masl), are comprised of the junction of two main rivers: Vohara River (1) and Mbeambea River (2) and a minor tributary: Njarimbisu River (3). Becho River (4), a tributary of the Vohara is located further upstream.

Protection of the Upper Tina River Catchment would create one of the largest, if not the largest, terrestrial protected area in S olomon Islands. Protection of the area would provide conservation support to a key portion of the highlands of Guadalcanal identified as a Key Biodiversity Area by the IUCN and Bird Life International.

The highest reaches of the Tina catchment back onto the highest parts of S olomon Islands, and the most extensive cloud forests in the country. Unlike the directly impacted area of the project, which is heavily affected by logging and human encroachment, these parts of the catchment are relatively intact and are thought to harbour significant unique biological and ecological diversity.

K.2 Protection Avenues

There are two potential avenues to conserve the upper catchment. The first is to create a formal Protected Area, changing the existing rights of customary landowning groups to consent to commercial activities on the land. As the catchment is owned by customary landowners these groups rather than SIG or the Project Company have powers to consent to a formal PA under the Protected Areas Act. A formal PA would serve as a biodiversity and customary land use reserve and could start upstream from the dam, including the reservoir and the entire upper Tina River catchment, which covers 125km².

The second is to use the Project as an opportunity to increase awareness and supervision and to improve the enforcement of existing laws for the protection of the upper catchment. This latter option could be used in conjunction with informal customary protection. The two options are not exclusive and there is benefit to pursuing the latter while the former is explored.

A third option, creating a formal protected area under the National Parks Act without the consent of landowners, is not considered feasible. The Act provides inadequate safeguards for customary land users and owners and while not repealed has been effectively replaced by the Protected Areas Act. The Act has been used only once in 1973 to designate a registered area of land as a National Park (the largely degraded and unmanaged Queen Elizabeth National Park). The Act is not in current usage. Any restrictions on the use of customary land without the consent and participation of owners is anticipated to lead to a backlash against protection efforts.

K.1.1 Previous Activities

In October 2015, an international expedition, known as :Islands in the Sky, was conducted by the University of the South Pacific (USP) and the American Museum of Natural History (AMNH), to explore the biodiversity of the upper catchment. This region, recognised as a Key Biodiversity Area (KBA) has received very little scientific attention. Expedition access to the key locales within the upland regions was made possible through the reliance on the existing relationships established between the TRHDP and landowning tribes, particularly the Uluna-S utahuri tribe which has a guardianship status with the highest regions of the catchment. The expedition was conducted with the funding of Critical Ecosystem Partnership F und (CEPF) and involved collaborations with the Solomon Islands National University (SINU) as well as other academic and conservation organisations.

The social pathway for the planning and implementation of the expedition was aligned with the behaviours and expectations that TRHDP has developed amongst indigenous peoples of the area, providing a stable association between tribal members and the members of the expedition.

K.1.2 ESMP Measures for Upper Catchment Protection

The Project is expected to have no direct impact on the terrestrial upper catchment. Initially indirect risks of increased access facilitated by the road to the dam site were considered. However, a new logging road on the right bank of the Tina River constructed in 2015/2016 provides unrestricted vehicular access to the same elevation. Unlike the logging road, the project road will be gated above Mengakiki (the end point of the existing usable road) and will have restricted vehicular access from Mengakiki onwards. 24 hours security guards will monitor access. This section of road is to remain a private road, owned by the TCLC and leased to the SPC during the BOOT period. As recorded in the social baseline assessments, part of the catchment is currently used in traditional hunting and fishing expeditions undertaken on foot by local communities. This use will continue to be permitted. Under no circumstances will SPC provide commercial logging operations access to the private road. In these circumstances, the TRHDP is anticipated to have negligible impacts on upper catchment access.

Notwithstanding this, the ESMP proposes a number of key measures to protect the upper catchment:

SPC and PO to regularly monitor forest coverage in the upper catchment through satellite or aircraft imagery, and to monitor and report any logging trucks or logging operations operating in the Tina or Toni catchments. Reporting should be made to the WB, Ministry of Environment, Climate Change, Disaster Management and Meteorology, and Ministry of Forests and Research. SPC and PO to coordinate with Ministry of Forests and Research to enforce existing law preventing commercial logging above 400 metres; and ¿ SIG to provide assistance, information and seed funding to an NGO to conduct community consultations and studies contributing to the potential establishment of a protected area.

K.1.3 Activity Restriction

The key element in declaring the upper Tina River catchment as a PA is to establish a prohibition on commercial logging and mining activities, and ban infrastructure development, including road construction into the area. Traditional activities would be recognised such as small-scale logging by local communities, fishing and hunting.

Activity restrictions would need to be approved by customary landowners and the SIG since timber, prospect and mining licenses are approved by landowners and granted by the SIG.

S ustainable funding schemes are key to the ongoing protection of the catchment. There will be pressure to monetarise the area and to receive royalties from logging or mining enterprises. The key to combatting this will be to provide opportunities for income streams and paid employment. Without the support of customary landowning groups, PA designation would be meaningless.

K.1.4 Staged Proposal

If protected, the Upper Tina Catchment would become the largest terrestrial protected area in the country. Examples of other, technically i informalo, protected areas include the Arnavon Islands, Choisseul, supported by The Nature Conservency, Tetepare Island, Western Proviince, managed by the Tetepare Descendents Association and supported by Solomon Islands Community Conservation Partnership (SICCP), and Kolombangara, managed by the Kolombangara Island Biodiversity Conservation Association (KIBCA).

Each of these sites involved several years of development and continue to receive ongoing external support. A successful protected area will need significant funding and long term commitment to establish and implement.

The support of customary landowners, SIG and donors will be key to the successful protection of the upper catchment. A potential staged process is contemplated, as set out in the table below.

	Activitiy	Actor
Stage 1	Monitoring and reporting of upper catchment forest coverage and logging activities	SIG and SPC
	Engagement with Ministry of Forests and Resoures to support their prevention of illegal commerical logging above 400 metres	PO/SIG
	Restricting use of the Project's access road above Mengakiki Village	SPC and HEC
Stage 2	Engagement of partner NGO to faciliate studies and consultations towards protected areas status	NGO/PO

Protected Area Feasibility		
	Supporting and facilitating NGO activities, including providing data and support to work with landowning groups	РО
	Consultation with landowning groups to seek in principle support for protection and proceed with preliminary studies	NGO
	Mapping and forestry studies undertaken with support of landowning groups. Studies to include potential opportunities for sustainable financing. Options will include a mix of eco-tourism, supporting scientific expeditions and voluntary carbon trading.	NGO
	Consultation and sharing of study findings with landowners and communities	NGO
	Consultations with SIG, including Minstry of Forests and Resources, Ministry of Environment, Climate Change and Disaster Management and Ministry of Mines, Energy and Rural Electrification	
S tage 3 E stablishment of an ĭ informal ŏ protected area through donor funded project with support of landowners and S IG	Agreement of customary landowners to prevent commercial logging and mining.	Donor/NGO with PO support where funding available
	Public signing of an MOU or equivalent with SIG and landowners	Donor/NGO
	Agreement marked by public declarations, cultural ceremony and media	
	Option for SIG to provide :legal support to the informal protection of the area through designation of the area as a :reserved area under section 4 of the Mines and Minerals Act, prohibiting mining activities.	Donor/NGO
	It is not proposed to designate the area as a forest reserve under the FRTU Act due to compensation payment requirements and wide exemptions.	

Stage 4 Formal	Completion of all steps to create a formal protected area. This includes :	Donor/NGO with PO support where funding available
Protection under the Protected	- Establishment of a management committee	
Areas Act	support of customary landowning groups	
	- Preparation of management plans	
	- Mapping of area	
	 S upport of neighbouring customary landowning groups (as protection includes a buffer zone) 	
	- Preparation of a budget	
	- Submission of formal application for approval	
	Full summary of steps is available in the Protected Areas Toolkit prepared by the Landowners Advocacy and Legal Support Unit.	

K.3 Challenges

Like all projects in Guadalcanal, one challenge ithat arises is customary land ownership and the need to identify land owners and boundaries to approve the protected area and to share in any financial benefits. The upper catchment is owned by a number of Malango Tribes . Boundaries and ownership have not been mapped, and as a pristine environment, the ownership of land has not been the subject of previous court cases for logging or acquisition.

This challenge is reduced in an informal protected area as opposed to a formal area where the support of all potential landowning groups can be obtained without the need to articulate land boundaries. A number of groups can sign an MOU for protection. For this to work, benefits would need to be provided by way of employment opportunities and activities rather than as cash payments to be divided between groups Where possible, it is recommended that any formal protected area also avoid identifying landownership boundaries and adopt a principle of inclusion of groups where disputes arise. Again, the extent to which this is possible will depend on the form of benefits and their distribution.

As PAs remain under customary ownership, the role of the SIG is to declare the area a PA and to enforce a strict prohibition on issuing resource exploration and exploitation licenses, granting logging licences or allowing infrastructure development. Working with SIG to agree to designate a PA will be a lengthy process, since it has already issued prospecting licences in the upper Tina River catchment. These existing licences need to be reviewed to determine their expiration dates (and lawful extensions) and discussions held with MMERE towards agreeing that no further licences will be issued as the PA is formalised.. The support of customary landowners will be the key to SIG s support.

The PA project will require the cooperation of villages and customary landowners before any protection is possible. NGOs and consultant firms could be involved in training and capacity building of both communities and government officials and development of community awareness and community participation. The concept of carbon trading might not be fully understood by communities. If carbon credits are pursued, training sessions will need to be provided to all beneficiary communities.

Long term protection will be dependent on sustainable financing opportunities. Securing these on Guadalcanal is a significant challenge. Experience of other protected areas in SI suggests that a mix of financing should be pursued. This may include small scale eco-tourism (assisted by the area's proximity to Honiara), paid support of scientific expeditions in the form of guides and logistics, NGO funded activities including rangers, and potential sales in the voluntary carbon trading market.

By prohibiting logging activities, landowners could potentially use the area to generate income through a voluntary carbon trading scheme. Benefits of 'forest carbon rights_on customary land would be owned by customary landowners, which could represent a small financial benefit to local communities. UNDP is currently supporting the preparation of a REDD+ program in S olomon Islands to establish a monitoring and reporting mechanism at the national level. This mechanism when complete will assist to establish the forest monitoring and legal frameworks required to attract a voluntary trading scheme. However, carbon trading opportunities in S olomon Islands are still many years away, as the ongoing SI REDD+ project continues to prepare frameworks and monitoring.

One issue raised by the SPC/GIZ Regional REDD+ Project in the Solomon Islands (2012), is that `there are currently no suitable mechanisms for customary land owners to join together as a legally recognized entity, to hold and manage forest carbon rights and to distribute benefits in an open and transparent way_. This issue has been overcome in other components of the TRHDP, in particular the design of co-operative societies for the open and transparent sharing of the land purchase price and royalty benefits within each Core Land Tribe. The lessons learned from that exercise can contribute to the benefit sharing mechanisms for any protected area.

To summarize, there are currently three major challenges associated with designating the upper Tina River catchment as a PA. These include:

- ["] Identifying customary landownership and boundaries, if this step cannot be avoided
- Providing sustainable benefits to achieve and maintain customary landowner support in competition with pressure and payments from logging or mining companies. Any income from carbon trading is likely to be small, and while UNDP's REDD+ preparation project is ongoing, may be some years away.
- [•] Establishing and enforcing a prohibition on mining and logging when there are already existing prospecting licences in the Tina River catchment and significant political pressure asserted on Ministry of Forestry and Reseach by foreign logging companies.

K.4 Process for Formal Protection

The Ministry of Environment, Conservation and Meteorology is responsible for the protection and conservation of biodiversity and designation of the PA network in the Solomon Islands.

As mentioned in the Environmental Baseline, the Protected Areas Act 2010 presents the process to designate a protected area. For an area to become a PA, a community or organization should prepare:

- An application to the Director of Environment for the site to be declared as a PA. The application will need to include a PA management plan and scientific studies to show that the area is of significance to biological diversity, and to the community in terms of natural resources. The application will also need to include an estimated budget for the PA and evidence of agreement by all customary landowners, a map showing the boundaries and size of the site.
- The Director, upon receiving the application, will review it and make recommendations to the Minister, if the application is deemed to have merit and should declared a PA. The basic requirements for an application and for considerations by the Minister include:
 - ¿ Conservation objectives of the PA identified in accordance with sound conservation practices;
 - ¿ Boundaries of the area accurately identified, or otherwise demarcated and surveyed;
 - ¿ Consent and approval obtained from persons having rights or interests in the area; and
 - ¿ Appropriate conservation, protection or management plan developed for the area to ensure that the conservation objectives of the PA would be achieved.

K.6 Conclusion Regarding Upper Tina River Protected Area

Establishing the upper Tina River catchment PA will require significant funding and a dedicated project team with expert assistance.

Neither SIG nor the SPC have the power to create a protected area without the consent and support of customary landowners. As a large area covering 125 km², protection will require the consent of a large number of landowning groups with disparate ideas about the value of conservation, and for many, a history of sometimes lucrative involvement in logging and mining. A dedicated and well resourced project team will be required to conduct the consultations and negotiations necessary to make the protected area a reality.

Expert assistance will also be required for studies and mapping, and preparation of a management plan. Funding for a project team and expert assistance will need to be obtained from international environmental NGOs or donor agencies such as the Green Climate Fund, Conservation International or the World Bank.

Once established, the protected area will need to leverage sustainable benefits to landowners to maintain landowner support, which in turn is crucial to maintaining SIG support. Sourcing and managing benefits will be a key component of the project team's work.

Based on this analysis, the declaration of a PA for the upper Tina River catchment should adopt a staged approach, the later stages of which will depend on the outcomes of Stage 2 feasibility assessments.

In the absence of a formal protected area, the role of TRHDP will be crucial to shining a spotlight on activities in the upper catchment. The Project provides an opportunity for the SPC to monitor and report on any deforestation activities. This will include reporting any illegal logging activities above the 400 metre contour, which covers the vast majority of the upper catchment area. The PO is well placed to secure SIG support to enforce existing laws and shut down illegal operations. Satellite monitoring of forestation through the SPC and SIG will provide essential data both to support future donor funding proposals as well as to provide baseline data for any carbon trading application. Appendix L

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hrţτ↑ţţţαŭ oIX之Ūţ↑ŢτЦΙIXbτzàτЦৠΙΕΟ Ͽ_σοϯΙΧοЦΙ↓ΙΧΙΕΥЦ(ţţ¼ετο ϯΰţţ)° Ц௹ЦÅξε/₩\$Φυ ΔΕΟΦμξή ΈΟΙ ϯΰτΓτττΖμζ↓Γτο ζάδωΠጵοτ€ήLρτ τ↑ΙΧοτ、ϯΙΧЦΙΕ=ΠΙΧΦμτLγίωτLγίωτις το ΓτιττΖμζ↓Τ ΈΟΓ ‡ΟΓ ΓΤ L[ΙΙΧ]Το Γ = ΔΙΧΓΙ& 1.45 ΥμΕΙ ΥΔΙΥΞΤΥΞΙΔΙ 100 ΤΟΓ \$Ω ΓΤ L[ΙΙΧ]Το Γ = ΔΙΧΓΙΦ ↓ ΠΕΙ ΥΔΙΥΞΤΥΞΙΔΙ 100 ΤΟΓ \$Ω

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- έ †Όρι τωστα∱Ιλω ἡτο ζαπο ὑτο ΦΙΤΙΤΕΥλλέφο ΙΧε≥ΤΟζήἡτЦΙ Ιλω †Όριο ЦΙ ΙΧΕΙ†Φ[↓↑ ΙΙΧ, ἱλομιΧωλεκ, ⇒Αμπο
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»Dϝ ¤ŒЦ\₩Ũţ↑ ϵ¾LĴ↑™ϗϥϯϲο LĹ Цi¾XĴ₲ ⅛ ↑Ũţ↑ Ϥ೫ Dͼǝ↑Ĩ¾¾X苹↑ οτ ↑ţ¼¾XIT Iឮ ӷ τ μĻĴŢ ₲₵₵₰₺₰₸ ₺IX I IXILĹЦЦШԵҹ┱ τ μĻĹĴŢ ₲°○ĹĹŒĹ ϧĨXI ₱Dϝ DĢĖDϝ Ĵ↑↑Ţ₠ŨXIIIኤD ₺₽ĹĮġЦЩЦ₡₵ Ц↑т¼╣Ũţ¼¾ᡌ₠₸ ↑Ũţ↑ ϵ¾Dρ

⊡ - ðī÷đí ħ dòí ðīð Ħþ øā øā ó ðā I Jø Hđā þ ðā ī é ü ò u d Hð þ ðā ī ħ

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Ϲⅆͼͺᠿ᠇᠊ᢃᡔᡃ᠋᠄ᡰ᠋ӹҴӏтᠽӏҞᢥӸҲϮϦϝϥͿΧϢʹϼͻϯϢͲͶϪͷͽϫϒϯτͱϥϢϮͺΙτΞϢᢁ

h ϯϿͽϯ ⊌ଌϫ≥ Lᢩᢔᢩᠧᡝ᠊ᢩᠿ᠋᠋ᡏ᠋ᡜᠮᡖᡗᢩᡅ᠋᠋ᡏᠽ᠌ᠯᡭᡭᢩ᠘ᢉᡝ᠋᠋ᡘᡟᡕᢧ᠕᠖ᢋᡀ᠖᠋ᠴ᠖ᡔ᠌ᡘᠯᡘᢧᠻᠯᢧ᠂᠑᠘ᡧ᠍ᢧᡘᢌᢣ᠄ᢘᡘᡅᢩᠪ᠖᠋ᢌᡄ᠋ ᡆᠯᢂ᠋ᡎ᠄᠋᠋ᡷ᠊ᠻ᠔ᡅ᠋᠋᠋᠋ᠻ᠇᠋᠋᠋᠄᠔᠘ᢔ᠋᠋ᠿ᠋ᠧᠿ᠋᠋᠋ᡝ᠋᠋᠋᠋ᡸ᠇ᠣ᠋ᢤᡘᡄᢢ᠖᠋ᢩᡘᢌ᠋ᡝ᠖ᡃᡘᢌᡄ᠋᠘ᢩᡅᡘᡶᡘ᠋᠋ᡘᡘ᠋ᡬᡬᡀ᠖ᠴ᠋ᢢᠿ᠋᠘ᡧᡘᡅᡲᡅᢕ ᠋᠋᠋᠋᠋᠋᠋᠋᠋᠋᠋ᡶ᠋ᢧ᠋᠋᠋᠋᠘ᡁᠿᠧᠿ᠕᠘᠘ᡁᡩ᠋᠋᠋᠘ᡁᠼ᠋ᠿᢄ᠖᠋ᠴᢩᠿ᠋᠋᠋ᡘᡡ᠋ᢤ᠋ᡘᢌ᠋ᡬᡘᡘᡘᡘᡕ᠕᠋᠋ᡘᡘ᠋ᡬ᠋ᢤ᠋ᡬᡬ᠁ᡬᢁ᠋ᡶ᠋ᢤᠿ᠘ᡧᡘᡅᡲᡅᢕ

