

**LAST COPY**  
**Please do not remove**



Training Report no. 5 / 6

South Pacific Regional Environment Programme

---

# Environmental Impact Assessment Training in the South Pacific Region

## Meeting Report

Honiara, Solomon Islands  
12 - 16 October 1992

With technical and  
financial assistance from the  
Asian Development Bank (ADB),  
United Nations Development Fund (UNDP),  
United Nations Environment Fund (UNEP),  
and the World Conservation Union (IUCN).



## FOREWORD

It gives me great pleasure to provide an introduction to the Meeting Record for the Environmental Impact Assessment Training Course held in Fiji. This course was the fourth in a series of EIA Training courses conducted by the South Pacific Regional Environment Programme (SPREP) in the Pacific Islands.

These courses address a fundamental issues for Pacific Island countries; that of how to successfully integrate environmental considerations into economic planning. Too often such considerations have been seen in a negative light, as a break on economic development.

Thankfully, this perception is changing and decision makers in the Pacific countries are increasingly aware of the need for careful and long term environmental planning. Environmental Impact Assessment is an important tool in bringing this about. It is important that EIA be applied in an appropriate manner in the Pacific. EIA must be relevant to the social and political systems in Pacific countries and it must be simple and easy to apply. It is not an academic exercise.

These EIA training courses build on the important work carried out by SPREP in the Pacific with the development of National Environmental Management Strategies. These Strategies are being developed through the RETA (Regional Environment Technical Assistance) project and the NEMS (National Environmental Management Strategies) project. These important projects are funded by the Asian Development Bank, the World Conservation Union (IUCN) and the United Nations Development Programme UNDP). I would like to thank those agencies for their generous support. I would also like to thank the United Nations Environment Programme (UNEP) for their generous support of this EIA Training Programme.



Dr. Vili A. Fuavao

**Director**

South Pacific Regional Environment Programme



# 1. Introduction

The course was held at the Solomon Island campus of the University of the South Pacific in Honiara, Solomon Islands, between 12-17 October, 1992. The course was divided into two sections, with the first day being a senior officials meeting to review EIA procedures in the Solomon Islands, and the remaining four days being a course for government officials on managing EIAs.

There were six resource people to help put on the course:

Komeri Onorio	EIA Officer South Pacific Regional Environment Prog. Apia, Western Samoa
David Hill	Regional Manager, Ministry for the Environment, Auckland, New Zealand
David Brash	Regional Manager, Ministry for the Environment, Dunedin, New Zealand
David Green	Institute of Applied Sciences University of the South Pacific Suva, Fiji
Bill Aalbersberg	Reader Chemistry Department University of South Pacific Suva, Fiji
David Sheppard,	RETA Team Leader SPREP Apia, Western Samoa

The EIA course was at an opportune time since the draft version of the National Environmental Management Strategy had just been completed, and also new environmental legislation had been prepared for consideration by the Solomon Island government. Both the senior officials meeting and the four-day course were well attended. The two portions of the EIA course are discussed separately below.

## 2. Senior Officials Meeting

### 2.1 Attendees

The senior officials meeting commenced with the opening address being given by the Permanent Secretary for the Ministry of Natural Resources. The following senior officials attended the meeting.

<i>Name</i>	<i>Organization</i>	<i>Position</i>
Levi Laka Shadrack C. Tahili	Honiara Municipal Authority Noro Town (MGP)	Town Clerk Town Clerk
Primo Afean	Attorney General's Office	Chief Legal Officer
Leonard Maenu'u Alice Pollard Tom Lolemae	Ministry of Health Ministry of Health Ministry of Health	Permanent Secretary Sr. Women @ Dev Off Chief Health Inspector
Walton Abuito'o	Prime Minister's Office	Assist. Secretary
Evans Tuhagenga	Min. of Finance & Econ Plan.	Sr Planning Officer
Johnson Airain	Ministry of Provincial Govt.	Director, Bilateral
Patteson Oti	Ministry of Provincial Govt.	Permanent Secretary
Eliam Tanirono	Ministry of Foreign Affairs and Trade Relations	Deputy Secretary
Nicholas J. Constantine	Solomon Is. Ports Authority	Secretary
Mostyn Nabu Moses Biliki	Ministry of Natural Resources Ministry of Natural Resources	Permanent Secretary Chief Environment Officer
Bernard Telei	Ministry of Natural Resources	Senior Environment Officer
Henry Isa	Ministry of Natural Resources	P.C.O.
Daniel Hoota	Ministry of Transport, Works and Utilities	Permanent Secretary

### 2.2 Agenda

The meeting began with a formal welcome by the Permanent Secretary for the Ministry of Natural Resources. After the initial welcome was complete, David Green reviewed the meaning of EIA, its history, and its role as a management tool. David Brash discussed the present status of the EIA process in New Zealand, and David Sheppard reviewed the status of environmental legislation as indicated in the NEMS document prepared by the Solomon Island government. The remainder of the day's discussions centred on reviewing these institutional procedures, and suggesting improvements that might be made to the proposed procedures.