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	Distance		
	from sea	Elevation	Gradient
Location	(km)	(m amsl)	(m/km)
Estuary	0	0	0.0
Tina/Toni			
confluence	19	43	2.3
Powerhouse			
site	24.7	73	5.2
Dam site	30.1	123	9.3
Proposed			
reservoir			
reach	32.7	172	18.8

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Habitat type	1 km upstream of Tina Village to powerhouse site	Upstream of powerhouse to 1.5 km downstream of dam site
Rapid	5%	5%
Riffle	31%	36%
Run	55%	46%
Pool	9%	13%

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Mean flow	14.85 I*∰
Mean annual flow (for complete years only)	15.87 I‡
Median flow	11.87 I [‡] ∰
Coefficient of Variation	0.89
Fre3 (frequency of flows > 3 x median per year)	6.3
MALF (mean annual 1-day low flow for complete years)	4.83 I [≵] ∰
MALF (mean annual 7-day low flow for complete years)	5.27 I [‡] ∰

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12.91 I [≵] ∰
10.78 I [≵] ∰
0.69
4.83
4.56 I [≵] ∰
5.09 I [≵] ∰



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Period analysed 3 years and 4 months



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	Environmental flow	Natural flow
Mean flow	3.5	14.8
Median flow	1.0	11.1
Coefficient of Variation	4.6	1.2
MALF (mean annual 1-day low flow for complete years)	1.0	4.2
MALF (mean annual 7-day low flow for complete years)	1.0	4.3

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ϹϾͼϤͳʹΖΞϭ[™] 9ϞͺͿΙ ϳጵͼ ΙϪ ΦΕυθάζέζη ‹‹ጛ Τμη ΫϽλΔϔϯΫϾͱϞτ↑ϯϽϽͿϔϯο ϤʹͳͺϤͳϪΤͺϳͽϐϞͼ·ϯϯ ΤͿϯ ΙΫϯͺΙ Τͺϯ ΙϪοͺϤͺϯʹϫ

Table 6: Frequency and duration of spill events in the residual river

Number of days that the flow $> 1 \text{ m}^3/\text{s}$ per year	58
Average number of contiguous events per year	9.5
Mean duration	6.1
Maximum duration	30
Duration equalled or exceeded by 5% of events	23.4
Duration equalled or exceeded by 25% of events	6.0
Median duration	4.0
Duration equalled or exceeded by 75% of events	3.0
Duration equalled or exceeded by 95% of events	1.4

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ϯϿϝϷϚϲϤϗϐIϲͺϚϤͷͷϬϯϯϚϹͺϳϫϯϪ;Ϥϲʹϒ϶϶ϯϿϝͺϯϲͺϹϹͿϪϤϴϪϯϨϿϝͺϯϲϙ·ϽϫϲϙϬͺϯϚͷϘϿͷϲϯϹϸϿϫϾͺϒϯ ʹϯϤͿΙϳ;ϗϐϙͺ·Ͻ;ϤͶϝͺϮͿͺϤͿϿͺϒͺͳϪ;ϐϒ;ϏϐͶϾͺͿϪͺϯϲϯϯϹͿϚϤϪͶϤϤϨϿϝͺͺϲͻϲϯϯϽϲͺϹϹͿϒͶϾ϶ϤϹͶϿͶϫ϶ʹϽͺΠϪ;ϐͺϒϗϐͶϾͺͰϪͺϯϲϯϯϹͿϚϤϪͶ ϤϤϯϿϝͺϙϯͺ϶·;ϒͺϹϹͿϪϿͽ

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Species		₩ΤΨΦϷ@ΠᠽϿΦΦΦϦϯϫϤϼϟϫϯͳͺΧͺϮͺ↓Ο		
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S cientific name	ЩIт	I (bo)/s	-ixixr↑Цµ6X01r	a (b)o1/8 Ll/18X00r
Anguilla marmorata	9т⅓	Æ		
Allamogurna sp.	DIX≓			Æ
Belobranchus spp.	DIX≓			Æ
Butis amboinensis	DIX≓	Æ		
Ophieleleotris hoedti	DIX≓			Æ
Ophieleotris sp.1	DIX≓	Æ		
Ophieleotris sp. 2	DIX≓	Æ		
Bunaka gyrinoides (Eleotris gyrinoides)	DIX≓			Æ
Awaous guamensis	DIX≓	Æ		
Awaous melanocephalus	DIX≓	Æ		
Awaou ocellaris	DIX≓	Æ		
Awaous sp.	DIX≓		Æ	
Bathygobius andrei	DIX≓	Æ		
Glossogobius celebius	DIX≓			Æ
Lentipes multiradiatus	DIX≓	Æ		
Lentipes sp.1(Solomonensis)	DIX≓	Æ		
Lentipes sp. 2(Solomonensis)	DIX≓	Æ		
Redigobius bikolanus	DIX≓	Æ		
S chis matogobius a mpluvinculus	DIX≓			Æ

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Species		┉ц₯ш₴₯₯ⅉℹ	ѫд₲тţ╤Ҷѱ҄ӀӾ҆ҭ҅ҭ҆	Ĵο
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S cientific name	ЩІт	I (bo)/8	-ixixr↑∐/£XDfr	a Coo%i Ll/BATEr
Schismatogobius roxasi	DIX≓			Æ
Sicyopterus lagocephalus ¹	DIX≓	Æ		
Sicyopterus longifilis	DIX≓		Æ	
Sicyopterus ouwensi	DIX≓	Æ		
Sicyopterus sp.	DIX≓			Æ
Sicyopus discordipinnis	DIX≓	Æ		
Sicyopus mystax	DIX≓			Æ
Sicyopus sp.1	DIX≓	Æ		
Sicyopus sp.2	DIX≓			Æ
Sicyopus zosterophorum	DIX≓	Æ		
Stenogobius hoesei	DIX≓			Æ
S tiphodon pelewensis**	DIX≓	Æ		
S tiphodon autopurpureus	DIX≓	Æ		
S tiphodon birdsong	DIX≓	Æ		
S tiphodon multis qua mus	DIX≓	Æ		
S tiphodon ornatus	DIX≓	Æ		
S tiphodon rutilaureus	DIX≓			Æ
S tiphodon semoni	DIX≓	Æ		
S tiphodon sp.1	DIX≓		Æ	
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	VV.ΔEE/BIA μμρ	<u>۸</u>		л:
	d (1728)			Æ
Chelon macrolepis	d ∪728↑			Æ
Microphis sp.	1X01XT ΗΨμΩρ ∫πα+↑			Æ
Mesopristes argenteus	∣∖Ψ#↓∣ ∣₠↑₡₤₶↑		Æ	
Mesopristes cancellatus	<u>ו</u> בייייי	Æ		
Total number of species		ħ	ゐ	交

*probably includes Sicyopterus cyanocephalus

**previously called Stiphodon atratus

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a ΙζΥΥΊ&ΥD# ĴIX ΔΦĴĿΙΧΏΤΟ ŪζΥΥΊΤΙΙΙ Ι&ΥD# ΟΙΙ ĴΦΤ ΙΧΥΦΙΧΙΙΛΑ, ΖΦΗΘΑΙΊ ΈΙΧΟ ΔΑΓΓΦΤΕΙΓΦΑΦΦĴ®D# ΑΔΜΑΙΙΠΟ ΈΙΩΦΤΥΊ Α ΤĴΙΧΑΦΥΤĴ, ЦΥΤ ΙΆΙΧΙΓΥΞΦΗ ΙΧΙΝΞΞΖΦΙΙ ΙΦΤΕĴIX ΔΦĴΥΌΔΗ ΠΥΤ ΕΙΧΌΟ ŪζΥΥΤΙΙ

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Stiphodon pelewensis











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Flow (m³&)	Width (m)	Depth (m)	Velocity (m⁄s)
1	18.0	0.36	0.23
2	20.1	0.40	0.29
3	21.0	0.44	0.35
4	21.4	0.47	0.42
5	21.8	0.50	0.47
6	22.3	0.53	0.52
7	22.7	0.55	0.57
8	23.1	0.57	0.61
9	23.5	0.58	0.65
10	23.9	0.60	0.69
11	24.6	0.60	0.72

↑ΦΝΑΙ(Τ)Τ (Τ) COLE 255, 2000 DOT II (Φ = UID ĴIX AOT Ĵ 100 DIT Ĵ] U|T 16Å 1/3=ΥΙΧΤΥ ΕΥΤ U|ΥΥ → 2000 U HAV2 I& 3Ι 24 ⅈⅅ⅃⅃ℿℴⅆⅅⅉ℔ℾ⅃ℸℴⅆ⅃ℿⅎ℁℀⅃℁ℨ℈ℬ⅃ⅈ℄⅏ⅅℾℸⅉⅈΩℾ⅃ⅉ℩ℴⅎⅆⅅℴℸ⅃ⅉⅆℽℲ⅃ℾ℄⅃ℿℸℿⅉℾℷℿℸ⅃⅊⅃⅍ℬ℀⅃℁ℨ

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Appendix M

Fauna Report

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Appendix M

Fauna Report

Edgar Pollard

Table of contents

1. F <i>A</i>	AUNA CHARACTERISATION	1
1.1	Method for the on field characterization	1
1.2	Sampling Stations	2
1	1.2.1 Fauna Transmission Line (TL1, 2, 3, 4 & 5)	3
1	1.2.2 Fauna Access Road (Acc.1 & 2)	3
1	1.2.3 Fauna PowerPlant (PP1 & 2)	3
1	1.2.4 Fauna Reservoir (Res.1, 2, 3 & 4)	3
1	1.2.5 Fauna Dam (Dam1, 2, 3 & 4)	3
1	1.2.6 Fauna Tunnel (Tun.)	3
1	1.2.7 Fauna Cliff (Clif. 1 & 2)	4
1	1.2.8 Fauna Upper Stream (Upp.1.2.&3)	4
1	1.2.9 Faunal Inventories	4
1.3	Important Species Descriptions	16
1	1.3.1 Amphibians	16
1	1.3.2 Birds	17
1	1.3.3 Mammals	21
1	1.3.4 Reptiles	21
1.4	Habitat delineation and valorization	22
1	1.4.1 Habitat Types	22
1.5	Recommendations and Conclusions	24
2 01		25
2. BI	IBLIOGRAPHICAL SOURCES	25
3 45	ΡΕΝΠΙΧ	26
5. 7.1		
3.1	Sampling Station Photographs	26
3.2	Species Photographs	26
3.3	Habitat Photographs	26

1. FAUNA CHARACTERISATION

In each sampling station a general habitat description is carried out. The polygons and points of habitat areas and important species areas will be drawn using Google Earth. Species tables will then be created with the following information for fauna, specifically amphibians, birds, mammals, and reptiles: species name (including scientific and common name), migration routes of wildlife in the project areas of impacts (if any), population trends of species (population declining increasing or stable), species status (CITES, IUCN, endemism), description of wildlife role for local populations (bush meat and cultural significance) as sources of livelihood and series of photographs to help describe each station and species (if possible). Potential species that were not observed will also be presented in order to have a complete overview of the area. This series of potential species can be gathered from other sources such as previous studies (see scoping reports, Gold Ridge reports, scientific journals or field guides).

1.1 METHOD FOR THE ON FIELD CHARACTERIZATION

Method for inventory descriptions will be described in this section: they include direct observations, species identification, species traces, netting and interviews, the date of field visit will be provided.

Methods used to identify terrestrial vertebrate inventories include visual and auditory encounter surveys (diurnal and nocturnal) consisting of 1) point and 2) plot counts primarily for birds, reptiles and amphibians and 3) mist nets primarily for birds and mammals. Informal interviews were also carried out with locals to determine important species presence. The field visits and sampling occurred on the dates 05/08/13 to 17/08/13.

Point counts involved visual and auditory surveying from a set location (sampling station) for the duration of 20min. Visual aids in the form of binoculars were also used. All faunal species (amphibians, birds, mammals and reptiles) observed (seen or heard) during the sampling period were recorded.

Plot counts involved the movement (where possible) and visual and auditory surveying in and around a 10x10m plot to sample for fauna (amphibians, birds, mammals and reptiles). Visual aids in the form of binoculars were also used. All faunal species (amphibians, birds, mammals and reptiles) observed (seen or heard) during the sampling period were recorded.

Mist netting involved the placement of 8 mist nets (15m x 2m, 20mm mesh size) in sampling stations to capture and record birds and mammals. Nets were placed in forested areas and also in locations adjacent to waterways.

Informal interviews involved the discussion with locals of important fauna and associated uses of associated species, these informal interviews also resulted in the significant recording of local knowledge (LK).

1.2 SAMPLING STATIONS



1.2.1 Fauna Transmission Line (TL1, 2, 3, 4 & 5)

Transmission Line areas were mainly covered in grassland, garden, oil palm plantation, remnant forest and fallow brush land habitats. TL1 is located between oil palm plantation and fallow bush dominated by paper mulberry trees. TL2 is located between oil palm plantations and grassland intermixed with gardens. TL3 is located in grassland and TL4 is located between grassland, gardens and remnant forest dominated by Canarium nut trees. TL5 is located in remnant forest. Conditions during the sampling of the TL sites were clear to cloudy and were deemed optimal for faunal sampling.

1.2.2 Fauna Access Road (Acc.1 & 2)

Access Road areas were mainly covered in forested habitats. Acc.1 is located on a hill slope surrounded by forest with evident signs of disturbance such as past timber extraction. Acc.2 is located on a ridge adjacent to a steep slope to the Tina river, it is surrounded by relatively undisturbed forest with the presence of large canopy trees. Conditions during the sampling of the Acc. sites were clear to cloudy and were deemed optimal for faunal sampling.

1.2.3 Fauna PowerPlant (PP1 & 2)

PowerPlant areas were mainly covered garden, fallow brush land habitats and disturbed forest. PP1 is located on a flat areas that is surrounded by gardens with crops of betelnut, banana and coconut, fallow brush land is also evident. PP2 is located on a small hill and is covered by forest with evidence of timber extraction and some relatively undisturbed areas. Conditions during the sampling of the TL sites were clear to cloudy and were deemed optimal for faunal sampling.

1.2.4 Fauna Reservoir (Res.1, 2, 3 & 4)

Reservoir areas were mainly covered in forest, though there were certain areas that were garden, and disturbed forest habitats. Res.1 is located on a flat area that is forested however there is evidence of disturbance through timber exploitation. Res.2 is located adjacent to a village area and is surrounded by gardens and remnant forest. Res.3 is located on a slope and covered by forest with evidence of disturbance through timber extraction and past garden use. Res.4 is located in forest with slight disturbance and evidence of timber extraction. Conditions during the sampling of the Res. sites were wet to cloudy and were deemed not optimal for faunal sampling as the conditions would limit the movement of species.

1.2.5 Fauna Dam (Dam1, 2, 3 & 4)

Dam areas were mainly covered in disturbed forest and gardens. Dam1 is located on a steep sloping area that is forested however there is evidence of disturbance through past timber exploitation. Dam2 is located in forested areas with disturbance due to current timber extraction. Dam3 is located on a slight slope and covered gardens and fallow brush land from past garden use. Dam4 is located in a very steep area that is forested with evidence of past timber extraction. Conditions during the sampling of the Dam sites were wet to cloudy and were deemed not optimal for faunal sampling as the conditions would limit the movement of species.

1.2.6 Fauna Tunnel (Tun.)

The Tunnel (Tun.) area was mainly covered in disturbed forest, with evidence of past and current timber extraction. Conditions during the sampling of the TL sites were clear to cloudy and were deemed optimal for faunal sampling.

1.2.7 Fauna Cliff (Clif.1 & 2)

C liff areas were mainly covered in distinct cliff vegetation that lacked larger canopy trees but covered with smaller plants such as ferns and shrubs, both Clif.1 and Clif.2 areas displayed similar characteristics of very steep slope adjacent to the water. Conditions during the sampling of the Clif. sites were wet to cloudy and were deemed not optimal for faunal sampling as the conditions would limit the movement of species.

1.2.8 Fauna Upper Stream (Upp.1 2 &3)

Upper S tream areas were mainly covered in undisturbed forest, though most terrain was quiet steep. Upp.1 is located at a confluence of two major rivers, surrounding areas were forested however there is evidence past village settlement. Upp.2 is located adjacent to a cliff area and is surrounded undisturbed forest and the river. Upp.3 is located adjacent to a river gorge with small vegetation growing through cracks and small caves. Conditions during the sampling of the Upp. sites were wet to cloudy and were deemed not optimal for faunal sampling as the conditions would limit the movement of species.

1.2.9 Faunal inventories

1.2.9.1 Amphibians

A total of 9 amphibian species were observed from a total of 13 potential species from 4 families. This is 64 percent of all amphibians expected to be found along the Tina River study area. Table 1 (below) lists amphibian species by family including scientific and common nomenclature. The sampling stations that the species is present in are noted as well as the :Potential Presence of the species in the Tina River study area based on species observed in areas in close vicinity to the study site in literature (TRHDP ESIA Scoping Study (Sherwood 2012) = SS, Frogs of the SI (Pikacha et al. 2008) = PP, Gold Ridge Report (NL 1996) = GR and Local Knowledge = LK). Species migratory and endemic status (Guadalcanal = G, Solomon Islands = SI, Introduced = I) were also stated based on Pikacha et al. (2008). Each species Red List category (IUCN 2013) as a value of vulnerability is also specified (Least Concern = LC, Vulnerable = VU and Data Deficient = DD). Each species CITES category (UNEP-WCMC 2013) where possible, of protection is also stated, as well as the status of local protection based on the Wildlife and Protection Act (1998). The :Population Trend (where possible, Increasing =I & Stable =S) is based on the IUCN (2013) Red List and :Local Uses is based on information regarding the species from locals (Food =F). Each species dependence on the river based on literature (Pikacha et al. 2008) and in-field observations is also stated.

			•.							
Species name	Common name	S tation P resence	Potential Presence	Migratory	Endemic	IUCN Red List Category CITES Appendix	1998 Act	Population Trend	Local Uses	River Dependent

Table 1 Amphibian Species Inventory of Tina River

Bufonidae TRUE	TOADS										
Bufo marinus	Cane Toad	TL1, Res.1, Res.2, Res.3, Res.4, Dam2, Upp.2	PP	-	I	LC	-		Ι	-	-
Ceratobatrachida	ae										
Batrachylodes vertebralis	Fauro S ticky-toed Frog	Res.2, Res.3, Res.4, Dam2, Dam3,	PP	-	SI	LC	-	п	S	-	-
Batrachylodes elegans	E legant S ticky-toed Frog		SS	-	SI	LC	-		S	-	-
Ceratobatrachus guentheri	S olomon Islands E yelash F rog	Res.3, Dam2,	PP, GR	-	SI	LC	-	Π	S	-	-
Discodeles guppyi	Giant Webbed Frog		PP, SS, GR, LK	-		LC	-		S	F	х
Discodeles malakuna	Malakuna Webbed Frog	Upp.2,	SS	-	SI	DD	-		S	-	-
P latymantis guppyi	S olomon Islands G iant T reefrog	Upp.2	SS, GR, PP	-	SI	LC	-		S	-	-
P latymantis solomonis	S olomon W rinkled G round F rog		SS, PP	-	SI	LC	-	I	S	-	-
Platymantis weberi	Weberš Wrinkled Ground Frog	Res.2, Dam2,	SS, PP	-	SI	LC	-		S	-	-
Hylidae TREEFR	OGS		1	1		1	I		1	1	
Litoria lutea	S olomon Island š T reefrog		SS	-	SI	VU	-		S	-	-
Litoria thesaurensis	Treasury Island Treefrog	Res.2,	РР	-	SI	LC	-		S	-	-
Litoria sp.		Res.3	SS, GR	-	-	-	-		S	-	-
Ranidae TRUE F	ROGS	I	1	1	1	1	1		1		
Hylarana kreffti	S an C ristobal T reefrog	Upp.2	GR, PP	-	SI	LC	-		S	-	х

(Potential Species, TRHDP ESIA Scoping Study = SS, Frogs of the SI = PP, Gold Ridge Report = GR, Local Knowledge = LK), (Endemic, Guadalcanal = G, Solomon Islands = SI, Introduced = I), (IUCN Red List Category, Least Concern = LC, Vulnerable = VU & Data Deficient = DD), (1998 Act, Prohibited Species = I, Regulated Species = II), (Population Trend, Increasing =I & Stable =S), (Local Uses, Food =F), (X = Dependent on the river).

1.2.9.2 Birds

A total of 41 bird species were observed from a total of 67 potential species from 28 families. This is around 61 percent of all birds expected to be found along the Tina River study area. Table 2 (below) lists bird species by family including scientific and common nomenclature. The sampling stations that the species is present in are noted as well as the :P otential Presence of the species in the Tina River study area based on species observed in areas in close vicinity to the study site in literature (TRHDP ESIA Scoping Study (Sherwood 2012) = SS, Birds of Melanesia (Dutson 2011) = GD(Dutson 2011)(Dutson 2011), Guadalcanal Island Bird Checklist (Tarburton 2007) = MT, Gold Ridge Report (NL 1996) = GR and Local Knowledge = LK). Species migratory and endemic status (Guadalcanal = G, Solomon Islands = SI, Introduced = I) were also stated based on Dutson (2011). Each species Red List category (IUCN 2013) as a value of vulnerability is also specified (Least Concern = LC, Near Threatened = NT, Vulnerable = VU and Data Deficient = DD). Each species CITES category (UNEP-WCMC 2013) where possible, of protection is also stated, as well as the status of local protection based on the Wildlife and Protection Act (1998). The :Population Trend (where possible, Increasing =I. Decreasing =D & Stable =S) is based on the IUCN (2013) Red List and Local Uses is based on information regarding the species from locals (Food = F and Cultural Importance = CI). Each species dependence on the river based on literature (Dutson 2011) and in-field observations is also stated.

S pecies name	Common name	Station Presence	Potential Presence	Migratory	Endemic	IUCN Red List Category	CITES Appendix	1998 A ct	Population Trend	Local uses	River Dependent
Ardeidae HERON	15										
Nycticorax caledonicus mandibularis	Nankeen Night Heron	Res.2, Res. 3, Res.4, Clif.2	SS, GD, MT	-	-	LC	-		S	-	x
Egretta s. sacra	Pacific Reef Heron	TL3	GD	-	-	LC	-		S	-	-
Phalacrocoracid	ae CORMORAI	NTS									
Microcarbo m. melanoleucos	Little Pied Cormorant	Res.1, Res.2, Res.3, Res.4, Upp.1,	SS, GD	-	SI	LC	-		S	-	x
Anatidae DUCKS				1	1	1	1	1	1	1	1
Anas superciliosa	Pacific Black Duck		SS, MT, GD	-	-	LC	-		S	F	х
Accipitridae HAV	VKS and EAGL	ES									

Table 2 Bird Species Inventory of Tina River

Haliastur indus flavirostris	Brahminy Kite	Res.3, Acc.2,	SS, MT, GD, GR	-	SI	LC	Π		D	-	-
Aviceda subcristata proxima	Pacific Baza		MT, GD, LK	-	SI	LC	Π		s	-	-
Accipiter novaehollandiae pulchellus	Variable Goshawk	Upp.1	MT, GD	-	G	LC	П		D	-	-
Accipiter meyerianus	Meyer š Goshawk	TL3	MT, GD, GR	-	-	LC	П	I	D	-	-
Haliaeetus sanfordi	S olomon S ea-E agle	TL5, Upp.1,	MT, GD	-	SI	VU	Π	I	D	-	-
Megapodiidae M	EGAPODES					-			-		
Megapodius eremita	Melanesian S crub F owl		SS, MT, GD, LK	-	-	LC	-		D	F	-
Turnicidae BUTT	ONQUAILS		1	1	1		1				I
Turnix maculosa salamonis	Red-backed Button-Quail		MT, G D	-	G	LC	-		D	F	-
Rallidae RAILS											
Gallirallus philippensis christophori	Buff-banded Rail	TL3	MT, GD, LK	-	SI	LC	-		S	F	-
Nesoclopeus w. woodfordi	Woodford š Rail	TL1, TL3	MT, GD, LK	-	G	NT	-	Ι	D	F	-
Amaurornis moluccanus sp.	Pale-vented Bush-hen	Res.2,	MT, GD, LK	-	SI	LC	-		S	F	-
Porphyrio p. samoensis	P urple S wamphen	TL3,	GD, LK	-	-					F	
Scolopacidae SA	NDPIPERS an	d CURLEWS									
Actitis hypoleucos	Common S andpiper	Res.1, Res.3, Res.4	MT, GD, LK	x	-	LC	-		D	CI	x
Columbidae PIG	EONS			_	_	_	_		_	_	_
Ptilinopus s. superbus	S uperb F ruit-Dove		MT, GD, GR	-	-	LC	-		S	F	-

	1		1								
Ptilinopus solomonensis ocularis	Yellow- bibbed Fruit- Dove		MT, GD, GR	-	G	LC	-	I	S	F	-
Ptilinopus viridis Iewisii	Claret- breasted Fruit-Dove		MT, GD, GR	-	-	LC	-		s	F	-
Ducula rubricera rufigila	Red-knobbed Imperial Pigeon	TL4, Acc.1, Acc.2, PP1, PP2, Res.2, Res.3, Dam2, Tun.,	SS, MT, GD, GR, LK	-	SI	NT	-		D	F	-
Ducula p. pistrinaria	Island Imperial Pigeon		MT, G D	-	-	LC	-		S	F	-
Gymnophaps solomonensis	Pale Mountain Pigeon		MT, GD	-	SI	LC	-		s	F	-
Macropygia mackinlayi arossi	Mackinlay's Cuckoo-Dove	Dam4, Upp.1, Upp.2	SS, MT, GD	-	-	LC	-		S	F	-
Reinwardtoena crassirostris	Crested Cuckoo- Dove	Tun.	SS, MT, GD	-	SI	NT	-		D	F	-
Chalcophaps stephani mortoni	Stephan`s Dove		SS, MT, GD, GR	-	SI	LC	-		S	F	-
Cacatuidae COC	κατοος										
Cacatua ducorpsi	Ducorp`s Cockatoo	TL5, Acc.1, Upp.1, Upp.2	SS, MT, CD, GR	-	SI	LC	Π	П	S	-	-
Psittacidae PAR	ROTS										
Chalcopsitta cardinalis	Cardinal Lory		SS, MT, GD, GR, LK	-	SI	LC	Π	Ш	S	-	_
Trichoglossus haematodus massena	Coconut Lorikeet	TL4, Tun., Upp.1, Upp.2,	SS, MT, GD, LK	-	SI	LC	II	Ш	D	-	-
Lorius chlorocercus	Y ellow- bibbed Lory	PP1, PP2, Res.1, Res.3, Dam2, Upp.2,	SS, MT, GD, GR, LK	-	SI	LC	Π	П	S	-	-

Charmosyna margarethae	Duchess Lorikeet		MT, GD, GR	-	SI	NT	п	I	D	-	-
Micropsitta finschii aolae	Finsch [°] s Pigmy Parrot	Tun.	MT, GD, GR, LK	-	SI	LC	Π	I	S	-	-
Eclectus roratus solomonensis	E clectus Parrot	Ирр.2	SS, MT, GD, GR, LK	-	-	LC	П	П	D	-	-
Geoffroyus h. heteroclitus	Song Parrot		MT, GD, GR	-	-	LC	П	Ι	s	-	-
Cuculidae CUCK	005										
Cacomantis variolosus addendus	Brush Cuckoo		MT, GD, GR	-	SI	LC	-		s	-	-
Centropus m milo	Buff-headed Coucal	TL3, TL4, TL5, Acc.1, PP1, Dam2,	SS, MT, GD, GR	-	SI	LC	-		S	-	-
Strigidae OWLS											
Ninox jacquinoti granti	Guadalcanal Boobook		MT, GD, GR	-	G	LC	п		s	-	-
Apodidae SWIFT	S										
Aerodramus vanikorensis Iugubris	Uniform Swiftlet	TL1, TL3, Dam2, Upp.2,	MT, GD	-	SI	LC	-		s	-	-
Collocalia esculenta becki	Glossy Swiftlet	Res.2, Res.3, Res.4, Dam2, Dam4, Clif.1, Clif.2, Upp.1, Upp.2,	SS, MT, GD, GR,	-	SI	LC	-		S	-	-
Hemiprocnidae T	REESWIFTS										
Hemiprocne mystacea woodfordiana	Moustached Tree-Swift		MT, GD, GR	-	SI	LC	-		S	-	-
Coraciidae ROLL	ERS										
E urystomus orientalis solomonensis	Dollar Bird		MT, CD, GR	-	SI	LC	-		D	-	-
Bucerotidae HOF	RNBILLS										

Aceros plicatus mendanae	Blyth š Hornbill	Res.1, Res.3, PP1, Dam2, Dam3, Dam4, Upp.1, Upp.2,	SS, MT, GD, GR, LK	-	SI	LC	Π	D	-	-
Alcedinidae KINO	GFISHERS				-	-			-	
Alcedo atthis salomomensis	Common (River) Kingfisher	Upp.2,	SS, MT, GD, GR	-	SI	LC	-	S	-	х
Ceyx lepidus nigromaxilla	Variable Dwarf Kingfisher	Res.3, Dam4,	MT, GD, GR	-	G	LC	-	D	-	х
Todirhamphus chloris alberti	Collared Kingfisher		MT, GD, GR	-	SI	LC	-	D	-	-
Todirhamphus Ieucopygius	Ultramarine Kingfisher		MT, GD, GR	-	SI	LC	-	S	-	-
Hirundinidae SW	ALLOWS									
Hirundo tahitica subfusca	Pacific Swallow		SS, MT, GD	-	-	LC	-	Ι	-	-
Campephagidae	CUCKOOSHR	KES and TRILLERS				I			1	
Coracina lineata pusilla	Barred Cuckoo- shrike		MT, GD, GR	-	SI	LC	-	S	-	-
Coracina papuensis elegans	White-bellied Cuckoo- Shrike	TL4,	SS, MT, GD, GR	-	SI	LC	-	Ι	-	-
Coracina h. holopolia	Solomon Cuckoo- Shrike		MT, GD, GR	-	SI	NT	-	D	-	-
Coracina tenuirostris erythropygia	Common Cicadabird	Res.2	MT, GD, GR	-	SI	LC	-	S	-	-
Rhipiduridae FAI	NTAILS		1	1	1	I			1	
Rhipidura Ieucophrys melaleuca	Willie Wagtail	Res.3, Res.4, Dam4, Clif.1, Upp.1, Upp.2,	SS, MT, GD, GR	-	-	LC	-	Ι	-	-
Rhipidura c. cockerelli	Cockerell š Fantail		MT, GD, GR	-	G	NT	-	D	-	-

Rhipidura rufifrons rufofronta	Rufous Fantail		MT, GD, GR	-	G	LC	-	D	-	-
Monarchidae MC	NARCHS									
Monarcha c. castaneiventris	Chestnut- bellied Monarch	Res.3, Dam4,	SS, MT, GD, GR, LK	-	SI	LC	-	D	-	-
Monarcha b. barbatus	Solomons Monarch	Res.3, Dam2,	MT, GD, GR, LK	-	SI	NT	-	D	-	-
Myiagra f. ferrocyanea	Steel-blue Flycatcher	Res.3, Upp.2,	MT, GD, GR	-	SI	LC	-	S	-	-
Pachycephalidae	WHISTLERS									
Pachycephala pectoralis cinnamomea	Golden Whistler	PP2, Res.2, Res.4, Dam2,	SS, MT, GD, GR, LK	-	G	LC	-	S	-	-
Dicaeidae FLOW	ERPECKERS									
Dicaeum aeneum becki	Midget Flowerpecker	Acc.2, Res.1, Res.3, Res.4, Dam2, Clif.1, Clif2, Upp.2,	MT, GD, GR	-	G	LC	-	S	-	-
Nectariniidae SU	INB IR DS									
Nectarinia jugularis flavigastra	Olive-backed Sunbird	TL4, Upp.1,	SS, MT, GD	-	-	LC	-	S	-	-
Meliphagidae HC	DNEYEATERS									
Myzomela melanocephala	Black-headed Myzomela	Dam2, Dam4, Upp.2	MT, GD, GR	-	G	LC	-	D	-	-
Sturnidae STARI	LINGS									
Aplornis cantoroides	Singing Starling		SS, MT, GD, GR	-	-	LC	-	S	-	-
Aplornis grandis macrura	Brown- winged Starling	Res.2, Res.3, Clif.2,	MT, GD, GR	-	G	LC	-	s	-	-
Aplornis metallicus nitida	Metallic Starling	Res.3, Dam2,	SS, MT, GD	-	-	LC	-	s	-	-

Aplornis brunneicapilla	White-eyed Starling		MT, GD, GR	-	SI	ΕN	-	D	-	-
Acridotheres tristis	Common Myna	TL3	MT, GD	-	I	LC	-	Ι	-	-
Mino kreffti sanfordi	Long-tailed Myna	TL4, TL5, Acc.1, PP2, Res.3,	SS, MT, GD, GR	-	SI	LC	-	S	-	-
Corvidae CROW	S									
Corvus woodfordi	White-billed Crow	Acc.2, PP1, Tun., Upp.2,	SS, MT, GD, GR, LK	-	SI	LC	-	S	-	-

(Potential Species, TRHDP ESIA Scoping Study = SS, Birds of Melanesia = GD, Guadalcanal Island Bird Checklist = MT, Gold Ridge Report = GR, Local Knowledge = LK), (Endemic, Guadalcanal = G, Solomon Islands = SI, Introduced = I), (IUCN Red List Category, Least Concern = LC, Near Threatened = NT, Vulnerable = VU, Endangered = EN & Data Deficient = DD), (CITES Appendix for international trade of species, II = may be authorized by the granting of an export permit), (1998 Act, Prohibited Species = I, Regulated Species = II), (Population Trend, Increasing =I, Decreasing =D & Stable =S), (Local Uses, Food =F & Cultural Importance = CI), (X = Dependent on the river).

1.2.9.3 Mammals

A total of 5 mammals were observed from a total of 14 potential species from 4 families. This is around 36 percent of all mammals expected to be found along the Tina River study area. Table 3 (below) lists mammal species by family including scientific and common nomenclature. The sampling stations that the species is present in are noted as well as the :Potential Presence of the species in the Tina River study area based on species observed in areas in close vicinity to the study site in literature (TRHDP ESIA Scoping Study (Sherwood 2012) = SS, Gold Ridge Report (NL 1996) = GR and Local Knowledge = LK). Species migratory and endemic status (Guadalcanal = G, Solomon Islands = SI, Introduced = I) were also stated based on IUCN (2013). Each species Red List category (IUCN 2013) as a value of vulnerability is also specified (Least Concern = LC, Near Threatened = NT, Endangered = EN, Critically Endangered = CR and Data Deficient = DD). Each species CITES category (UNEP-WCMC 2013) where possible, of protection is also stated, as well as the status of local protection based on the Wildlife and Protection Act (1998). The :Population Trend (where possible, Increasing =I, Decreasing =D & Stable =S) is based on the IUCN (2013) Red List and :Local Uses is based on information regarding the species from locals (Food =F). Each species dependence on the river based on in-field observations is also stated.

Species name	Common name	Station Presence	Potential Presence	Migratory	Endemic	IUCN R ed List Category	CITES Appendix	1998 Act	Population Trend	Local uses	River Dependent
Pteropodidae F	RUIT BATS										

Table 3 Mammal Species Inventory of Tina River

Macroglossus minimus	Northern Common Blossom Bat		GR, SS	-	-	LC	-		s	F	-
Melonycteris fardoulisi	Fardoulis's Blossom Bat		GR	-	SI	LC	-		D	F	-
Nyctimene major	Island Tube- nosed Fruit Bat	Res.2, Res.3, Res.4	G R	-	-	LC	-		s	F	-
P teropus rayneri	S olomon š Flying Fox	Res.3, Dam3,	SS, LK	-	SI	NT	Π	I	D	F	-
Pteropus admiraltatum	Island Flying Fox		SS, LK	-	-	LC	Π	I	D	F	-
R ous ettus amplexic audatus	R ous ette Bat	Res.3, Res.4	GR	-	-	LC	-		S	F	-
Hipposideridae	LEAF-NOSED	BATS									
Aselliscus tricuspidatus	Trident Leaf- nosed Bat		GR	-	-	LC	-		s	F	-
Hipposideros cervinus	Fawn Leaf- nosed Bat	Res.3		-	-	LC	-		S	F	-
Hipposideros diadema	Diadem Leaf-nosed Bat		GR	-	-	LC	-		s	F	-
Muridae RODEN	NTS										
Rattus exulans	Polynesian Rat		GR	-	I	LC	-		s	-	-
Rattus rattus	House Rat		GR	-	I	LC	-		S	-	-
Uromys rex	King Rat		SS, LK	-	G	ΕN	-	Ι	D	-	-
Uromys imperator	Emperor Rat		SS, LK	-	G	CR	-	Ι	D	-	-
Suidae PIGS											
Sus scrofa	Wild Pig	PP2, Tun., Res.3	LK	-	-	LC	-		S	F	-
Phalangerio	dae NOCTURN	AL MARSUPIALS	-								
Phalanger orientalis	Northern C ommon C us cus		LK	-	-	LC	-		s	F	-

(Potential Species, TRHDP ESIA Scoping Study = SS, Local Knowledge = LK, Gold Ridge Report = GR), (Endemic, Guadalcanal = G, Solomon Islands = SI, Introduced = I), (IUCN Red List Category, Least Concern = LC, Near Threatened = NT, Endangered = EN & Critically Endangered = CR), (CITES Appendix for international trade of species, II = may be authorized by the granting of an export permit), (1998 Act, Prohibited Species = I, Regulated Species = II), (Population Trend, Decreasing =D & Stable =S), (Local Uses, Food =F).