### 2.3 Summary of Discussions

Three EIAs have already been done in the Solomons: one for a proposed hydro development, one for a proposed brewery, and one for the proposed gold mine on Gold Ridge. The lack of legislative support for the EIA process was described as an underlying weakness in the present system. In general the senior officials were sympathetic to concept of EIA, with some concerns about not unduly slowing down development procedures. The text of the formal document prepared as a result of the senior officials meeting is attached as an Annex.

## 2.4 Assessment of Senior Officials Meeting by Resource Staff

The senior officials meeting provided a reasonably good cross-section of the government bureaucracy at a senior level. The senior officials appeared to understand and appreciate the concept and the practice of environmental assessment, and the discussions were generally positive and accepting of environmental assessment as a standard management tool, although no specifics were discussed or adopted. About a third of the senior officials were sufficiently interested to return on the last day of the four-day course to attend the closing function, at which time more specific EIA procedures were discussed (see below).

### 3. Four day course on managing EIAs

This was a well-attended course with representation from most of the Departments impinging on the environment, and with the planners coming from each province. The twenty-eight participants are listed below:

#### 3.1 Attendees

<i>Name</i>	<i>Organization</i>	<i>Position</i>
Arstric Roat	Solomon Is. Electricity Auth.	Civil Engineer
Richard Pauku	Solomon Is. Plantations Ltd	Agricultural Agronomist
Russell Abrams	World Health Organisation	Public Health Engineer
Marcel Gapu	Solomon Taiyo Ltd	Health Inspector
Harry Waigara	S.I.G. (M.A.L.)	Assist. Physical Planner
Aiden Beveni	Forestry Division (MNR)	Principal Forest Officer
Filiramo Ganita	Physical Planning Division, Tulagi Central Province	Physical Planner
Collin Migobake	ARIMCO Solomons Ltd	Geologist
Buddley Ronnie	Honiara Municipal Authority	Assist. Physical Planner
Bill Barile	Solomon Is. Ports Auth.	Port Engineer
John Kori	Environ. Health Div. (MHMS)	Public Health Engineer
Carlson S. Taro	Honiara Municipal Authority	Senior Health Inspector
Patrick Navam	Principal Economic Geologist	Geological Survey
Alexander Makini	Simn Is. Coll. of High. Educ.	Sr.Tech./Computing
Tia Masolo	Environ. Div. (SOLFRIP)	SOLFRIP Co-ordinator
John R. Pita	Envir. & Conser. Division	Assist. Wildlife Officer
Edwin Oreihaka	Fisheries Divion, MNR	Senior Fisheries Officer
Alan Teli	Develop. Serv. Exchange	Coord, Rural Trng Centre
Abraham Basanisia	SIDev.Trust	Director
John Garosi	Energy Division, MNR	
George Cowe	SOLTRUST	
John Houanihau	Solomon Taiyo Ltd	Assist. Commercial Manager
Peter Buka	Physical Planning Division, Isabel Province	Physical Planner
Johnson Wale	Physical Planning Division, Malaita Province	Physical Planner
Robert M. Zutu	Physical Planning Division, Western Province	Snr. Physical Planner
John Taisia	Physical Planning Division, Makira Ulana Province	Physical Planner
John Rapemora	Physical Planning Division, Temotu Province	Physical Planner
Geoffrey Pakipota	Physical Planning Division, Choiseul Province	Assist. Physical Planner



### 3.2 Course Description

The course consisted of the following main lectures:

- Contents of an EIA and Slides (David Green)
- Social Impact Assessment (David Hill, David Brash)
- Physical/Biological Impact Assessment (Bill Aalbersberg)
- EIA Process in New Zealand (David Brash)

The lectures were followed by an exercise in which the participants were divided into groups of four. Each group was given a different Environmental Impact Assessment document to review and comment upon. Six EIAs were reviewed: three from the Solomons (brewery, hydro, and gold mine), and three from elsewhere (logging from Vanuatu, marina from Fiji, resort from Fiji). After having a period of time to review the EIAs, the participants in each group assumed roles: one as the developer, one as a consultant, one as an objector, and one as a government official reviewing the EIA and making a decision on whether or not the project should go ahead.

The review of EIAs was followed by case studies in which the participants actually conducted an EIA. The participants broke into three groups, and each group conducted a different EIA. The case studies were:

1. An EIA for relocating the Honiara rubbish tip to the White River area. (The relocation was compared with leaving the rubbish tip in its present site.)
2. An EIA for logging a tribe's land using community-based 'Alaskan sawmills, compared with commercial logging by a foreign logging company.
3. The development of a major resort at Doma Point on Guadalcanal.