1.2.9.4 Reptiles

A total of 5 reptiles were observed from a total of 23 potential species from 5 families. This is around 22 percent of all reptiles expected to be found along the Tina River study area. Table 4 (below) lists reptile species by family including scientific and common nomenclature. The sampling stations that the species is present in are noted as well as the :P otential Presence of the species in the Tina River study area based on species observed in areas in close vicinity to the study site in literature (TR HDP ESIA Scoping Study (Sherwood 2012) = SS, Reptiles of the SI (McC oy 2006) = MM, Gold Ridge Report (NL 1996) = GR and Local Knowledge = LK). Species migratory and endemic status (Guadalcanal = G, Solomon Islands = SI, Introduced = I) were also stated based on McC oy (2006). Each species Red List category (IUCN 2013) as a value of vulnerability is also specified (Least Concern = LC, Near Threatened = NT and Data Deficient = DD). Each species CITES category (UNEP-WCMC 2013) where possible, of protection is also stated, as well as the status of local protection based on the Wildlife and Protection Act (1998). The :Population Trend (where possible, Increasing =I & Stable =S) is based on the IUCN (2013) Red List and :Local Uses is based on information regarding the species from locals (Food =F). Each species dependence on the river based on literature (McCoy 2006) and in-field observations is also stated.

S pecies name	Common name	S tation P resence	Potential Presence	Migratory	Endemic	IUCN Red List Category	CITES Appendix	1998 Act	Population Trend	Local uses	River Dependent
Gerkoniuae GEC		1	I						1	1	
C yrtodac tylus salomonens is	S olomons Bent-toed G ecko		MM, G R	-	SI	NT	-	п	S	-	-
C yrtodac tylus biordinis	Guadalcanal Bow-fingered Gecko		MM, LK	-	G	LC	-		S	-	-
Gehyra oceanica	Oceanic Gecko		MM,	-	-	LC	-		s	-	-
Gekko vittatus	Sago Gecko		MM	-	-	LC	-	п	s	-	-
Nactus multicarinatus	S olomons S lender-toed G ecko	Res.4, Dam2,	ММ	-	-	LC	-		s	-	-
Scincidae SKINKS											
Corucia zebrata	Prehensile- tailed S kink		MM, LK	-	SI	NT	П	п	D	F	-
E moia cyanogaster	Greeen-Bellied Tree S kink		MM, S S	-	-	LC	-		S	-	-

Table 4 Reptile Species Inventory of Tina River

E moia cyanura	Brown-tailed Copper-striped S kink	TL4, Acc.1,	MM, SS, GR	-	-	LC	-	П	S	-	-
E moia nigra	Pacific Black Skink	TL1, Acc.1, Upp.2, Dam1, Dam2,	MM, SS, GR, LK	-	-	LC	-		S	-	-
E moia pseudocyanura	S olomons Blue-tailed S kink	TL5, Acc.1, PP1, PP2, Dam1, Upp.1, Upp.2,	MM, SS, GR	-	SI	LC	-		s	-	-
E ugongylus albofas ciolatus	White-banded Giant Skink		ММ	-	-	LC	-		s	-	-
Lipinia noctua	Moth S kink		ММ	-	-	LC	-		S	-	-
Lamprolepsis smaragdina	Emerald Tree Skink		MM, SS	-	-	LC	-	П	S	-	-
Prasinohaema virens	Green-blooded S kink		MM, G R	-	-	LC	-	П	s	-	-
S phenomorphus bignelli			мм	-	SI	LC	-		S	-	-
S phenomorphus concinnatus	Elegant Forest Skink		MM, G R	-	SI	LC	-	П	s	-	-
S phenomorphus solomonis			MM, G R	-	-	LC	-	П	s	-	-
S phenomorphus cranei	Crane š Skink		MM, G R	-	SI	LC	-		s	-	-
Tribolonotus schmidti	S chmidt š C rocodile S kink		MM, G R	-	G	LC	-		S	-	-
Boidae BOAS											
Candoia paulsoni	S olomons G round Boa		MM, SS, GR, LK	-	-	LC	П		S	-	-
Colubridae COLUBRID SNAKES											
Boiga irregularis	Brown Tree S nake		SS, GR	-	-	LC	-		s	-	-
Dendrelaphis salomonis	S olomons Tree S nake	TL5	MM, GR, LK	-	-	LC	-		s	-	-
Elapidae ELAPID SNAKES											
Salomonis par	Solomons Red Krait		MM, SS, GR, LK	-	SI	LC	-		S	-	-

(Potential Species, TRHDP ESIA Scoping Study = SS, Reptiles of the Solomon Islands = MM, Gold Ridge Report = GR, Local Knowledge = LK), (Endemic, Guadalcanal = G, Solomon Islands = SI), (IUCN Red List Category, Least Concern = LC, Near Threatened = NT), (CITES Appendix for international trade of species, II = may be authorized by the granting of an export permit), (1998 Act, Prohibited Species = I, Regulated Species = II), (Population Trend, Decreasing =D & Stable = S), (Local Uses, Food =F).

1.3 IMPORTANT SPECIES DESCRIPTIONS

This section will describe species observed that are deemed ecologically important because of their migratory patterns, endemic status, threatened status and protected status and water dependence. Species that will be described include species that are migratory, are Guadalcanal island endemics, are IUCN red listed as Vulnerable, Endangered or Critically Endangered, are protected CITES species and have a dependence on the river water system.

Literature regarding specific life cycle, breeding and feeding habits of most fauna in the Solomon Islands is lacking. There is lack of human and financial resources to carry out research at a species specific level. Due to this lack of information there is therefore a limitation regarding in the impact that development activities may have on such species. Therefore care must always be taken to err on the side of caution when assumptions are being made.

1.3.1 Amphibians

Amphibians are sensitive animals and often seen as good indicators for forest health. This is due to their dependence on certain moisture regimes and sensitivity for pollutants as they are able to :breathe through their skin. Therefore amphibians require moist environments that are relatively pollutant free.

Discodeles guppyi

Giant Webbed Frog

This frog is deemed ecologically important because of its dependence on the river system and is usually found along smaller rivers and streams (Pikacha et al. 2008). This is the largest frog in the S olomon Islands and locals report eating this species. This species belongs to the riparian habitat. Possible impacts of the hydro project on this species is the loss of habitat for breeding and feeding.

Litoria lutea

Solomon Island's Treefrog

This frog is deemed ecologically important because of its vulnerability based on the IUCN Red List assessment (IUCN 2013). This is a rare forest frog in the Solomon Islands and little information about this species is available (Pikacha et al. 2008). This species belongs to the upland, forest habitats. Possible impacts of the hydro project on this species is minimal.

Hylarana kreffti

San Cristobal Treefrog

This frog is deemed ecologically important because of its dependence on the river system and is an aquatic breeder that lays eggs in pools of water (Pikacha et al. 2008). This is the only Solomon Islands frog that has a tadpole stage as opposed to direct development evident in the Ceratobatrachidae frogs (See egg and tadpole pictures in appendix). This species belongs to the riparian habitats. Possible impacts of the project on this species is the loss of habitat for feeding, however the creation of a dam may increase micro-habitats for breeding.

1.3.2 Birds

There is a wide variety of birds that occupy different ecological niches in various habitats from grasslands to waterways to upland forests. Birds play an important ecological role in the dispersal of plant seeds, the control of insects and the pollination of plants amongst other things. S pecialist birds that occupy very narrow niches (such as the common sandpiper) are very good indicators as their disappearance can easily signify a degraded habitats.

Nycticorax caledonicus mandibularis Nankeen Night Heron

This bird is deemed ecologically important because of its dependence on the river system for feeding (such as on little fish and shrimp) and the sub-species is also a Solomon Islands endemic (Dutson 2011). This heron is found close to water and especially along forested rivers such as the Tina and is found in riparian habitats (see picture of footprint in appendix). Loss of habitat for breeding and feeding for this species may occur, however the creation of a dam may increase micro-habitats for feeding.

Microcarbo m. melanoleucos Little Pied Cormorant

This bird is deemed ecologically important because of its dependence on the river system for feeding (such as on little fish and shrimp). It is found along large rivers and nests in large trees beside water (Dutson 2011). This cormorant is found in riparian habitats. Loss of habitat for breeding and feeding for this species may occur, however the creation of a dam may increase micro-habitats for feeding.

Anas superciliosa

Pacific Black Duck

This bird is deemed ecologically important because of its dependence on the river system for feeding and breeding and is found along waterways such as rivers (Dutson 2011). This duck is also opportunistically hunted by locals as a food source. This species is found in riparian habitats. Loss of habitat for this species may occur, however the creation of a dam may increase micro-habitats for feeding.

Haliastur indus flavirostris

Brahminy Kite

This bird is deemed ecologically important because of its CITES protection status (UNEP-WCMC 2013), this sub-species is also a Solomon Islands endemic (Dutson 2011). It is the commonest raptor in the Solomon's and if found throughout a wide range of habitats, it is found throughout the entire study area. This raptor feeds mainly on smaller birds. This bird is not threatened and possible impacts of the hydro project on this species is minimal.

Aviceda subcristata proxima

Pacific Baza

This bird is deemed ecologically important because of its CITES protection status (UNEP-WCMC 2013) and this sub-species is also a Solomon Islands endemic (Dutson 2011). This common species has small numbers and is found in forest habitats but is able to be seen throughout the entire range of the study area. This raptor feeds mainly on smaller birds and lizards. This bird is not threatened and possible impacts of the hydro project on this species is minimal.

Accipiter novaehollandiae pulchellus Variable Goshawk

This bird is deemed ecologically important because of its CITES protection status (UNEP-WCMC 2013), this sub-species is also a Guadalcanal island endemic (Dutson 2011). The commonest hawk in the region and is found in forest habitats but is able to be seen throughout the entire range of the study area. This raptor feeds mainly on smaller birds and lizards. This bird is not threatened and possible impacts of the hydro project on this species is minimal.

Accipiter meyerianus

Meyer's Goshawk

This bird is deemed ecologically important because of its CITES protection status (UNEP-WCMC 2013). It is an uncommon species found in forest habitats (Dutson 2011) but is able to be seen throughout the entire range of the study area (see picture in appendix). This raptor feeds mainly on smaller birds and lizards. This species may be locally threatened and possible impacts of the hydro project on this species is minimal.

Haliaeetus sanfordi Solomon Sea-Eagle

This bird is deemed ecologically important because of its CITES protection status (UNEP-WCMC 2013) and its vulnerability based on the IUCN Red List assessment (IUCN 2013), this sub-species is also a Solomon Islands endemic (Dutson 2011). This eagle is wide ranging, from coast to upland forests and is found throughout the entire study area (see picture in appendix). This eagle feeds mainly on pigeons, doves, fish, possums and lizards. It is rare but possible impacts of the hydro project on this species is minimal.

Turnix maculosa salomonis Red-backed Button-Quail

This bird is deemed ecologically important because this sub-species is a Guadalcanal island endemic (Dutson 2011). This quail is locally common but may also be locally threatened due to habitat disturbance and opportunistic hunting for food. This species if found in the grassland habitat. Possible impacts of the hydro project on this species is minimal.

Nesoclopeus w. woodfordi

Woodford's Rail

This bird is deemed ecologically important because this sub-species is a Guadalcanal island endemic (Dutson 2011), it is classed as Near Threatened by IUCN'S Red List (IUCN 2013) and it is also opportunistically hunted by locals for food. The possible impacts of the hydro project on this rare and threatened rail should be minimal due to minimal impacts to the grassland habitat that this species is located in.

Actitis hypoleucos

Common Sandpiper

This bird is deemed very ecologically important because it is a migratory species and it is also dependent on the river system (Dutson 2011). This species breeds in the northern hemisphere from May to J une and would be absent from the S olomon Islands, possible breeding destinations for these migrants include R ussia, K orea and J apan (BirdLife 2013). This sandpiper is water dependent and feeds on larval insects, spiders, molluscs, snails, crustaceans, annelids, frogs, toads, tadpoles and small fish, as well as plant material (including seeds). This bird is also a culturally important species as it's feather is believed to give extra strength or luck if obtained, to further signify the migratory status of this species, locals recall never observing the nest or egg of this bird. This common species is usually solitary and is also territorial (see picture in appendix). Loss of habitat for this species may occur, however the creation of a dam may increase micro-habitats for feeding.

Ptilinopus solomonensis ocularis Yellow-

Yellow-bibbed Fruit-Dove

This bird is deemed ecologically important because this sub-species is a Guadalcanal island endemic (Dutson 2011) and it is also opportunistically hunted by locals for food. This dove is found in upland habitats and feeds on fruits and nuts. This bird is not threatened and possible impacts of the hydro project on this species is minimal.

Cacatua ducorpsi

Ducorp š Cockatoo

This bird is deemed ecologically important because of its CITES protection status (UNEP-WCMC 2013), also this species is also a Solomon Islands endemic (Dutson 2011). This common cockatoo is found in most areas that have large trees so all habitats except grassland and oil palm plantations should have this species. This cockatoo feeds on fruit, nuts and seeds of trees. This species is not threatened and possible impacts from the hydro project are minimal.

Chalcopsitta cardinalis

Cardinal Lory

This bird is deemed ecologically important because of its CITES protection status (UNEP-WCMC 2013), also this species is also a Solomon Islands endemic (Dutson 2011). This common lory is found throughout all habitat types in the study area with a preference for flowering or fruiting large trees. This bird is not threatened and possible impacts from the hydro project are minimal.

Trichoglossus haematodus massena Coconut Lorikeet

This bird is deemed ecologically important because of its CITES protection status (UNEP-WCMC 2013), also this sub-species is also a Solomon Islands endemic (Dutson 2011). This abundant lorikeet is found throughout all habitat types in the study area with a preference for flowering or fruiting large trees. This bird is not threatened and possible impacts from the hydro project are minimal.

Lorius chlorocercus

Yellow-bibbed Lory

This bird is deemed ecologically important because of its CITES protection status (UNEP-WCMC 2013), also this species is also a Solomon Islands endemic (Dutson 2011). This common lory is found throughout all habitat types in the study area with a preference for flowering or fruiting large trees. This bird may be threatened by logging and possible impacts from the hydro project are minimal.

Duchess Lorikeet

This bird is deemed ecologically important because of its CITES protection status (UNEP-WCMC 2013), this species is also a Solomon Islands endemic (Dutson 2011), this species is also listed as Near Threatened by IUCN's Red List (IUCN 2013). This lorikeet is common in upland habitats especially on flowering trees. This bird may be threatened and possible impacts from the hydro project are minimal.

Micropsitta finschii aolae

Finsch's Pigmy Parrot

This bird is deemed ecologically important because of its CITES protection status (UNEP-WCMC 2013), this sub-species is also a Solomon Islands endemic (Dutson 2011). This parrot is found in forest habitats and feeds on small termites found in the bark of large forest trees. This common species is not threatened and possible impacts from the hydro project are minimal.

Eclectus roratus solomonensis Eclectus Parrot

This bird is deemed ecologically important because of its CITES protection status (UNEP-WCMC 2013). This is a common parrot that can be found in a wide variety of habitats from forests to gardens and feeds on wild fruits and also cultivated fruits such as banana's (Dutson 2011). It is not threatened and possible impacts from the hydro project are minimal.

Geoffroyus h. heteroclitus

Song Parrot

This bird is deemed ecologically important because of its CITES protection status (UNEP-WCMC 2013). This is an uncommon parrot that can be found in a wide variety of habitats from forests to gardens and feeds on fruits and seeds of trees (Dutson 2011). It is not threatened and possible impacts from the hydro project are minimal.

Ninox jacquinoti granti Guadalcanal Boobook

This bird is deemed ecologically important because of its CITES protection status (UNEP-WCMC 2013), this sub-species is also a Guadalcanal island endemic (Dutson 2011). This owl is common in forest habitats and is not likely threatened and feeds on insects. Possible impacts from the hydro project are minimal.

Aceros plicatus mendanae

Blyth's Hornbill

This bird is deemed ecologically important because of its CITES protection status (UNEP-WCMC 2013), also this sub-species is a Solomon Islands endemic (Dutson 2011). This common hornbill is found in forest habitats and is thought not to be threatened it feeds on forest fruits and nuts. Possible impacts from the hydro project are minimal.

Alcedo atthis salomomensis

Common (River) Kingfisher

This bird is deemed ecologically important because of its dependence on the river system for feeding on fish and this sub-species is also a Solomon Islands endemic (Dutson 2011). This kingfisher is relatively uncommon and can be found beside streams and large rivers in the riparian habitat. It is not threatened and loss of habitat is possible, however the creation of a dam and reservoir may increase micro-habitats for feeding.

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Ceyx lepidus nigromaxilla Variable Dwarf Kingfisher
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This bird is deemed ecologically important because of its dependence on the river system and this sub-species is also a Guadalcanal island endemic (Dutson 2011). This kingfisher is relatively common and can be found beside streams in riparian habitats (see picture in appendix). It is not threatened and loss of habitat is possible, however the creation of a dam and reservoir may increase micro-habitats for feeding.

Rhipidura c. cockerelli Cockerell's Fantail

This bird is deemed ecologically important because it sub-species is a Guadalcanal island endemic (Dutson 2011) and it is also classed as Near Threatened by the IUCN Red List (IUCN 2013). This uncommon fantail requires undisturbed forest and is threatened by habitat degradation, however possible impacts from the hydro project are minimal. It feeds on insects.

Rhipidura rufifrons rufofronta Rufous Fantail

This bird is deemed ecologically important because it sub-species is a Guadalcanal island endemic (Dutson 2011). This fantail is common in forested habitats and feeds on insects and appears not to be threatened with possible impacts from the hydro project are minimal.

Pachycephala pectoralis cinnamomea Golden Whistler

This bird is deemed ecologically important because it s sub-species is a Guadalcanal island endemic (Dutson 2011). This whistler is common in forest habitats and feeds on insects and may be threatened due to habitat loss. Possible impacts from the hydro project are minimal.

Dicaeum aeneum becki

Midget Flowerpecker

This bird is deemed ecologically important because it sub-species is a Guadalcanal island endemic (Dutson 2011). This bird is very common in forest habitats especially on flowering plants and antplants (see picture in appendix) that it feeds on insects living in the ant plants. It is not threatened and possible impacts from the hydro project are minimal.

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Myzomela melanocephala
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Black-headed Myzomela

This bird is deemed ecologically important because it is a Guadalcanal island endemic (Dutson 2011). This bird is common in forest habitats especially on flowering plants and ant-plants where it feeds on nectar from flowers. It is not threatened and possible impacts from the hydro project are minimal.

Aplornis grandis macrura

Brown-winged Starling

This bird is deemed ecologically important because it sub-species is a Guadalcanal island endemic (Dutson 2011). This common starling is found in a wide range of habitats from gardens and settlements to forest habitats and feeds on insects, flowers and fruits. It is not threatened and possible impacts from the hydro project are probably minimal.

Aplornis brunneicapilla

White-eyed Starling

This bird is deemed ecologically important because it is classed as Endangered by IUCN'S Red List (IUCN 2013) and is also a Solomon Islands endemic (Dutson 2011). This is a rare bird and is found in forested habitats and feeds on insects, flowers and fruits. It is threatened by habitat lost, however possible impacts from the hydro project are minimal.

1.3.3 Mammals

Guadalcanal is home to some of the most cryptic and rare mammals in the Pacific including flying foxes and giant native rats. These animals are also very threatened and some have not been seen for over 100 years and may be extinct, however in depth searches for these animals have not being carried out and there is a possibility that they may occur in the study vicinity.

Pteropus rayneri Solomon's Flying Fox

This bat is deemed ecologically important because of its CITES protection status (UNEP-WCMC 2013), this species is also classed as Near Threatened by the IUCN'S Red List (IUCN 2013) and is a Solomon Islands endemic, this species is also opportunistically hunted by locals for food. This large bat is found over a wide variety of habitats though uses forests for roosting, especially large trees and caves and feeds on fruits. This species is threatened by habitat loss and hunting however, possible impacts from the hydro project are minimal.

Pteropus admiraltatum

Island Flying Fox

This bat is deemed ecologically important because of its CITES protection status (UNEP-WCMC 2013), this species is also opportunistically hunted by locals for food. This large bat is found in forest habitats and feeds on wild and cultivated fruits, it may be threatened and possible impacts from the hydro project are minimal.

Uromys rex

King Rat

This rat is deemed ecologically important because it is classed as Endangered by IUCN'S Red List (IUCN 2013) and it is also a Guadalcanal island endemic. This native tree-rat is believed to be found in upland forest habitats and feeds on fruits, nuts and seeds, it is highly threatened from habitat loss and predation from cats. This species is very rare however it is unlikely to come into contact with the hydro project direct impact area. The establishment of the catchment area into a conservation area may prove beneficial to this species, though more surveying for this species is recommended.

Uromys imperator

Emperor Rat

This rat is deemed ecologically important because it is classed as Critically Endangered by IUCN'S Red List (IUCN 2013) and it is also a Guadalcanal island endemic. This native tree-rat is believed to be found in upland forest habitats and feeds on fruit, nuts and seeds, it is highly threatened from habitat loss and predation from cats. This species may be extinct as no species has been encountered since 1880, it is unlikely to come into contact with the hydro project direct impact area. The establishment of the catchment area into a conservation area may prove beneficial to this species, though more surveying for this species is recommended.

1.3.4 Reptiles

Reptiles are important animals of the forest and provide a large proportion of faunal biomass, thus playing an important role in the food web of the ecosystem. Reptiles are ectotherms and therefore require body heat from the sun and also there body heat is regulated externally similar to amphibians, therefore they can also be susceptible to changes in the micro-habitats.

Cyrtodactylus biordinis

This gecko is deemed ecologically important because it is a Guadalcanal island endemic (McCoy 2006). It is commonly found on smaller trees and tree hollows where it lays its eggs, in forested habitats and feeds on insects especially moths. It is believed not to be threatened and possible impacts from the hydro project are minimal.

Corucia zebrata

Prehensile-tailed Skink

This skink is deemed ecologically important because of its CITES protection status (UNEP-WCMC 2013), this skink is also a Solomon Islands endemic (McCoy 2006) and is classed as Near Threatened by the IUCN Red List (IUCN 2013), it is also opportunistically hunted for food. This species is probably the largest skink in the world and prefers large trees with dense foliage in forest habitats, it is a vegetarian and feeds on leaves from vines and fruits and flowers. This species may be threatened by habitat loss, however possible impacts from the hydro project are minimal.

Tribolonotus schmidti

Schmidt's Crocodile Skink

This skink is deemed ecologically important because it is a Guadalcanal island endemic (McCoy 2006). This skink is relatively common and prefers moist areas under fallen and rotting timber in forest habitats, it feeds on insects. It is not threatened and possible impacts from the hydro project are minimal.

Candoia paulsoni

Solomons Ground Boa

This snake is deemed ecologically important because of its CITES protection status (UNEP-WCMC 2013). This common snake occurs in a wide variety of habitats from forests to gardens and feeds on frogs to skinks and smaller snakes. It is not threatened and possible impacts from the hydro project are minimal.

1.4 HABITAT DELINEATION AND VALORIZATION

General habitats were localized and delineated on a Google Earth map. This section describes the value of the general habitat types for terrestrial wildlife (highly valued, moderately valued, weekly valued). The report defines what is considered `critical_ in the study area in a strictly biological point of view: areas with protected species colonies, areas with endemic species, areas with migratory species and areas with endangered species. Critical natural habitats described and delineated include grassland, riparian, upland and forests. However certain important species have ranges that cover the entire project area and can be found in all areas.

1.4.1 Habitat Types

Refer to pictures in appendix and delineated areas on Google Earth. All the habitats described are common on Guadalcanal and there are no unique habitats that are found in the project that cannot be found elsewhere on the island of Guadalcanal. Most habitats found in the project area are not in a pristine state and have been used and degraded to a certain extent by local populations.

1.4.1.1 Grassland

Refers to habitats that are dominated by grasses and cover the lower lying hills that are not so steep. These are natural habitats formed from the dryer climate and less fertile soils. They have moderate ecological value mainly because they support fewer species but they do support unique species that are not found in forests.

1.4.1.2 Forest

2.4.1.2.1 Undisturbed forest

Refers to forested areas that have undergone relatively no disturbance by human activities. These forest areas are in pristine condition and are on a high ecological value. They are home to a wide variety of species and the intactness of the forest supports greater biodiversity.

2.4.1.2.2 Disturbed forest

R efers to forested areas that have undergone relatively recent disturbance by human activities, such as in the form of timber extraction. These forest areas are not in pristine condition and are on a moderate ecological value. They are home to a small variety of species because of the disturbed nature.

2.4.1.2.3 Remnant forest

R efers to forested areas that have undergone extensive disturbance with remaining large trees such as Canarium nut trees left on purpose. These forest areas are not in pristine condition and are on a moderate ecological value. They are home to a small variety of species but are highly modified landscapes by people.

1.4.1.3 Upland

R efers to habitats further inland and of a higher altitude and usually of a forest nature. Upland areas are usually of a pristine nature due to the distance from human habitation and influence. They also are home to many unique and rare species and this habitat is therefore of a high ecological value.

1.4.1.4 Riparian

Refers to habitats along and adjacent to the Tina river and other waterways. These habitats are of high ecological value because they are home to many unique species that are dependent on the water ecosystems. Riparian habitats of a greater distance from settlement areas are also of the most pristine conditions.

1.4.1.5 Cliff

Refers to habitat on and adjacent to very steep areas, usually always adjacent to the river as well. Cliffs seem to be habitats that are created by the river systems that they are adjacent to. They are of a moderate ecological value because they house unique species that may use the cliffs as feeding and breeding habitats. They are of a relatively pristine nature because cliff areas are hard to be modified by local peoples.

1.4.1.6 Garden

Refers to human cultivated habitats that contain food crops. This habitats are of a weak ecological value as they are human created landscapes. However they do provide certain feeding habitats for some species.

1.4.1.7 Fallow brush land

Refers to habitats that were cultivated in the past but have been left to fallow in recent years. These are areas similar to remnant forest however they have undergone complete cultivation as in the form on a garden and have been left to fallow/regrow. They are of a weak ecological value because they host a minimal number of species.

1.4.1.8 Oil palm plantation

R efers to habitats that are homogenous cultivated with oil palm. These areas are of a weak ecological value as they are human created landscapes and are dominated by a foreign species. However certain species have learned to adapt and take advantage of this habitat such bats.

1.4.1.9 Settlement

Refers to habitats in and around village areas. These areas are of a weak ecological value and threaten native species especially through domesticated animals such as cats, dogs and pigs.

1.5 RECOMMENDATIONS AND CONCLUSIONS

- ¿ Field study time should be increased for this report, to increase the accuracy and credibility of information on faunal species.
- *i* The establishment of a protected area for the catchment area may benefit the conservation of most biodiversity of the island, especially the endangered native rats.
- *i* The formation of a dam system may favour some water dependent species such as birds by providing extra micro-habitats for feeding and breeding.

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3. APPENDIX

3.1 SAMPLING STATION PHOTOGRAPHS

R efer to folder in FTP

3.2 Species Photographs

R efer to folder in FTP

3.3 HABITAT PHOTOGRAPHS

R efer to folder in FTP

Appendix N

Treatment of Community Feedback

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Appendix N

Treatment of Community Feedback

Table N-1 provides a summary of the community feedback received in the 15 ESIA mitigation workshops undertaken in 2014 and the manner in which feedback has been incorporated into project design and key safeguard documents. Minutes of the relevant mitigation workshops can be found in Annex 12.

Table N-2 provides a summary of community feedback arising during community consultations of the revised ESIA in October and November 2016 and Project responses to issues raised.

Consultation Feedback	Project Outcome
Grievance Mechanism required for local communities	Grievance mechanisms for local communities provided for land acquisition in the LALRP and for project impacts in the ESIA
Need for a fish pass and protection of key fish species	Further fish study undertaken by Ian J owett to consider protection of nominated fish species (Gobi, eel, silver fish). Trap and Haul system adopted as more effective fish pass for true swimmer species. ESIA disclosure in November 2016 included presentation of photographs of trap and haul systems and mechanism details.
Concern about impact of dam on downstream commercial gravel activities and request for further investigation	Communities informed in November 2016 ESIA disclosure meetings: - Initial drill hole studies suggest a minimum of 30-50 years of river-bed gravel. - Further and ongoing investigations to monitor gravel quantity will be undertaken on a regular basis through the hydro operations period
Provision of alternative water supplies pre- construction for river dependent communities	Accommodated. Provision of alternative water supplies for Project affected river users downstream of the dam site provided for in ESMP. SPC to prepare a Water Supply Feasibility Study for approval by PO and WB prior to installation of supplies.
S afety of the dam during cyclones and extreme weather conditions a series concern for communities.	Dam design complies with dam safety panel requirements. Dam safety panel visited communities in 2012. Under the ESMP, the TRHDP-PO will run a village level consultation program on modern day dam engineering, construction and operation complemented by community briefings from the World Bank's dam safety panel.
Tambu site protection to be considered and compensation paid for damage	Accomodated. The ESMP's Cultural Heritage Plan Framework provides for tambu sites to be confidentially identified prior to construction, protected where possible, and provided with monetary compensation where damage occurs.
Consideration to be given to protecting community benefit agreements where companies change to avoid difficulties experienced with Gold	To accommodate this concern, the community benefit share payment regime once finalised shall be enforceable through contracts between SPC and Solomon Power (PPA), and between SPC and SIG (Implementation Agreement). Any novation or transfer of the contracts will require consent. Consideration will be given to recommending an Act of Parliament to reflect the contractual agreements once

Table N-1 ⁻ Resolution of Community Concerns ESIA Mitigation Workshops 2014

Consultation Feedback	Project Outcome
Ridge. Suggestion that this be done by way of an Act of Parliament.	implementation confirms success of community benefit share financing arrangement.
Guarantee for communities and landowners to be given priority employment	Accomodated. The Implementation Agreement provides for communities and landowners to receive preferential employment. J S DF funded C ommunity Benefit S hare Pilot provides for pre-employment training for landowners and communities.
Malango people as landowners need equal involvement in the Project with Bahomea	Accomodated. Malango people will be included in the community benefit share arrangements, and as landowners, were key players in the negotiation of the Process Agreement for land acquisition. They are also included in the PO s ongoing consultation program.
Traditional use of the river to be documented in the ESIA	Accommodated. ESIA and LALRP include assessment of river uses including fishing, drinking, washing, bathing, and swimming.
Mitigation measures to address removal of vegetation and biomass from the reservoir	Accommodated. ESMP includes measures for reservoir vegetation to be stripped (without pesticides) and mulched, to reduce biomass.
Consideration to be given to oxygen levels in the dam	Accommodated. Investigation of reservoir stratification included in ESIA.
Information needed on how environmental flow will be managed	Accommodated. ESIA community awareness in Nov 2016 provided information on environmental flow requirements and management. Requirements will also form part of the Reservoir Management Plan to be prepared by the SPC.
Overseas study visits needed to show other hydros	Accommodated. Two overseas study visits facilitated by PO, including visits to hydro power stations in Fiji and Australia.
Relocation request for riverside villages even if dam is deemed safe	Not Accommodated. Relocation not compliant with WB Indigenous Peoples safeguards. Village level dam safety workshops, involving the dam safety panel, instead proposed in ESMP.
Impacts of dam on social structures of communities, churches, women and youth to be included in ESIA	Accommodated. Social impact assessment in ESIA accomodates issues raised. Key mitigation measures include compulsory cultural induction training for workers, workers code of conduct, prohibition on a construction worker's camp in the area, and priority job access and job training for local communities.
Request for a police post to be installed in the Tina area	Not Accommodated. RSIPF arrangements are out of scope of the TRHDP. However, extensive security will be provided during construction and operations and there is an opportunity for the Community Benefit S hare F und to consider accommodating police infrastructure needs as a supported project if determined to be a priority.
Request for re-opening of clinics and a high level health service (mini hospital)	Partly Accommodated. SPC/EPC are to open and operate a clinic in or near the Project Area before construction commences. Community Benefit Share Fund is anticipated to support the re-opening of the Konga Clinic in Bahomea in consultation with the Guadalcanal

Consultation Feedback	Project Outcome
	Ministry of Health. Opening of a clinic in Malango is also a likely priority for the fund. Ministry of Health planning for Guadalcanal provides for a referral system to the National Referral Hospital (NRH) in Honiara (30-40 minutes drive). Providing requisite staff, expertise and supplies to a second hospital is not consistent with Ministry of Health policy. Road upgrades will improve transport times to NRH.
Studies should take into account social inconvenience and use of bad language	Accommodated. ESMP requires all new workers to participate in cultural induction training and adhere to a Worker's Code of Conduct
Need to consider seismic events in dam design	Accommodated Dam design built to withstand a 1 in 500 year Operating Base Earthquake (OBE) and a 1 in 10,000 year Maximum Design Earthquake (MDE). A seismic risk assessment was undertaken and incorporated into design requirements as the PPA's :Minimum Functional S pecifications'. The Dam Safety Panel will continue to review dam design in accordance with the WB's Dam Safety Plans under OP 4.37. S eismic event design communicated to Bahomea, Malango and Ghaobata communities in November 2016 ESIA disclosure consultations and will form a key component of dam safety village workshops required under the ESMP.
Emergency plan for dam failure needed	Accommodated Developer to prepare an Emergency Preparedness Plan under the ESMP including disaster/extreme event modelling, dam failure and responses.
Importance of education	Accommodated Community Benefit Share Fund is proposed to focus primarily on education outcomes, including improvements to existing schools, teacher housing, electrification of schools and computer classes. Final priorities will be determined in accordance with the decision making processes of the final fund design.
Information requested on Project timeframes	Accommodated Ongoing community awareness has updated communities on Project activities and timeframes. See Annex 14.
Rehabilitation needed for youths involved in anti-social behaviour during the tensions	Partly Accommodated Community Benefit S hare F und to provide improvements to education from kindergarten to F orm 7 to increase employment and further studies opportunities for youth. J S DF C ommunity Benefit S hare Pilot to provide pre-employment training to youth, and Implementation Agreement to prioritise local community for employment opportunities. If specific rehabilitation programs are a community priority, these will be incorporated into the C ommunity Benefit S hare program. Community consultation will inform the focus on the Community Benefit S hare F und.
Suggestion that fish will not be depleted but may increase in number. Further study requested.	Accommodated. Further fish study by Ian J owett commissioned. Results confirm feedback and suggest that fish numbers likely to increase in lower flow conditions.
sources to be provided to communities	Accommodated. LALR P provides for 3 x SBD \$20,000 annual community payments for the purchase of alternative proteins for

Consultation Feedback	Project Outcome	
	feasts/celebrations to compensate for loss of pig hunting grounds/fishing sites during construction years. Households identified as obtaining more than 10% of their livelihood from impacted fishing or hunting activities (vulnerable households) to receive equivalent comparable foods or store vouchers to the value of SBD \$25,000 (being 50% of the average income of Bahomea households). (LALR P E ntitlements Matrix)	
Fish farms to be considered as an alternative if fish depleted	Accommodated. LALRP to provide for a feasibility study of a reservoir fish farm if annual fish studies along the river suggest depletion over baseline studies (NB: clarification on this will be part of the next round of amendments)	
Whether people of Bahomea will have access to free power	Not Accommodated. Further consultations with communities raised concerns that free power will attract unwanted settlers and squatters to the area.	
C lear example of the fish pass proposed for the dam needed	Accommodated. ESIA disclosure consultations in Nov 2016 included indicative photographs of the proposed trap and haul measure and information on its application	
Will people of Choro, Senge and Korepa need to be relocated?	Accommodated. No relocation required, and confirmed to communities in a number of consulations including ESIA disclosure consultations in Nov 2016.	
Downstream communities in Ghaobata to be included in alternative water supplies	Accommodated. All river dependent downstream communities to be provided with alternative water supply systems commiserate with affected river use. EPC contractor to prepare Water Supply Feasibility Plan for WB and PO approval. Ngalimbiu community informed of measure at ESIA workshops in 2014 and 2016.	
Information needed on the dam fill time after construction	Accommodated. Information on dam fill time provided during ESIA disclosure workshops in November 2016.	
Suggestion of an environmental bond to ensure developer compliance	Environmental bond requirements will be a decision of the MECDM as part of the development consent conditions under the Environment Act.	
Gate to be established at entrance of Project area managed by both the developer and landowners	Accommodated. ESMP provides for access above Mengakiki to be restricted and for the road to remain a private road. SPC operational budget includes a budget for security.	
Voltage of power lines and safety concerns of vehicles hitting poles	ESMP requires Solomon Power to carry out educational programs on electricity safety including safety around transmission lines.	
Width of road and potential damage and compensation needed for any plants damaged	Accommodated. LALRP includes an asset survey of all plants within the infrastructure corridor.	
E nforcement of E nvironmental laws ordinarily very weak. Additional measures required.	Accommodated. In addition to Environment Act compliance, ESMP requires monitoring and oversight of all environment and social measures by Project Office. ESMP compliance forms a key term of the Implementation Agreement. World Bank Project Agreements with SPC will also incorporate monitoring and compliance.	
	Consultation Feedback	Project Outcome
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.Ngalimbiu Communities	Concerns of reduction in gravel available for commercial extraction	Gravel monitoring by a river geomorphologist provided in the ESMP in section 13.2.2. Drill holes demonstrate areas of deep gravel depth, suggesting sufficient gravel for a significant number of years.
	Dam safety concerns for downstream villages. Dam will :answer to nature s call	Dam design complies with dam safety panel requirements. Dam safety panel visited communities in 2012. ES MP section 13.2.2 requires a village level consultation program on modern day dam engineering, construction and operation complemented by community briefings from the World Bank s dam safety panel.
	Concern that environment and safety measures discussed will not be implemented or overseen.	Environment and safety measures to be incorporated into all project agreements. New contractual arrangements section 13.7.3 added to ESMP. Project Finance to include funding for TRHDP-PO and MMERE to provide oversight of SPC and HEC E&S implementation.
Bahomea and Infrastructure Corridor Communities	Concerns of dam safety and question regarding possibility of relocation	Dam design complies with dam safety panel requirements. Dam safety advisory panel (DSAP) visited communities in 2012. ESMP section 13.2.2 requires a village level consultation program on modern day dam engineering, construction and operation complemented by community briefings from the World Bank š dam safety panel. Relocation not advised by DSAP. WB safeguards do not support unnecessary relocation.
	Could the dam be used to provide a water supply for communities and Honiara Village water supplies to be built before construction starts	Not a component of the current hydropower project. Section 13.2.2.6 revised to clarify that all downstream communities whose use is affected by the Project will receive
	E mployment to prioritise host communities. Concerns of influx of people and workers from other islands.	alternative water supplies before construction commences. Project related employment to prioritise host communities, ESMP section 13.2.2.2. Requirement incorporated into Implementation Agreement between SIG and SPC
	Will downstream fish migration be impacted by the dam once upstream migration measures are implemented	Downstream fish migration predicted to follow freshes and small floods and make use of spillway.
	Electrification for villages	Electrification for priority infrastructure a component of the JSDF Community Benefit Share Pilot, at section 13.5.1.1.