The eight or nine participants in each group visited the sites on Wednesday afternoon, and were briefed on each proposed development. On Thursday they prepared a point form EIA, interspersed with 'environmental' videos from around the world. On Friday each group presented their environmental assessment by taking on roles and essentially acting out the various concerns raised in their environmental assessments.

For the Honiara rubbish tip, the scenario was that various consultants and interest groups (scavengers, school authority, White River community representative, etc) were appearing before the Honiara town council to give evidence and concerns. The Honiara town council, which was made up of members from another group, listened to the evidence and made a decision on the future siting of the rubbish tip.

For the Alaskan logging operation, a commercial logging company (Kitano) and an NGO (Conserve) were seeking to convince the various landowner representatives of the tribe that they should log their way. The landowners and the rest of the village listened to the two competing proposals, asked questions of each proponent, and made a decision on how to log their land.

For the Doma resort, the situation was a public hearing at which the developer was explaining the proposed project, and various interest groups (other hoteliers, plantation workers, government tourism officer) were expressing their opinions.

One resource staff member was assigned to each case study, and helped with the organization of the EIA document, and with the development of the scenario to be acted out by the group. The final case study presentation was also attended by about six senior officials who return to attend the closing of the course.

Resource material for the course consisted of the EIA booklet handed out to each participant, about twenty EIAs from Fiji and elsewhere, a variety of books and reference materials, a brief slide show, a set of videos, and a set of posters which were used at the meeting and distributed to participants to use in their offices.

### 3.3 Assessment of Course by Resource Staff

The course went very well, from the point of view of the teaching staff. There was excellent participation, and the case studies in particular were conducted vigorously. Communication was not a problem in general, with participants speaking in either English or Solomon pidgeon, which was reasonably easy for the resource staff to understand.

### 3.4 Assessment of Course by the Participants

The course was formally assessed by the participants using a standard form. Twenty-two assessment forms were received. The various aspects of the course were scored on a scale of 1 - 10, with 1 being excellent and 10 being very poor. Comments and suggestions on each segment of the course and on the overall course were also sought. The results of these assessments follow:

#### 1. *Course Booklet:* Average score 1.7

##### Comments:

- \* Generally excellent
- \* The booklet is reasonably simple and coherent, it only needs some illustrated (pictorial) examples
- \* Excellent
- \* Various points to look for when assessing a certain area should be highlighted as to how it can affect decision
- \* Be taught as part of the syllabus in secondary schools
- \* Could have gone over it slowly
- \* Excellent book, covers new areas to me
- \* I just think the booklet needs more details and examples of each aspects
- \* I think it will be mor effective to have more bulletins given to schools and NGOs.

#### 2. *Lectures:* Average score: 1.7

##### Comments:

- \* Fairly good: requires more data and evidence of adverse affects.
- \* More input needed, especially for people who experience this EIA for the first time
- \* There should be more use of posters, etc.
- \* Excellent presentations by the lectures
- \* Excellent presentation
- \* Lectures were clear, the use of visual aids helps me clearly understand the lectures.
- \* Hope no malaria infections. Overall talks are very well presented.
- \* The presentations was very good (excellent). I just hope we have more of the presentations.
- \* I suggest that more expertise from regional and overseas countries be present at such workshop.

#### 3. *Exercise: Review of EIAs* Average score: 1.7

##### Comments:

- \* Could we have more Solomon case to review
- \* Would be best to review existing projects in the Solomon as no regional participant attended.
- \* More exercises should be made
- \* A lot of the cases have relatively little sections on EIA part
- \* Nice start. Know what to do when preparing the case studies
- \* Some questions and answers during presentation would be exciting and not having to wait till after the presentation.
- \* Good practice, should have to go through different sorts of EIAs

- \* Excellent awareness programme for the managers participating in the workshop.
- \* Need more time for presentation.
- \* Very helpful exercise
- \* Need to review EIAs affecting Solomon Islands eg reviewing EIA in relation to Goldridge is a real case situation. The product of the review as well as being part of the course should be thorough.
- \* Good because it really helps in broadening our scope in EIA
- \* Its very interesting and suggest that project developers whose doing development in country be present at such workshop.
- \* Time should be made available to work through two or even three exercises. This will give participants change to gauge performances.