Table N2 $\,\,{}^-$ R esolution of Community Concerns ESIA Consultations Oct 2016

Consultation Feedback	Project Outcome
Important that dust reduction and malaria prevention plans are properly implemented	Air Quality Management and Dust Control Plan and Community Health and Disease Vector Management Plan to be provided by the Developer. Further information on these plans, and details of timeframes and approvals inserted in section 13.4.
Will there be improvements to education and clinics? Education is priority.	Funding for education and clinics are expected to be key priorities for the Community Benefit Share Fund. Fund priorities to be determined with reference to community consultations as part of fund design and ongoing operations. Discussion of the Benefit Share Fund updated in section 13.5.1.

Appendix O

Construction Environment and Social Management Plan Specifications

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Appendix O

Construction Environmental and Social Management Plan Specifications

This Appendix provides an outline of environmental specifications for assistance of implementation actors in preparing construction contracts in the TRHDP. This document is provided for guidance only and is not intended to create any additional obligations on the Developer in addition to those provided in the ESMP. In the event of any inconsistency the ESMP shall prevail.

1. GENERAL

2. ENVIRONMENTAL DUTIES OF THE CONTRACTOR

The duties of the Contractor(s) include but not limiting to:

- a. Compliance with relevant environmental legislative requirements in Solomon Islands
- b. Work within the scope of contractual requirements and other tender conditions;
- c. Prior to construction commencement, the contractor shall submit to the Project Company a Contractors Health, Safety and Environment Plan (HSE) showing its organization and methods for implementation of the Construction Environmental and Social Management Plan (CESMP) and related management and monitoring plans issued by the Project Company.
- d. Organize representatives of the construction team to participate in site inspections undertaken by the Project Company, MMERE Project Office, the independent monitoring agent, and undertake any corrective actions instructed by the Supervision Engineer;
- e. Provide and update information to the Project Company regarding works activities which may contribute, or be continuing to the generation of adverse environmental conditions;
- f. Stop construction activities which generate adverse impacts upon receiving instructions from the Supervision Engineer and propose and carry out corrective actions and implement alternative construction method, if required, in order to minimize the environmental impacts;
- g. Submit Contractor's Compliance Reports on the dates specified in the Contract.
- h. Establish a Grievance Redress Mechanism according to the GRM associated with the Project Company's ESMP.

3. CONTRACTOR'S PROGRAM FOR IMPLEMENTATION OF EMP

The Contractor is required to submit a CESMP Implementation Program (CEMPIP) as part of his proposed Construction Method Statements during construction phase. The Contractor's CEMPIP shall provide details such as Contractor's commitment to environmental protection; methodology of implementing the project CSEMP; detailed designs for mitigation measures; environmental monitoring program during different stages of the construction period, and the contractor's proposed resources for the implementation of the CSEMP.

4. CONTRACTOR'S WORKPLACE SAFETY AND ENVIRONMENTAL AND SOCIAL OFFICERS (SESO)

Three Workplace Safety and Environmental/Social Officers (SESO) working full time on-site will be appointed by the Contractor. Each of the SESOs is expected to have at least 7 years relevant working experiences. One shall be specialized in environmental management, training and monitoring in infrastructure construction projects; one shall be specialized in workplace health and safety in infrastructure construction projects; and one shall be responsible for community liaison, including public information, consultations, interactions on community development projects and mitigation measures such as replacement water supplies, and grievances. The SESOs should be familiar with relevant requirements of S olomon Islands legislation and regulations. The Contractor shall assign a sufficient number of inspectors and assistants to provide adequate coverage of the workplace.

The SESOs shall be responsible overall for implementation and management of the CSEMP program. The roles and responsibilities of SESOs are, but not limited to, the followings:

- a. Assist in environmental awareness and health and safety training for the contractor's workers within two weeks since mobilization and refresh training at every six months. Conduct additional training as advised by the Environmental Manager of the Project Company
- b. Carry out environmental <u>site surveillance</u> to investigate the Contractors' <u>site practice</u>, equipment and work methodologies with respect to pollution control and adequacy of environmental mitigation implemented;
- c. Carry out safety inspections, investigate and report on incidents, administer a permit to work system, enforce compliance with workplace safety rules.
- Monitor the implementation of environmental and social mitigation measures and the contractor <u>compliance</u> with environmental protection, pollution prevention and control measures, and contractual requirements; Advice to the Contractor(s) on environment improvement, awareness, proactive pollution prevention measures;
- e. Carry out investigation and submit proposals on mitigation measures to the Contractor(s) in the case of non-compliance / discrepancies to CESMP are identified. Participate in the monitoring and implementation of remedial measures to reduce environmental impact
- f. <u>Review the success</u> of the CSEMP to cost-effectively confirm the adequacy of mitigation measures implemented
- g. Prepare Contractor's Compliance Reports to be ready on the dates specified in the contract.
- h. Incorporate CESMP implementation progress into contractor's construction progress report
- i. <u>Complaint investigation</u>, evaluation and identification of corrective measures.
- j. Carry out the monitoring programs issued by the Project Company within the specified timeframe instructed by the Supervision Engineer and/or Project Company and participate in any SIG or World Bank monitoring programs; and
- k. Brief the Independent Environmental Monitoring Agent (IEMA), who will carry out environmental sampling and monitoring quarterly, on all environmental-related issues regarding the contractor's works. Provide the IEMC one copy of each environmental document the SEO prepared during and between visits of the IEMC.

The Contractor(s) shall ensure adequate resources are available to the SEO for the implementation of the CESMP throughout the construction phase.

5. CONSTRUCTION ACTIVITIES AND ENVIRONMENTAL RULES FOR CONTRACTOR

The Contractor will prepare and enforce a Workers Code of Conduct based on the model in the ESMP issued by the Project Company to reflect the followings.

5.1 PROHIBITIONS

The following activities are prohibited on or near the project site:

- 1. Cutting of trees for any reason outside the approved construction area;
- 2. Hunting, fishing, wildlife capture and poaching, or plant collection;
- 3. Buying of wild animals or their meat for food or any other purposes;
- 4. Disturbance to anything with architectural or historical value other than in compliance with the Physical Cultural Resources Management Plan;
- 5. Building fires outside workers housing areas without authorization;
- 6. Use or possession of firearms;
- 7. Use of alcohol by workers during working hours;
- 8. Washing car or machinery in streams or creeks.
- 9. Doing maintenance (change of oils and filters) of cars and equipment outside authorized areas
- 10. Littering of the site and disposing trash in unauthorized places
- 11. Workers driving motorbikes without wearing helmets
- 12. Control construction plants or vehicles by unauthorized person.
- 13. Driving at speeds exceeding set safety limits.
- 14. Having caged wild animals (especially birds) in camps.
- 15. Working without safety equipment (including gloves, boots and masks)
- 16. Creating nuisances and disturbances in or near communities
- 17. Disrespecting local customs and traditions
- 18. The use of rivers and streams for washing of clothes.
- 19. The use of welding equipment, oxy-acetylene torches and other bare flames where fires constitute a hazard.
- 20. Indiscriminate disposal of rubbish or construction wastes or rubble.
- 21. S pillage of potential pollutants, such as petroleum products.
- 22. Collection of firewood.
- 23. Latrining outside of the designated facilities.
- 24. Burning of wastes and/or cleared vegetation.

5.2 TRANSPORT

The Contractor shall use selected routes to the project site, as agreed with the Supervision Engineer, and appropriately sized vehicles suitable to the class of roads in the area. The contractor shall restrict loads to prevent damage to local roads and bridges used for transportation purposes. The Contractor shall be held responsible for any damage caused to local roads and bridges due to the transportation of excessive loads, and shall be required to repair such damage to the approval of the Supervision Engineer.

The Contractor shall not use any vehicles, either on or off road with grossly excessive, exhaust or noise emissions. In any built up areas, noise mufflers shall be installed and maintained in good condition on all motorized equipment under the control of the Contractor.

Adequate traffic control measures shall be maintained by the Contractor throughout the duration of the Contract and such measures shall be subject to prior approval of the S upervision E ngineer.

5.3 WORKFORCE AND WORKERS FACILITIES

The Contractor should, whenever possible, locally recruit the majority of the workforce, including all unskilled and semi-skilled labour, and shall provide appropriate training as necessary. The contractor shall prioritise workers from the local Bahomea and Malango areas.

Minimum Facilities required:

The construction site shall be provided with the following minimum facilities:

- a Warning signs at the perimeter of construction areas to restrict public access to hazardous areas.
- ð Sanitary arrangements, latrines and urinals shall be provided on the following scale:
- ð Where female workers are employed, there shall be at least one latrine for every 25 females or part thereof.
- Where males are employed, there shall be at least one latrine for every 25 males or part thereof.
- Every latrine shall be under cover and so partitioned off as to secure privacy, and shall have a proper door and fastenings.
- a Each latrine or urinal must be lockable from inside, and outside of each block there must be a notice in the language understood by the majority of the workers `For Men_or `For Women_as the case may be.
- ð The latrines and urinals shall be adequately lighted and shall be maintained in a clean sanitary condition at all times and
- ð Water shall be provided in or near the latrines and urinals by storage in drums.
- a A sick bay and first aid station. First aid box shall be provided at every construction campsite and under the charge of a responsible person who shall always be readily available during working hours of the work place. He shall be adequately trained in administering first aid-treatment. Formal arrangement shall be prescribed to make motor transport available to carry injured person or person suddenly taken ill to the nearest clinic or hospital.
- ð Waste disposal facilities shall be provided:
- ð Disposal of sanitary wastes and excreta shall be into septic tanks.
- a Kitchen wastes shall be disposed into soak pits. Wastewater from campsites will be discharged and disposed in a kitchen sump located at least 15 meters from any body of water. Sump capacity should be at least 1.3 times the maximum volume of wastewater discharged. The bottom of the pit should be filled with coarse gravel and the sides shored up with board, etc. to prevent erosion and collapse of the pit.
- ð Solid wastes generated in the construction site shall be reused if recyclable or disposed off in land fill sites
- ð Fire breaks are important, together with an effective fire prevention policy.

Workers Camp

The contractor undertakes not to establish a workers camp. Workers are to be recruited from local communities of Malango and Bahomea as a priority. Foreign and non-local national workers shall be housed in existing townships such as Honiara and Henderson.

Activities in Construction Camp

The following precautions need to be taken in construction of camps:

- Measures to ensure that no leaching of oil and grease into water bodies or underground water takes place
- ð Wastewater should not be disposed into water bodies
- a Regular collection of solid wastes should be undertaken and should be disposed of safely
- a All consumables of first aid equipment, cleaning equipment for maintaining hygiene and sanitation should be recouped immediately

The Contractor shall ensure that site offices, storages and workshops are located in appropriate areas as approved by the Supervision Engineer and not within 200 meters of existing residential settlements. Explosive materials storage must be away from residential areas, administrative areas or other public areas, the location of the storage must be accepted, approved by the Ministry of Environment in consultation with the Tina Hydro Project Office and comply with existing S olomon Islands legislation.

The Contractor shall comply with all point source pollution requirements of the Project Company's ESIA and ensure that site offices and particularly storage areas for diesel fuel and bitumen are not located within 100meters of watercourses, and are operated so that no pollutants enter watercourses, either overland or through groundwater seepage, especially during periods of rain. This will require bund walls to be constructed around the area with a settling pond/oil trap at the outlet.

Site Restoration

At the completion of the construction work, the Contractor shall comply with the Post Construction Rehabilitation Plan. Including, all construction camp facilities shall be dismantled and removed from the site unless retention of a facility is requested by the Project Company for use during operation, and the whole site restored to a similar condition to that prior to the commencement of the works or to a condition agreed to with the Project Company in consultation with the owner of the land. Various activities to be carried out for site restoration are:

- ð Oil and fuel contaminated soil shall be removed and transported and buried in waste disposal areas approved by the Supervision Engineer.
- ð Construction campsite shall be grassed and trees cut replaced with similar tree species.
- ð Trees planted shall be handed over to the Project Company for maintenance
- ð Soak pits and septic tanks shall be covered and effectively sealed off.

5.4 CLEARING THE RIGHT-OF-WAY

The Contractor shall ensure that vegetation clearing of right of way is carried properly.

- a Before clearing, a botanical survey will be carried out in accordance with the Forest Clearing Plan to identify trees and plants to be avoided or transplanted. Whenever possible, communities should be allowed to benefit from this vegetation for firewood and other uses.
- Trees should be cut in such a way that they fall longitudinally and not transversally to the right of way alignment. Extra care should be taken to avoid tress from falling down slope with potential risk for communities or traffic below.
- ð Make use of any usable timber (after community uses) before construction starts.
- The Contractor shall remove and store the organic layer of the soil to be used for revegetation and restoration of affected sites in accordance with the Topsoil and Spoil Management Plan.

5.4 WASTE MANAGEMENT AND EROSION

Solid, sanitation, and, hazardous wastes must be properly controlled, through the implementation of the following measures:

Waste Management:

ð Shall be undertaken in accordance with the Waste Management Plan issued by the Project Company

Erosion Control:

ð Shall be undertaken in accordance with the Erosion and Sedimentation Control Plan issued by the Project Company

Maintenance:

- ð Identify and demarcate equipment maintenance areas (>15m from rivers, streams, lakes or wetlands). Fuel storage shall be located in proper areas and approved by the Supervision Engineer.
- a Ensure that all equipment maintenance activities, including oil changes, are conducted within demarcated maintenance areas; never dispose spent oils on the ground, in water courses, drainage canals or in sewer systems.
- a All spills and collected petroleum products shall be disposed of in accordance with standard environmental procedures/guidelines, and the Point Source Pollution requirements of the Project Company's ESMP. Fuel storage and refilling areas shall be located at least 100m from all cross drainage structures and important water bodies or as directed by the Supervision Engineer.

5.5 EARTHWORKS, CUT AND FILL SLOPES

All earthworks shall be properly controlled, especially during the rainy season.

The Contractor shall maintain stable cut and fill slopes at all times and cause the least possible disturbance to areas outside the prescribed limits of the works.

The Contractor shall complete cut and fill operations to final cross-sections at any one location as soon as possible and preferably in one continuous operation to avoid partially completed earthworks, especially during the rainy season.

In order to protect any cut or fill slopes from erosion, in accordance with the drawings, cut off drains and toe-drains shall be provided at the top and bottom of slopes and be planted with grass or other plant cover. Cut off drains should be provided above high cuts to minimize water runoff and slope erosion.

Any excavated cut or unsuitable material shall be disposed of in designated disposal areas as agreed to by the S upervision E ngineer and in accordance with the Topsoil and S poil Management Plan.

5.6 STOCKPILES AND BORROW PITS

Operation of a new borrowing area, on land, in a river, or in an existing area, shall be subject to prior approval of the Supervision Engineer, and the operation shall cease if so instructed by the Supervision Engineer. Borrow pits shall be prohibited where they might interfere with the natural or designed drainage patterns. River locations shall be prohibited if they might undermine or damage the river banks, or carry too much fine material downstream.

The Contractor shall ensure that all borrow pits used are left in a trim and tidy condition with stable side slopes, and are drained ensuring that no stagnant water bodies are created which could breed mosquitoes.

The location of crushing plants shall be subject to the approval of the Engineer, and not be close to environmentally sensitive areas or to existing residential settlements, and shall be operated with approved fitted dust control devices.

In any borrow pit and disposal site, the Contractor shall:

Identify and demarcate locations for stockpiles and borrow pits, ensuring that they are
 15 meters away from critical areas such as steep slopes, erosion-prone soils, and areas

that drain directly into sensitive water bodies (except the sites designed with rock wall to cover the surroundings

- ð Limit extraction of material to approved and demarcated borrow pits.
- Stockpile topsoil when first opening the borrow pit. After all usable borrow has been removed, the previously stockpiled topsoil should be spread back over the borrow area and graded to a smooth, uniform surface, sloped to drain. On steep slopes, benches or terraces may have to be specified to help control erosion.
- a Excess overburden should be stabilized and re-vegetated. Where appropriate, organic debris and overburden should be spread over the disturbed site to promote revegetation. Natural re-vegetation is preferred to the extent practicable.
- Existing drainage channels in areas affected by the operation should be kept free of overburden.
- o Once the job is completed, all construction -generated debris should be removed from the site.