#### 4. Case Studies

Average score: 1.9

##### Comments:

- \* The choice is relevant, except that more serious note should be focussed on inviting the respective people to give brief talk (seminar) about their projects.
- \* Sensitive case studies: however, not much background provided.
- \* There should be a more realistic assessment based on the facts presented rather than basing on personal preferences. Presentations should be or there is a need for presentations to be more thorough.
- \* As fisheries are major developments to Solomon Islands, fisheries should be one of the case studies. eg looking at Solomon Taiya Ltd.
- \* A real life situation and should help the provincial planners when engaging in this EIA.
- \* Our group is not given a chance to investigate a case which is current.
- \* Interesting
- \* Good, provides an indebt knowledge of what an EIA addresses
- \* Suggest that need for more realistic cases viz sawmilling, perhaps spend more time assessing a real concern as part of the course.
- \* It gives us a good picture of how EIA is done and the parts it plays
- \* I prefer and wish we could study case studies of projects which are not yet approved or any proposal by provincial or national government. It's worth less to study existing project because decisions are done already.
- \* Very good practice real life cases.
- \* Recommendations be sent to relevant authority eg G. Province for the Doma case study.

#### 5. The goal of this workshop was to improve the participants knowledge of EIA. Do you feel that the workshop accomplished these goals to your satisfaction?

- \* Yes
- \* There are areas that need to be re-emphasized, esp management and enforcement.
- \* Yes
- \* The workshop more or less achieved or accomplished all of these goals. The reviewing, monitoring, and enforcement parts have to be clear. To me it is essential to have such workshops.
- \* Is getting towards these goals
- \* Yes, the workshop fully equipped us when the national government stimulates the importance of EIA. I m confident I can make a satisfactory EIA.
- \* Yes
- \* I fell the workshop has accomplished the above goals to my satisfaction.
- \* Yes
- \* Yes
- \* Yes
- \* Yes. I feel that this workshop has accomplished its goals, and I am satisfied with what I have achieved through the workshop.
- \* Yes
- \* Yes
- \* Yes
- \* I'm satisfied with the course, although Solomon Islands do not have a clear process by which EIA is conducted. However, it enables us to think of ways in which a process can be started.
- \* Yes
- \* I think the workshop did reach its goals but I just think it just need more time.
- \* I personally feel that I'm satisfied and accomplished these goals through the workshop.
- \* Not quite, there was very limited time.
- \* Yes
- \* Yes, not to satisfaction, few more days will be very convenient.

#### Do you have any suggestions on how to improve the course, so that it meets these goals better?

- \* Involve the group that came on Monday in the technical level workshop.
- \* Draw up a policy with clear definite guidelines on the work of EIA and other existing bodies ( eg physical planners, environment div, SIFI) to avoid repetition and beauracacies and administation.
- \* Encourage holding similar workshops to incolove all sectors as possible.
- \* More of this kind of workshop should be carried out because environmental concerns are excalating to a stage where we must do something.
- \* The present standard is always highly recommended.

- \* I am glad to meet with people for different profession to share ideas together which I have learnt a lot out from them.
- \* More time (one month)
- \* Moderate a planning course which will outline these various areas more carefully, possibly invite EIA people from various provinces.
- \* Need more than four days.
- \* Hold the course in some better environment (local areas) other than Honiara.
- \* Probably two weeks be a good thing to accomplish these goals. Also using a hypothetical case study is quite difficult to realise the real issues. However, it proves exciting and enjoyable.
- \* Just more time.
- \* I suggest that SPREP organize follow-up workshops again on later date at different levels with the help of present participants.
- \* The course should be spread over two weeks, and participants especially those with busy routine be warned in good timeto enable them to reorganize their workload.
- \* Government to make policies on environment, responsible authorities to implement these policies.

6. *The Solomon government has invested a considerable amount by sending staff members on this four day course. Do you think this course was wise use of your time?*

- \* Yes
- \* Fairly useful
- \* Yes, because then participants would educate the sectors they come from of the importance of the environment and man and developments.
- \* This course to me is a timne exceptionally wellspent. There are things which we can do ourselves without consultants coming in.
- \* Yes
- \* Yes, I think this course was a wise use of time. As a young developing country EIA was always not considered in giving approvals to companies or developers which means lack of EIA was a pest to our small and developing country.
- \* Yes, I think this course should be held in other Pacific Island countries.
- \* I have really enjoyed this course because as I am a provincial physical planner, I have learnt a lot of information and ideas on how to do an EIA. I have learnt a lot out of this course all the discussions and exercises are so valuable and they represent the real situation happening in my place of work in the province. Once again thanks a lot for attending this workshop and I look forward to put into practice what I have learnt during the four days.
- \* Yes, to maintain the natural environment of the Solomons
- \* Very wise use as it will increase the effectiveness of participants in their screening of development proposals
- \* Yes
- \* Of course yes. this workshop is so relevant that the Solomons Govt has made a wise investment in sponsoring it.
- \* Yes
- \* Yes
- \* Yes. Awarenes of EIA
- \* Sure
- \* Yes
- \* Yes because I've learnt more, and it give me a broad idea of environmental impacts.
- \* I'm sure the government has done a wonderful investment, to have representatives from each province and NGO attend the workshop.
- \* Yes
- \* Useful
- \* Yes

### 3.5 Report on Case Studies

The written reports for the case studies are attached as Annexes. The quality of the EIAs is sufficient to show that the participants have a good grasp of the framework of an EIA. All three show that the major issues surrounding each project have been sighted, if not dealt with in depth. The EIAs are attached as they were written, as Annexes 1, 2, and 3.

### 3.6 EIA Procedures: Summary of Recommendations

The course participants broke into two groups to discuss the possible EIA procedures at the national level and at the provincial level. The results of these discussions were much more specific than the generalities of the senior officials meetings, and the following recommendations were made:

## **Provincial Level:**

The planners from each of the provinces met and considered the present procedures for project approval, and the best means of integrating environmental assessment into the approval process. The provincial planners recommended the following changes to legislation and procedure in the Solomons to allow them to conduct environmental assessment in an effective manner.

1. The Provincial Government Act would be changed to have Executive approval come after Town and Country Planning Approval. Under present procedures, the provincial planners do not see projects until they have been approved at the National Executive level, and they have no effective powers over the development, and no way to implement effective environmental assessment. By reversing this sequence, the planners can have an effective role in both planning and environmental assessment, and present decision-makers with the full information to make wise decisions.
2. Environmental assessment would be included in the regular approval process, and the provincial planners would present to the Executive the full proposal complete with environmental impact assessment for consideration and approval.
3. In requiring and reviewing the environmental assessment, the planners would circulate environmental assessments to all the departments with an interest in the area, including the Environmental Conservation Unit.
4. The planners would continue to be bound by the provisions in the Town and Country Planning Act, which requires that they respond to development requests within 28 days, so that the steps in the EIA procedure (screening, scoping, reviewing) would be done expeditiously.
5. The Town and Country Planning Act would be changed to include control over major commercial projects on custom land.

## **National Level:**

The national level government civil servants were sympathetic to the above scheme, and felt that all projects but the most major could go through this provincial system. The exceptions were projects like the Komarindi hydro project. The process for such projects of national significance was less clear, and no agreement was reached on this type of project.

## Annex 1: Case Study #1

### Doma Tourism Proposal

#### 1. Engineering Description of the Project.

The development aims at providing a 120 room tourist resort at DOMA. Doma is some 25 km northwest of Honiara. An area of 11.5 hectares has been recommended as suitable for the development. The project is estimated to cost about \$50m, and will take approximately 18 months to build.

The development is to be done in three phases. Basically the end product would include the following :

120 rooms	golf course
mariners' lakes	imported white beaches
infrastructure: jetties, road networks, etc	school, clinic
borehole water supply	diesel electric power
workers quarters	waste treatment plant

#### 2. Description of existing environment

##### a) Climate

Relatively dry (3000-5000 mm rainfall/annum)

##### b) Landuse

Agriculture (cocoa and coconut)

Residential (approx. 15 houses)

##### c) Flora and Fauna

- Area covered with coastal vegetation: *Callophyllum* sp., *Terminalia catappa*, *Sumanea saman*, *Hibiscus tiliaces*, *Barringtonia* sp., *Premna corymbosa*, *Desmodium* sp., and other shrubs and grasses and creepers
- Crocodile reportedly sighted in area (endangered in Solomon Islands)
- Evidence of eroding sand
- High energy coastline/black pebbles on coastline
- Sand and rocky bottom offshore
- Small reef offshore from workers quarters' site
- Small stagnant/dry rivers covered with plants
- Reports of high river flow in wet season

#### 3. Resources required

- Independent infrastructure development (road, diesel, electricity, seaport / jetties, etc)
- White sand for the beaches to be imported
- Machines and manpower (of all relevant skills)
- Borehole water
- Food and other employment multiples during operational phase

#### 4. Waste produced

- Water pollution caused by waste oil spill, waste water from kitchens, toilets, swimming pools, laundries, etc.
- Siltation during dredging
- Sewage
- Soil run-off from cleared land
- Carbon monoxide from machineries used
- Dust from vehicles
- Pollution from burning of cleared material
- Solid waste from cleared cocoa/coconut plantation
- Relocated buildings
- Wreckage removals (according to model in GP)

#### *Solid Waste*

The volume of solid waste which is going to be produced per week/month is not given  
How and where the solid waste to be dumped is also not indicated

#### *Sewage*

Model states that tertiary treatment will be employed. Method of tertiary treatment is not given. Should be aware that Solomon Island is a signatory of the Montreal Protocol. Information of the size of treatment tanks is not given

#### 5. Changes in land use

- Major change from agricultural to tourism use
- Loss of copra/cocoa income
- Reef fishing will be limited
- Changes in land ownership (there is concern here about the social effects also of the land tenure system).
- Land was originally leased to Dettke, and later on to Laurie Young. It is said/understood that this lease period has expired and currently GP is negotiating with COL about title? There is concern that land tenure is potentially an issue and must be sorted out now.