The Contractor shall present a quarry or borrow pit exploitation plan. The operation of the quarry or borrow pit should follow the following practices: should include aspects like:

- o Operations must be conducted in discrete stages with all valuable material fully extracted so that progressive rehabilitation can be carried out.
- a It is most important that operators plan for progressive rehabilitation while operations are ongoing. Planning of final rehabilitation of a pit should occur well before the cessation of operations. Any plan for the rehabilitation of a site should include a brief description of the site prior to the commencement of operations, including: soils, landform, flora and fauna, drainage and conservation values.
- ð Deposits should be worked in a systematic manner, generally across or down the slope, so that worked out sections can be rehabilitated and left to revegetate without further disturbance.
- ð Where substantial volumes of waste rock or overburden will be produced by the operation of the quarry, this material should be placed in properly designed dumps, which are located and shaped to blend in with the surrounding landscape. Costly reshaping of dumps during the rehabilitation phase is then avoided.
- Minimization of the total disturbed area is the best method of reducing erosion caused by storm water run-off and weed invasion. Use boundary markers, such as stakes and flagging tape, to indicate to machinery operators the extent of areas to be cleared.
- The Contractor shall submit a blasting plan for each site following the Drill and Blast Management Plan issued by the Project Company for review and approval by the Supervision Engineer prior to implementation.
- ð Avoid blasting in overcast and other adverse weather conditions. A regular blasting time should be adhered to and notified to communities.
- ð Quarrying should be carried out in a series of working benches if the material is stable. Orientation of benches should take into account the underlying geology and vantage points from which the quarry is visible. All benches should be self-draining. Each bench should act as a table drain, carrying water along the bench to a suitable discharge point or settling pond. If drainage is allowed to flow down the face from one bench to the next, erosion will occur and the benches may be lost.
- Topsoil is usually the darker, upper soil layers. Though only 10 30 cm deep, it contains nutrients, minerals, seed, and organic matter which helps bind it all together. Wherever possible, stripped topsoil should be placed directly onto an area being rehabilitated. This avoids stockpiling and double handling of the soil.
- a If topsoil must be stockpiled, remember that it does deteriorate in quality while stockpiled. The following practices will help maintain soil quality: o Topsoil should be kept separate from overburden, gravel and other materials; if possible, windrows of topsoil should not exceed one metre in height to reduce `souring';
 - o topsoil stockpiles should be protected from erosion;
 - o Growing vegetation on the stockpiles (shrubs or grasses) reduces erosion and will maintain biological activity in the soil;

- Topsoil should not be buried or driven on, as this will damage soil structure. o Soil should be stored somewhere out of the way; and o Excessive handling of topsoil should be avoided.
- ð Sites should be regularly inspected for the presence of noxious weeds, their presence should be recorded, and if necessary a control program implemented.
- ð All run-offs from working areas, which contains sediment, should be collected in settling ponds before being discharged from the premises. Water from washing, screening, or dust reduction plants should be treated in a like manner. Accepted methods for removal of sediment from run-off include settling ponds, hay bale filters, aggregate filters, wetlands (shallow ponds planted with suitable swamp plants). For quarries in vegetated areas, run-off should be directed through vegetation prior to reaching any watercourse to enable further filtering of sediment.
- ð Management of noise impact can be achieved through:
- a Confining operations to reasonable operating hours is the simplest means of avoiding unreasonable noise impacts. Another effective means is to provide appropriate separation distance to enable the noise to decay to acceptable levels.
- a Enclosures may be required around crushing and screening plants. Solid barriers, such as bund walls and topographical features, provide the most effective 'in line' reduction of sound levels. Reliance on a barrier of vegetation alone will result in only marginal reduction in noise levels.
- a Hydraulic rock breakers produce less noise than secondary blasting with explosives. In general, operators should avoid using surface detonating cord for charge initiation. Sufficient stemming and appropriate delays between shot holes should always be used. Use of non-electric detonators has won widespread approval as the quietest delay system for initiating blasts.
- The following practices shall be considered to minimize environmental impact on air quality:
- The direction of the prevailing winds and the placement of the stockpile on the site should be considered during the planning stage. Trees should be planted for windbreaks or topography and/or embankments utilized, to shield stockpiles and working areas from prevailing winds. As conveyors and transfer points can be major sources of dust, enclosures, mist sprays, or approved dust extraction equipment may be required. Drop distance between discharge point and top of the stockpile should be kept to a minimum.
- The speed of vehicles is an important factor in the generation of dust. The speed of vehicles on site may need to be restricted. In addition, where transport routes are along unsealed roads, it may be advisable to slow down in the vicinity of residents along these routes.
- Stockpiles and roads can be sprayed with chemicals such as magnesium chloride to produce an impermeable layer, which reduces dust development. Alternatively, regular spraying with water can also be used to suppress dust. Waste oil must not be used as a dust suppressant.
- The nature of the material being transported and its potential to emit dust should be considered in the loading of trucks. Generally, the highest point of the load should not exceed the height of the tray walls, unless the load is covered. Environmental factors play a large role in the nature of air pollution and dust emissions. Extra care should therefore be taken at times of high wind speed, or during other adverse weather conditions, to minimize dust emissions. Decreased vehicle speeds, increased watering of roads and stockpiles and reduction of the amount of product transported per load, may be appropriate in adverse weather conditions.
- ð Visual impact shall be minimized through:
- a Natural vegetation is a valuable resource that should be employed for screening purposes. Vegetation may needlessly be destroyed by brief activities with heavy machinery at the pit boundary. Clearing should be kept to the minimum absolutely necessary for efficient operations. Planting of vegetation will also provide additional screening.
- ð Quarry faces should be screened from frequently used roads and commonly visited vantage points. Existing topographic features may be utilized as effective screens and

any landscaping undertaken should be designed to be visually compatible with the surrounding natural landscape. Where practical, working faces should be oriented away from vantage points and neighbors and the direction of working should be carefully chosen so that that the working face is hidden from the most critical view. Where possible, uppermost benches should be worked out and rehabilitated as soon as possible.

New premises should not be opened adjacent to roads frequently used by the public, unless adequately screened by topography and/or vegetation. Access tracks should be aligned to avoid continuous line of sight from vantage points.

5.7 DISPOSAL OF CONSTRUCTION AND VEHICLE WASTE

The Contractor shall establish and enforce daily site clean-up procedures, including maintenance of adequate disposal facilities for construction debris

All arrangements for transportation during construction including provision, maintenance, dismantling and clearing debris, where necessary, will be considered incidental to the work and should be planned and implemented by the contractor as approved and directed by the S upervision E ngineer.

5.8 SAFETY DURING CONSTRUCTION

The Contractor's responsibilities include the protection of every person and nearby property from construction accidents. The Contractor shall be responsible for complying with all national and local safety requirements as well as the Health and Safety Plan issued by the Project Office, and any other measures necessary to avoid accidents, including the following:

- ð Carefully and clearly mark pedestrian-safe access routes;
- If school children are in the vicinity, include traffic safety personnel to direct traffic during school hours;
- ð Maintain supply of supplies for traffic signs (including paint, sign material, etc.), road marking, and guard rails to maintain pedestrian safety during construction;
- ð Conduct safety training for construction workers prior to beginning work;
- ð Provide personal protective equipment and clothing (gloves, dust masks, boots, etc.,) for construction workers and enforce their use;
- ð Post Material Safety Data Sheets for each chemical present on the worksite;
- a Require that all workers read, or are read, all Material Safety Data Sheets. Clearly explain the risks to them and their partners, especially when pregnant or planning to start a family. Encourage workers to share the information with their physicians, when relevant;
- ð Ensure that the removal of asbestos-containing materials or other toxic substances be performed and disposed of by specially trained workers;
- ð During heavy rains or emergencies of any kind, suspend all work and mobilise resources for mitigation actions.
- ð Brace electrical and mechanical equipment to withstand seismic events during the construction.
- ð Setting up nets, fences or traps to prevent rocks, trees, and soil from falling down slope and put communities or traffic at risk. Specific high risk points are identified in the Information Sheet.

5.9 ENVIRONMENT PROTECTION AND SAFETY DURING BLASTING

Due to the narrow characteristics of construction site and the presence of population along the right-of-way, mine exploding for road bed only inner exploding method will be allowed in order to limit soil and stone to be pushed away to fill up river/stream and effect to surrounding houses. The Contractor shall present for approval Blasting Plan for each site. The Plan should include the following methods to be applied to ensure safety and minimize environmental impacts:

- a A blasting plan for each exploding point. The Plan must be available during construction period)
- ð Procedures for management on non-exploding mines or missing exploding points. □ All the safety precautions that will be applied during blasting such as:

Radius of dangerous area must be calculated based on site condition (for example: to small exploding the minimize radius of dangerous area is from 300m to 400m)

- a If, practical conditions at the site does not allow the application of standard method to ensure safety for blasting the Contractor shall prepare and submit to the Supervision Engineer and PMB a detail blasting plan for each of the blasting sites that satisfy: (i) create a barrier made of suitable materials to ensure safety, (b) temporary evacuate people and animals before blasting; and (c) blasting using inner exploding method.
- ð Exploding site must be far away from resident as required by regulations
- ð Exploding direction must be towards mountain sides or non residential areas and far from traffic road.
- ð Information systems such as signboards and setting warning surrounding exploding area to local people and traffic.
- a Information campaigns to alert local government and communities about blasting schedules and safety measures.
- ð Provision for lead times (at least 15 min) before actual blasting with sirens that can be heard far away
- ð Evacuation people out of exploding area.
- ð Check safety of equipment and workers before returning to normal operations

5.10 NUISANCE AND DUST CONTROL

To control nuisance and dust the Contractor should:

- ð Maintain all construction-related traffic at or below 15 mph on the road within 500 m of the site;
- ð Maintain all on-site vehicle speeds at or below 10 mph.
- ð To the extent possible, maintain noise levels associated with all machinery and equipment at or below 90 db.
- ð In sensitive areas (including residential neighborhoods, hospitals, rest homes, etc.) more strict measures may need to be implemented to prevent undesirable noise levels.
- ð Minimize production of dust and particulate materials at all times, to avoid impacts on surrounding families and businesses, and especially to vulnerable people (children, elders).
- ð Phase removal of vegetation to prevent large areas from becoming exposed to wind.
- Spray water at the site, and on dirt roads, cut areas and soil stockpiles or fill material as needed to ensure that dust level at areas close to housing, commercial areas, and recreational areas meets the exsting Vietnam air quality standard.
- ð Apply proper measures to minimize disruptions from vibration or noise coming from construction activities.
- ð Heating bitumen should be carried out at least 50 m from any residential area, the heating areas must be at the end of wind direction, be appropriately covered so as the impacts of smoke, dusts and odour onto the surrounding areas are minimised.

5.11 COMMUNITY RELATIONS

To enhance adequate community relations the Contractor shall:

- ð Inform the population about construction and work schedules, blasting schedules, interruption of services, traffic detour routes and provisional bus routes, and demolition, as appropriate.
- ^a Limit construction activities at night. When necessary ensure that night work is carefully scheduled and the community is properly informed so they can take necessary measures.
- a Inform local community as early as possible and repeat at least one day in advance of any service interruption (including significant changes to the river or the use of roads) the community must be advised through postings at the project site, and key community locations including churches, schools and clinics.
- a All community infrastructures such as roads, bridges, water supply systems, micropower generators, boat landings, irrigation systems, etc. affected during construction must be restored to the satisfaction of the communities and approved by the S upervision E ngineer.
- a All local roads used or by-passed by the Contractor will need to be rehabilitated to their original conditions, and Black Post Road to be rehabilitated to its post-reconstruction condition.
- a Establish and maintain an unit to receive, process and reach resolution on community complaints arising from construction activities. This mechanism will be overseen by the Contractor's SEO. Records of such complaints and their resolution must be kept and be available for review by the Supervision engineer and PMB in accordance with the Grievance Redress Mechanism.

5.13 PHYSICAL CULTURAL RESOURCES CHANCE-FINDS PROCEDURES

If the Contractor discovers archeological sites, historical sites, remains and objects, including graveyards and/or individual graves during excavation or construction, the Contractor shall follow the Chance Finds Procedure set out in the Project Company's ESMP.

5.14 HAZARDOUS MATERIALS

The Contractor undertakes not to use hazardous building materials, including asbestos, in any construction.

5.15 HEALTH SERVICES, HIV/AIDS EDUCATION

The Contractor shall provide basic first aid services to the workers as well as emergency facilities for work related accidents including as medical equipment suitable for the personnel, type of operation, and the degree of treatment likely to be required prior to transportation to hospital.

The Contractor shall be responsible for implementing a program for the detection screening of sexually transmitted diseases, especially with regard to HIV/AIDS, amongst laborers is actually carried out.

The Contractor shall at all times take all reasonable precautions to maintain the health and safety of the Contractor's Personnel. In collaboration with local health authorities, the Contractor shall ensure that medical staff, first aid facilities, sick bay and ambulance service are available at all times at the S ite and at any accommodation for Contractor's and E mployer's Personnel, and that suitable arrangements are made for all necessary welfare and hygiene requirements and for the prevention of epidemics.

The Contractor shall appoint an accident prevention officer at the S ite, responsible for maintaining safety and protection against accidents. This person shall be qualified for this responsibility, and shall have the authority to issue instructions and take protective measures to prevent accidents. Throughout the execution of the Works, the Contractor shall provide whatever is required by this person to exercise this responsibility and authority.

The Contractor shall send, to the Supervision Engineer, details of any accident as soon as practicable after its occurrence. The Contractor shall maintain records and make reports concerning health, safety and welfare of persons, and damage to property, as the Engineer may reasonably require.

The Contractor shall conduct an HIV-AIDS awareness program via a third partyservice provider, and shall undertake such other measures as are specified in this Contract to reduce the risk of the transfer of the HIV virus between and among the Contractor's Personnel and the local community, to promote early diagnosis and to assist affected individuals.

The Contractor shall throughout the contract (including the Defects Notification Period): (i) conduct Information, Education and Consultation Communication (IEC) campaigns, at least every six monthly, the first one should be within three weeks from construction commencement, addressed to all the Site staff and labor (including all the Contractor's employees, all Sub-Contractors and Consultants' employees, and all truck drivers and crew making deliveries to Site for construction activities) and to the immediate local communities, concerning the risks, dangers and impact, and appropriate avoidance behavior with respect to of Sexually Transmitted Diseases (STD)-or Sexually Transmitted Infections in general and HIV/AIDS in particular; (ii) provide male or female condoms for all Site staff and labor as appropriate; and (iii) provide for STI and HIV/AIDS screening, diagnosis, counseling and referral to a dedicated national STI and HIV/AIDS program, (unless otherwise agreed) of all Site staff and labor.

5.16 ENVIRONMENTAL EMERGENCY PROCEDURES

Prior to construction commencement, the contractor shall submit to the Environmental Supervising consultant and Project Company an Emergency Response

In the event that accidental leakage or spillage of diesel/chemicals/chemical wastes takes place, the following response procedures shall be followed immediately by the Contractor(s): The person who has identified the leakage/spillage shall immediately check if anyone is injured and shall then inform the Contractor(s), Supervision Engineer and PMB.

- ð The Contractor(s) shall ensure any injured persons are treated and assess what has spilled/leaked;
- Should the accidents / incidents generate serious environmental pollution (e.g. spillage / leakage of toxic or chemicals, large scale spillage / leakage, or spillage / leakage into the nearby water bodies which are used for irrigation / portable water), the SEO immediate inform PMB;
- a In such cases, the Contractor(s) shall take immediate action to stop the spillage / leakage and divert the spilled / leaked liquid to nearby non-sensitive areas;
- The Contractor(s) shall arrange maintenance staff with appropriate protective clothing to clean up the chemicals/chemical waste. This may be achieved through soaking with sawdust (if the quantity of spillage/leakage is small), or sand bags (if the quantity is large); and/or using a shovel to remove the topsoil (if the spillage/leakage occurs on bare ground); and
- ð Depending on the nature and extent of the chemical spill, evacuation of the activity site may be necessary.
- ð Spilled chemicals must not be flushed to local surface drainage systems. Instead, sawdust or sandbags used for clean-up and removed contaminated soil shall be disposed

of by following the procedures for chemical waste handling and disposal already described.

The possibility exists for environmental emergencies of an unforeseen nature to occur during the course of the construction and operational phases of the project. By definition, the nature of such emergencies cannot be known. Therefore, the Contractor(s) shall respond on a case-by-case basis to such emergencies and shall initiate event-specific measures in terms of notifications and reactions.

The Contractor(s) shall prepare a report on the incident detailing the accident, clean-up actions taken, any pollution problems and suggested measures to prevent similar accidents from happening again in future. The incident report shall then be submitted to the S upervision E ngineer and PMB for review and keep in the records. The incident report shall also be submitted to DONRE, if required.

5.17 ENVIRONMENTAL TRAINING AND AWARENESS

The Contractor should ensure that all concerned staff area ware of the relevant environmental requirements as stipulated in local environmental legislation and the Contract specifications. The Contractor(s) is responsible for providing appropriate training to all staff. This should be tailored to suit their level of responsibility for environmental matters. The Contractor(s) should also ensure that all site staff members are aware of the emergency response procedures. All staff should receive environmental induction training and managerial staff should receive additional training. The training materials should be reviewed by the SES and submitted to the PMB for approval.

Additional refresher training may be provided and this should be scheduled following periodic internal review of requirements for the Project activity concerned. Records should be maintained for staff environmental training and submitted to the IEMC upon request. Records should be kept on site where possible for each project activity for easy access during site audits or enquiries. Environmental training records (e.g. attendance records for environmental awareness training, topics covered) should be kept.

REMEDIAL ACTIONS

Remedial actions which cannot be effectively carried out during construction should be carried out on completion of the works (and before issuance of the acceptance of completion of works:

- (a) All affected areas should be landscaped and any necessary remedial works should be undertaken without delay, including grassing and reforestation;
- (b) water courses should be cleared of debris and drains and culverts checked for clear flow paths; and
- (c) All sites should be cleaned of debris and all excess materials properly disposed; (d) Borrow pits should be restored.

Appendix P

Biodiversity Management Plan Preparation TOR [this page left intentionally blank]

Appendix P

BIODIVERSITY MANAGEMENT PLAN PREPARATION TOR

1. BACKGROUND

Tina River Hydropower Development Project Office (TRHD PO), the Solomon Islands Stateowned project delivery entity, is in the final stages of negotiating a loan agreement with International Financial Institutions (IFIs) to construct the 15MW run-of-river hydropower peaking facility on the Tina River, Guadalcanal Province.

A 23 km, 66 kV transmission line system will evacuate the power from the hydropower facility to the Honiara grid, connecting to the existing Lungga Power Station. The transmission lines will extend southward from the Lungga Power Station and then eastward, on the south side of several villages, until reaching the access road and following it to the power station.

Construction activities will last 3 years and all construction activities will take place in the recently acquired `Core Area_and Black Post Road. The Tina Core Land Company (TCLC), a joint venture between customary landowners and government, will hold rights to the lands on which the Project will be constructed and operated (Core Area), including the access road from the power station to the dam site. This land shall be leased to the Independent Power Producer (IPP).

The footprint of the 72m high dam, reservoir, transmission lines, powerhouse, access road, quarry and other ancillary activities will result in the permanent loss of 115.49 ha due to construction activities, although the area of influence of the project is much wider.

Construction on the access road from its current terminus at the end of Black Post Road, and upgrading Black Post Road, is expected to start in late 2017. The main construction works (dam, power house, tunnels, etc.) will start in 2018 once the road is completed.

An ESIA for the Tina River Hydropower Development Project (TRHDP) has been completed in accordance with good international industry practice, and includes an Environmental and Social Management Plan (ESMP).

1.1. KEY TERRESTRIAL ECOSYSTEM FEATURES

A total of 161 plants species were identified during field surveys. Among them 5 species are listed as being vulnerable, and 19 are listed as being threatened.

The primary habitats of the study area are comprised of forested and non-forested ecosystems, which represent a mix of modified and natural habitats. The level of disturbance increases from upstream to the downstream in the catchment. The upper Tina River catchment, upstream of the dam site, is dominated by highly valued, undisturbed lowland forests, whereas, the area downstream of the dam site is dominated by disturbed forests. This is mainly the result of anthropogenic activities (e.g., logging, settlements, garden, trails, etc.). Disturbed areas such as Black Post Road, and the proposed access road and transmission line corridor, are colonized by invasive plant species. There is a concern that the Project may facilitate improved access for loggers into the upper Tina River catchment, thereby accelerating the rate of timber removal from upland forest areas outside of, but immediately adjacent to, the Project.