#### 6. Changes in foreshore use

#### *Fishing Rights*

The site which the Resort Development is to take place is not regarded as a major fishing ground. The resort development will limit (stop) access to people who used to fish in the area. As the development begins people residing in the area who used to fish there will be resettled.

#### *Effects on Near-shore Processes*

- Development of a large resort will surely result in production and accumulation of a lot of waste.
- Disposal of rubbish in the sea will have an effect in the marine life.
- Sewage at the resort should be treated to tertiary level before discharging.
- Solid waste from sewage treatment plant should be used as organic fertilizer.
- Due to the development will mainly be concentrated along the coastline storm surge should be taken into consideration.
- Increased flooding will cause siltation to the Marine (artificial lake).

## 7. Biological effects

### *Effects*

- Removal of trees and shrubs will result
- Change in the micro-climate
- Coastal erosion
- Displacement of the wildlife
- The endangered crocodiles life under threat
- Probable increase in mosquito due to lakes and marina

### *Mitigation*

- A strip of vegetation be left at the shoreline
- Planting of trees where appropriate
- Possible care must be taken to ensure that the crocodile is protected

## 8. Social effects

### *Traditional Land Ownership*

Traditional land ownership has been lost because the 75 year lease agreement between the past holders of the title of the land had long expired.

### *Permanent Population Changes*

- Present population on site is approximately 100 people.
- Present workers on site will be displaced.
- The development will result in an influx of people coming in during phase 1 of the project.
- It is envisaged the development will accommodate 120 units after phase 2 of the project is completed.
- It is likely that total workers will be about 200 resort workers.
- New population on the site after the resort development is completed is approximately 400.
- The interaction between rural people in the neighbouring areas and the influx in differences of culture, role and lifestyle of people coming to the hotel.

### *Employment Opportunity*

- The proposed development is expected to employ 200 workers.
- Employment opportunity for Solomon Islanders is not known.

### *Market Opportunity*

The tourism development will provide a market for rural farmers.

### *Health Services*

The tourism development proposes establishing of a clinic. Current health services available is the ones in town and Guadalcanal Province clinic.

### *Educational Services*

At present children living on the proposed development site went as far as to the Honiara schools for primary education. Proposed development to provide a school in the area.

## 9. Global Environmental Problems

- The area is a flood risk area. Storm surge may cause serious damage due to the low elevation.
- Tree Felling - not a threat to global environment.



## 10. Summary of problems and recommendations

### *Land tenure:*

Resolve before anything more done.

### *Material:*

White sand prone to wave erosion

### *Low lying area:*

- Flooding: Raise elevation of site
- Wave action during hurricane: Minimum floor height

### *Erosion:*

- Beach front: 20m set back
- Bare ground: Planting of trees along shoreline

### *Lakes and marina:*

- Mosquitoes
- Low waterflow in dry season
- Siltation: Design of lake to prevent sedimentation
- Debris

### *Endangered species:*

- Measure should be taken to protect crocodile (if any)
- Preserve crocodile habitat, if any

### *Sewage:*

A back up system should be considered in case of failure in the primary system

### *New dump site:*

Location not identified. Consideration to be taken to where solid waste is to be dumped

### *Waste oil:*

Care must be taken to avoid oil spills

### *Social:*

Risk of disease. Educate people through help of MHMS

## **Recommendation**

- Recommend for public hearing
- Reviewed by an independent party

## **Monitoring**

To be done by the Guadalcanal province at the cost of the developer. Government bodies such as the Environment Section to do their own monitoring.

## **Enforcement**

- Security bond to be of sufficient amount of (½) half a million dollars. Bond to be reimbursed upon satisfactory completion of clinics and schools promised.
- Retention of \$100,000 as an Environmental Bond

## **Annex 2: Case Study #2**

### **Honiara Rubbish Dump: Existing Site & Proposed New Site**

#### **1. Introduction**

The very business of living inherently must generate byproduct, excesses and wastes which, if not properly disposed off, become offensive and hazardous to life itself. Thus, in any human settlement composing of many individuals, the rate at which these undesirable rubbish are produced invariably becomes problematic.

It is necessary then that an organised and systematic method of collection and disposal to carefully settled and properly managed dumping sites, becomes the community's foremost concerns.

It is against this background that our team of environmental impact assessors were given the task of assessing the existing rubbish disposal practises of the Honiara Township and what could be done, if any, to improve it and make it environmentally acceptable.

The existing rubbish dump is situated at Ranandi, 5 km east of the town centre. It has been serving the township since it established.

Environmental concessions has forced the community to critically assess the viability of this existing dumps in terms of its environmental impact. It is plagued with environmental problems, to say the least.