The fauna baseline study has shown that wildlife species thrive in pristine forests of the upper Tina River catchment, but also in the more anthropogenically altered areas in the middle and lower reaches of Tina River. A total of 60 wildlife species were observed by the ESIA team in the study area, including: 9 amphibian, 5 reptile, 41 bird, and 5 mammal species. Approximately 45% of which are endemic. This includes: 1 endemic amphibian, 1 endemic reptile, and 25 endemic bird species and subspecies.

The project, including areas of inundation during operation, access and construction activity, will be located in those parts of the study area that are largely disturbed forest and modified grassland with extensive and ongoing anthropogenic change.

The pristine montane forests found in the upper Tina River catchment will not be directly affected by the Project.

Invasive faunal species, including the Giant African Snail, cane toad, Norway rat, and feral cats, are found on Guadalcanal Island. The Giant African Snail can be found in lowland areas, adjacent to, but not yet within, the project area. Whereas, the cane toad, Norway rate and feral cats are all found within both lowland areas and the project area, where pose an ongoing threat to local native species that contribute to Guadalcanal's biodiversity.

1.2. KEY AQUATIC ECOSYSTEM FEATURES

Current water quality in the Tina River does not appear to be a limiting factor for aquatic life, given the low level of pollution.

The Tina River is a relatively pristine, low nutrient watercourse originating from bedrockcontrolled substrate in the undisturbed montane forests found on the higher elevation slopes of Guadalcanal. Lower trophic level aquatic organisms, such as algae and macro-invertebrate species support many of the fish species found within the Tina River. Species assemblages and populations can be used as an index of aquatic ecological health.

Field studies conducted in support of the ESIA involved only limited sampling of aquatic macro-invertebrates, primarily aquatic dependent insect species, mostly in their emergent adult forms. In the interest of monitoring potential impacts of TRHDP construction and operation on the health of the aquatic habitat, a program of algae and macro-invertebrate monitoring is required. Baseline algae and macro-invertebrate data collection should be undertaken pre-construction during a typical low flow period, when it is safe to enter the river

to collect samples. Periodic algae and macro-invertebrate sampling should be subsequently carried out to measure potential changes to these lower trophic levels that may result from construction and operation of the Project.

Fifty-nine 59 species of fish were recorded within the Tina/Ngalimbiu River system, from the upstream catchment area to the mouth of the river.

In the Solomon Islands, as with other mountainous islands of the Indo-Pacific Region, Gobioid fishes are the dominant fresh water fauna, and are mainly represented by members of the Gobiidae and Eleotridae families. Baseline fish surveys showed that the Gobioid group was represented by 34 species (25 Gobiidae, 8 Eleotridae and 1 Rhyacichthidae).

Like other tropical islands of the Indo-Pacific Region, all native species encountered in inland fresh water are migratory species with a life cycle that alternates between ocean and river. Two main migration patterns are followed: catadromous and amphidromous.

Fishing is a significant source of livelihood only at the mouth of the Ngalimbiu River, where semi-commercial fishing occurs using mosquito seine net, gill net, and other methods.

The upper Tina River catchment plays an important role in fish life cycle but not a critical one since:

- fish within the Solomon Islands do not show natal stream homing behavior. Rather, juveniles will colonize any rivers for which they can gain access; and
- " the mouth of the Ngalimbiu River is more critical to the life cycle of most fish species than upstream areas, as it is the only entry point to all fish that live within the catchment.

Based on current knowledge, the upper Tina River catchment is a highly valued aquatic habitat but not a `critical habitat_for fish species present in Guadalcanal. This remains under assessment, as a number of fish found during ESIA surveys are awaiting confirmation of identification. Notwithstanding, the Project has elected to provide for upstream and downstream fish passage.

The trap-and-haul method of affecting upstream fish passage was selected as the preferred means for moving fish up and over the dam, as it offers potentially greater effectiveness, better opportunity for adaptive management, lower capital cost, and provides ongoing social benefits in the form of employment to operators of the facility.

Consideration has been given to include two forms of trap-and-haul, an engineered trap-andhaul system to accommodate climbing fish species, plus, a system involving netting and hauling for swimming species, as part of an adaptive management approach to monitor their migrations and congregations with a view to designing an effective but inexpensive engineered structure, should the results of monitoring support this. Each type of system will need to be monitored during operation to determine whether changes to design or operation are required to ensure fish passage over the dam.

S pilling flows will be used to move adult eels downstream during migration periods.

1.3. LAND ACQUISITION AND LIVELIHOODS ISSUES

There will be no physical relocation of homes or settlements resulting from the Project. Instead, the principal effects will be a reduction on the availability and loss of access to the natural capital available on 428ha of land acquired for Project construction and operation (core land), the Tina River, and the infrastructure corridor. A further important livelihood effect will be the potential damage to physical capital in the form of private and community structures, such as homes, huts, and tracks.

1.4. PROXIMITY OF PROTECTED AREAS AND CRITICAL NATURAL HABITAT

There are no formal protected areas or proposed protected areas that could be affected by the TRHDP. However, there are nearby areas that are considered to be of great landscape and biodiversity value, and are either protected or official protection status is pending. Informal protection of many small, natural sites called Tambu_is provided by the local population, which protects these areas in a traditional manner.

At least two authoritative sources recognised by the World Bank, the IUC N and Birdlife International, have identified the upper watersheds on Guadalcanal as Critical Natural Habitat. Within the Tina River catchment, this area is within undisturbed montane forest located above 400masl to the south, west and east of the dam site and reservoir. Below this elevation the habitat has been either moderately or significantly anthropogenically altered. Therefore, the TRHDP will not significantly impinge directly on the Critical Natural Habitat of the upper Tina River catchment.

2. OBJECTIVES

A Biodiversity Management Plan (BMP) is required as one of the sub-plans under the ESMP. Preparation of a BMP is also an appropriate (and in some cases necessary) approach to meet the requirements of World Bank Performance Standard 6 Biodiversity Conservation and Sustainable Management of Living Natural Resources, which is applicable to TRHDP. The BMP needs to be completed and implemented prior to mobilisation of the EPC contractor to the site.

The goals of the Biodiversity Management Plan include:

- Protecting and, if possible, enhancing remaining significant habitats within, and particularly adjacent to, the project area, in particular, reducing pressure on the upper Tina River catchment area, upstream of the Project. In particular, achieve no net loss of biodiversity, in areas of natural habitat, where feasible.
- 2. Protecting and, if possible, improving the chances of survival of listed species in the project area. The plan must provide clear guidance on how to protect and restore habitats in the project site, to protect and manage listed species and to prevent the further incursion of invasive species. However, the approach to biodiversity management is expected to be :adaptive. This means there should be continuous monitoring of success, and the plan should be flexible to allow changes to the approach, depending on the on-going achievements or setbacks in the field.

According to the ESMP timetable, the Biodiversity Management Plan shall be in place at least one month prior to the EPC mobilising to the field, and will remain operative through the preconstruction, construction, inundation and operational phases of the project.

The BMP will be implemented by the SPC, and it is anticipated that SPC will require support from expert ecologists / biologists and possibly community groups from the project area.

4. RESPONSIBILITIES

Organisation	Responsibility
BMP Consultant	As described in this scope of work.
SPC	Oversee the scope of work \Box Ensure that the plan is undertaken in accordance with the ESMP. Attend training. \Box S upervise BMP implementation. Update the ESMP to be consistent with the Biodiversity Management Plan. Update the relevant sub-plans, for which they are responsible, that have links with the Biodiversity Management Plan. Operate in accordance with the Biodiversity Management Plan.
TRHDP PO	Review draft plan. Ensure that the plan is undertaken in accordance with the ESMP. Attend training. Monitor BMP implementation.
НЕС	Update the relevant sub-plans they are responsible for that have links with the final Biodiversity Management Plan. DAttend training. Doperate in accordance with the Biodiversity Management Plan.
Solomon Power	Participate in stakeholder meetings. DReceive copies of the Biodiversity Management Plan.

5. DSCOPE OF WORK

There are five key outputs in this scope of work as follows:

- 1. Complete an Issues and Options report based on a site visit and review of previous studies and other background materials.
- 2. Prepare a Biodiversity Management Plan based on good international industry practice and strengthened through stakeholder and community consultation.
- 3. Provide detailed information in a technical report to update the ESMP and other relevant environmental and social protection sub-plans so that they are consistent with the Biodiversity Management Plan.
- 4. Deliver training on the Biodiversity Management Plan, and provide training materials for future training events.
- 5. Provide materials to support awareness raising and community engagement.

5.1. ISSUES AND OPTIONS REPORT

Complete an Issues and Options Report_that is based on the following activities:

- 2 Review background documents and raw data from previous flora and fauna surveys and studies in the project area, and the ESIA. In particular analyse data and recommendations made in the ESIA (TRHD PO 2016) and fish habitat evaluations (J owett 2016).
- ¿ Project site visit (2 3 days) At least one field trip to site by relevant members of the team is anticipated to become familiar with the environmental setting. No additional field-work or primary data gathering is anticipated.
- Stakeholder consultation ⁻ with the support of TRHD PO's Community Liaison Assistant, identify and meet with key stakeholders, including relevant agencies, and conservation and wildlife NGO's. The purpose is to gather information, identify relevant skills and resources in the Government and NGO sector and to establish a

multi-sector stakeholder group (or work with TRHDP-PO \check{s} existing stakeholder groups). \Box

- ¿ Prepare a list of issues and options for biodiversity management, and the rationale, costs, complications and benefits of each option. □
- *¿* Prepare clear recommendations on practical, achievable approaches to meet the objectives of the Biodiversity Management Plan.

5.2. BIODIVERSITY MANAGEMENT PLAN.

Prepare a BMP based on the recommendations of the Issues and Options Report, including:

- ¿ Community consultation ⁻ assist SPC/TRHDP PO to run a series of meetings with interested community groups and leaders to inform them of the BMP, seek their input into biodiversity management, and consider development of a community group that could be engaged in the implementation of the plan. □
- ¿ Forest mapping using satellite imagery where appropriate to link the BMP to the Forest C learance Plan and/or to monitor changes in forest cover in the upper catchment.¹ This measure should be implemented in close consultation with S IG.
- ¿ Minimum required mitigation measures [–] should be equal to, or have higher standards than, the mitigation measures listed in the TRHDP ESMP.
- ¿ Establish an invasive species management program.
- ¿ Consideration for whether reservoir-operating rules in the Reservoir Management Plan need to be adjusted to consider biodiversity issues, given the size and volume of the proposed reservoir.
- *i* The BMP must also provide clear instructions as to how it will be monitored, evaluated and updated, since it represents an :adaptive management approach.
- ¿ Using the Adaptive Management process as a guide, develop an appropriate and detailed methodology and program for managing the key biodiversity issues. This should include (but is not limited to):
 - o A clear strategy for biodiversity management, with objectives and policies. \Box
 - o Organisation of the stakeholder group [−] who will be involved, their roles and responsibilities, how the group will work, etc.
 - o A detailed plan and methodology for consultation and engagement with locals and the construction workforce.
 - R estoration plan and :no net loss biodiversity plan for areas to be returned to their natural state, with maps, planting plans (species, program of planting, source of plants), budgets, etc.
 - Methodologies for protecting the :species of interest and :habitats of interest.
 Detailed methods for translocation (if relevant), protection measures during construction and operation, including a program, required expertise and resources, schedules and budgets for each species / habitat.
 - o Detailed design of trap and haul system for upstream migration
 - o Detailed monitoring programmes and budgets, including Algae Macro-invertebrate and Fish Monitoring Plan.
 - o S cope of works for completing further studies, including baseline and follow-up algae and macro-invertebrate studies, study of the efficacy of fish passage during operation and potential need to adjust operation of fish passage facilities or redesign, etc. □

¹ Imagery with 10-m resolution may be available from the European Space Agency.

- o An overall program showing critical paths and key milestones, acknowledging the project's overall construction and operational program.
- As a minimum, the BMP should be structured as follows:
 - ¿ Executive Summary
 - ¿ Methodology
 - ¿ Biodiversity Context
 - ¿ Priority Biodiversity Features
 - ¿ Biodiversity Objectives and Targets
 - ¿ Recommended Management Actions (legal requirements; biodiversity actions; responsible parties; etc.)
 - ¿ Implementation Mechanism
 - ¿ Monitoring and Surveillance (including adaptive management process)
 - ¿ Budgets and Timelines
 - ¿ Internal and External Reporting
 - ¿ References
 - ¿ Appendices (maps; photo documentation; etc.)

5.3. INSTRUCTIONS / INFORMATION FOR UPDATING ES MP AND SUB-PLANS

Provide instructions and / or detailed information necessary to update relevant sections in the TRHDP ESMP framework, and related sub-plans, and to the overall project plan that may affect, or relate to, the BMP, such as:

- ¿ Key milestones and critical paths for the project program (particularly with regard to land clearance, significant earthworks, and reservoir filling.
- ¿ Monitoring data, methodologies, and programs.
- ¿ Construction mitigation measures that relate to biodiversity management.

Tasks may include:

- 2 Preparing a technical report with clauses and sections to be inserted into the ESMP framework and sub-plans.
- ¿ Meetings, presentations and / or workshops with TRHD PO, KWater (EPC Contractor) and construction contractors to explain and discuss the cross-overs with the ESMP and sub-plans.

The relevant sub-plans which may be influenced by the BMP include:

- ¿ Operation and Maintenance Plan
- ¿ Emergency Preparedness Plan
- ¿ Cultural Heritage Management Plan
- ¿ Community Health and Disease Vector Management Plan
- ¿ Construction Environmental and Social Management Plan (CESMP)
- ¿ Influx Management Plan
- ¿ Waste Management Plan
- ¿ Hazardous Materials Management Plan

- ¿ Spill Prevention and Emergency Response Plan
- ¿ Forest Clearance Plan
- ¿ Watercourse Crossing Management Plan
- ¿ Spoil and Topsoil Management Plan
- ¿ Drainage, Erosion and Sediment Control Plan
- ¿ Reservoir Preparation Plan
- ¿ Drill and Blast Management Plan
- ¿ Accidents and Malfunctions Plan
- ¿ Air Quality Management and Dust Control Plan
- ¿ Stormwater Management Plan
- ¿ Point Source Pollution Management Plan
- ¿ Post-construction Rehabilitation and Revegetation Plan
- ¿ Operations Environmental and Social Management Plan (OESMP)
- ¿ Reservoir Management Plan
- ¿ Suspended Sediment Monitoring Plan
- ¿ Water Quality Monitoring Plan

5.4. TRAINING

Provide training and materials for a training program, including:

- ¿ Deliver at least four training sessions as follows:
 - o TRHDP PO and KWater (EPC Contractor) environmental staff and senior project managers
 - o Contractors environmental staff and senior project managers
 - o Two :Training the trainers `workshops $\ \square$
- ¿ Develop a training module (presentation slides, hand outs, notes for the trainers, etc.) for TRHDP PO, KW ater and the Contractors to use to train their staff on the issues and how to implement the BMP.

5.5. COMMUNITY CONSULTATION AND ENGAGEMENT

Prepare community consultation and engagement materials. **D**evelop an ongoing awareness and community engagement campaign for SPC to deliver. Written materials, methodology, communication methods and delivery program.

6. DELIVERABLES

The following deliverables will be provided under the BMP contract:

- ¿ Issues and Options report.
- ¿ Biodiversity Management Plan
- ¿ Training module for Biodiversity Management Plan

- ¿ Three training workshops completed
- ¿ Technical report recommending relevant changes to the ESMP and other sub-plans.

NOTE: The BMP report should be presented by the Consultants in a draft form to a meeting of SPC and TRHDP PO staff (which may also be attended by Word Bank representatives) within two weeks of submission of the report. A final report shall be prepared based on comments and recommendations received during the meeting.

7. INDICATIVE PROGRAM

There is some urgency with the timeframe to ensure that the BMP is operative prior to mobilization of the EPC Contractor, and especially before mobilization of the contractor that will construct the access road. An indicative program is provided below:

Indicative deliverable / output	Details	Estimated timeline from engagement
Kick off meeting	Meet with SPC, TRHD PO and World Bank representatives to confirm the program, deliverables, outputs, information requirements, site visit logistics, etc.	1 week
S takeholder consultations	As required throughout the program, but at least one to be completed prior to the Issues and Options R eport.	2 weeks
S ite visit	Familiarity site visit to project area.	2 weeks
Issues and Options report	Report discussing issues and options for biodiversity management, and clear recommendations for the BMP.	3 weeks
Community consultation	Engage with community leaders and local groups and consult about the BMP, if required.	4 weeks
Draft BMP and technical report	A draft BMP with detailed program and methodology and draft budgets. Draft technical report outlining recommendations for updates to the ESMP framework and other sub- plans.	2 months
Draft training module materials	Proposed training method, list of potential attendees, location, logistics, training materials (draft slides, hand outs, notes for trainers, etc.)	2.5 months
Final BMP and technical report	Final BMP encompassing comments from SPC, TRHD PO, World Bank, and other key stakeholders.	3 months

Four training workshops completed.	Training environmental staff and senior project managers. Training trainers.	4 months
Awareness campaign	Develop an ongoing awareness and community engagement campaign for SPC to deliver, including preparation of materials and delivery program.	4.5 months

8. EXPERTISE REQUIRED

Experts must have international experience in the protection and restoration of forest habitats, in particular experience with the species listed in this TOR, and with the lowland and montane forest habitats of Guadalcanal, S olomon Islands. The consultants will form a team they consider appropriate for the tasks in the TOR. One individual may have the expertise to carry out more than one role or all roles. The following table is intended to be a guide of the possible core team.

Team member	Minimum experience	Role
Lead ecologist (1) / Project Manager	15 years of ecological assessment and / or conservation ecology; DProject Management experience; experience preparing Biodiversity Management Plans; experience working in the S olomon Islands; at least 10 years experience working internationally.	Manage the team. □C ontrol the preparation of the reports. Lead contact with S P C . □C oordinate meetings. □C oordinate training workshops. Manage quality reviews.
Terrestrial fauna biologist / forest ecologist (1)	7 years experience in the conservation of terrestrial fauna ecosystems found in tropical forests of S outh P acific Islands. Experience with invasive fauna management.	Provide advice and recommendations on the management and protection of terrestrial fauna (amphibians, reptiles, mammals), and forest habitats.
Avifuana biologist / ecologist (1)	7 years experience in the conservation of birds in tropical ecosystems of S outh P acific Islands.	Provide advice and recommendations on the management, protection and restoration of bird habitat.
Aquatic biologist / ecologist (1)	7 years experience in the conservation of aquatic ecosystems of S outh P acific Islands	Provide advice and recommendations on the management of riverine ecosystems, fish passage facilities using adaptive management processes.