There is very inconsistent management. Attempts at organised dumping and soil fill have not been working well resulting in too unsightly and messy masses of rubbish lying exposed.

Leachate from decomposing vegetable matter and other chemical processes, are to some extent, free to enter the surrounding creek and sea.

The proposed new site is at White River, in a valley as described below.

#### **2. Engineering Description**

##### *Project Management: Existing Ranandi Dump*

- Dump operated by HMA and predecessor organisation since establishment of Hon. Township.
- All waste, including kitchen rubbish, garden refuse, industrial waste is collected from township and dumped at site.
- Collection done by two ram trucks and five open back trucks.
- Individual truck to dispose of own rubbish.
- Landfill and covering over is done after every 2 days.
- Method repeated progressively for entire area after which dumping re-starts on already landfilled area and thus process is repeated.
- Town Council personnel are on duty to manage the system.
- Equipment for landfill is used from Ministry of Transport of the Central Government.

### *Project Management: Proposed White River Dump Site*

- Proposed site is on a basin and is proposed to operate a solid waste landfill;
- Valley basin will be overlaid with a layer of impermeable clay to arrest leachate and thus protect underlying aquifers. Layer of impermeable clay to incline downstream on barrier for collecting leachate recycling by spraying of dumping areas;
- Dumping to proceed on impermeable layer and be covered over with 20 cm thick layer of dirt burrowed from humper and spurs on the existing site;
- Equipment to be permanently deployed on site, to include a dozer, loader, trucks and may be even a grader.
- HMA to allocate staff to manage the dump.

### *Project Design: Existing Site*

- No design, dumping on wet land and progress towards a creek and seashore;
- Design defects numerous:
  - a. leakage into creek and surrounding sea
  - b. area of dump is large and dumping to speed out not manageable

### *Project Design: Proposed Site*

- Design to take a form of an impermeable clay place constructed inclined to the horizontal with lowest level on the downstream of the valley (basin);
- Road system to be aligned on acceptable grade down and skirting the side of the basin;
- Wire perimeter fence on the dump to trap wind flown plastics, papers and the like;
- Dam at downstream end of impermeable clay pad to collect leachate and to recycle.

### *Options Available: Existing Site*

- Dumping and covering with soil fill can be done in strate form, eventually building up a full formation;
- Construct a leachate trap and a solid waste retaining wall surrounding the sea front and the creek before actioning (a);

### *Options available: Proposed Site*

- Dumping option is idealistic, depends on whether all processes and management procedure work according to plan;
- Access leaves very limited option due to steepness.

## **3. Resources needed during construction**

### *Existing site*

- Sand/soil to cover the area before moving to new site
- Need machinery/manpower for operation
- Service the disposal site in terms of machinery, how many times collection is done, covering up of rubbish, (transportation)

### *Proposed site*

- Clay soil thickness 50 cm
- Machinery and manpower
- Mitigation measure : composting vegetation wastes must be introduced
- Sustainability: expected to last for 20-30 years

#### *Clay soil excavation (resource)*

- will cause problem to land owners
- will cause land erosion
- hard to find clay soil

### **4. Waste produced**

Waste, in this case, can be categorised into two parts:

- Incoming waste which is waste that is brought to the dump site to be disposed.
- Outgoing (or produced) waste which is whatever waste which is produced from activities plus reactions that take place between the dumped incoming waste and the environment there.

#### *Incoming Waste*

This consists of:

- **Household waste** - This is waste from households. Mainly consists of kitchen waste. A waste generation study was conducted in Honiara revealed that 60% of the household waste consist of inseparable matters mainly putrescible vegetable matters from kitchens. There is also tin cans, plastics, glass, papers, etc. included here.
- **Industrial waste** - This is waste from industries such as metal cut-offs, car bodies and such like. Such things as car bodies do occupy a large area per single item as compared to household waste.
- **Garden waste** - This is grass cuttings and tree leaves from parks, office compounds and house yards.
- **Commercial** - This is waste from stores, networks, hotels and offices.
- **Hazardous waste** - This is not dumped here but chances of it being dumped here in the early years of the dump site may not be ruled out.

#### *Outgoing Waste*

This consists of :

- **Leachate** - Whenever there is downpour of rain, the rainwater percolates through the dumped waste and seep into the ground and at the present site into the creek and foreshore.
- **Release of Methane gas** - There is emissions of methane gas into the atmosphere. This gas is produced from certain reactions that take place in the dumped waste itself.
- **Smoke** - The smoke produced from burning fires.
- **Dust and blown-away Papers** - Dust is produced by burning fires, movement of trucks and blowing force of the wind.
- **Smell** - the bad smell is mainly produced from the decomposing waste.

### **5. Changes in land use**

#### *Existing Site*

- The land is currently owned by the government but the dump is controlled, managed by the Honiara Municipal Authority. The present dump site covers an area of 5 hectares.
- Adjoining land uses: King George VI Secondary School, Ranadi Industrial Estate, surrounding residential areas.
- The major change in land use will come about if the present site is closed up and committed for other purposes. The land use which is technically feasible for this site would be for recreation or just an open space.
- The expansion of the Ranadi Industrial Estate (RIE) will require the closure of this dump site.

## *Proposed Site*

- The land is held by the Commissioner of Lands and at present it is not committed for any specific land use.
- The proposed dump will cover a land area of 20 hectares and the valley depression method will be used. The total volume of landfill required is 835,200 cubic metres. Given this capacity the area would be operational for about 20 years.
- Most changes in land use will occur during the initial stage of the project. This will include clearing and levelling using heavy equipment. A covering soil of 20 ha - 40,000 cubic metres will be removed from the surrounding hills.
- Residential expansion will affect or encroach into this site in the foreseeable future.
- The proposed new secondary school is also located within the same proximity.
- The Customary Land at end of the boundary will be affected. The people there will have their own fears and aspirations.
- Traffic will be generated because of different land uses.
- The outline approval for the change in land uses can only be granted by the Town and Country Planning Board.

## **6. Change in foreshore uses**

### *Existing Site:*

- Site has caused some changes to:
- The aquatic food materials (e.g. water crest and fish)
- the infrequent soil covering of the refuse has contributed to the amount of leachate into the foreshore area. Due to the differences and variation in turbidity the sediments seem to flow westward.
- Beach mining has also changed the backshore formation.
- It was also evident, the area is seasonally fished, depending on fish migratory.
- Flooding is a hazard which also caused diversion in the flow of the creek.

### *Proposed site:*

Is not on the coast and will not effect the foreshore.

## **7. Biological effects**

### *Existing Site*

- Pollution to the streams/creek due to dumping of rubbish is done into the creek.
- Pollution to the creek also create unbalanced or disturbance to the food chain (food chain poisoning).
- Mosquito breeding places were plenty due to uncontrolled and poor landfill of the pit.
- Few trees (coconut) that were been existed on the site were fell to give space for dumping of rubbish resulted with direct heat from sun and burning fires.
- There is room for fauna especially flies, rats, dogs - smell.
- Dirty swamps and waters prevent fish breeding due to
- Plants grown floated on the surface of the creek fixes and used oxygen from the water therefore reduces the chances for fish habilitation and even breeding.
- Harvesting of edible plants along the creek might cause other human sickness.
- Scavengers at the pit is a health hazard.
- Burning of rubbish sometimes during dry season and windy days may result with all the grass adjacent to the tip being destroyed as well - biologically this pauses problem.

### *New Site*

- Existing situation - Gulley with only and mainly grass growth however destroyed at times during dry seasons by burning fire (bush fire).
- No real problem with flora and fauna due to existing situation only grass lands.
- The soil at the site is permeable therefore subject to underground leaching - problem to underground water.
- Site reasonably dry season throughout the year round.
- The site is grassland therefore no more room for mosquito breeding.
- Establishment of the rubbish pit might encourage more flora and fauna in and around the site.
- Any opening of the earth at the gulley heads would result in forming enlarging the natural draining along the valley due to steep hills.

## **8. Social effects**

### *Existing Site*

- Most people living in and around the boundaries of Honiara town boundaries benefitted from the dump/pit in terms of waste deposit.
- There is at the moment one person employed by the Municipal at the dump site to manage it.
- Other unknown villagers living quite far do also present at the pit to collect bottles and cans to be sold to companies for recycling (scavengers).
- Due to the foul odour given out at the pit, no person or residence is attracted to the site.
- A number of industrial workers near the site prefer the dump to be moved somewhere.
- No tabu or cultural site exist therefore no disturbances to such
- Using open trailer trucks for collection of rubbish and transporting to the dump usually gives foul smell to residences along the roads.
- Scavengers endanger their life/health when tilting the rubbish for bottles, cans and other useful things they might think.

### *New Site*

- The existing residences located about ½ a mile on the ridges south of the proposed site may have objection to the project although they are located outside of the boundary (smell).
- The project will benefit Honiara residences.
- The existence of rubbish pit in the middle of possible buildable resident areas would reduce and hinder residential development in the vicinity of the pit. This would further increase crowdedness or densely development at the eastern side of the town.
- No cultural/tabu sites exist therefore no concern is paid on this.
- Existing residences further down the valley (independence) should be consulted as access might be via the said valley and drainage would also via the valley (dust/smell).
- People may still want to collect cans, bottles and other valuable things from the pit (health hazard).
- Education of Honiara residences of the proper ways of dumping of rubbish (takes time and money) may change life style of people.

## 9. Mitigation

### *Reducing Amount of Waste*

Firstly, we have to reduce as much as possible the amount of waste brought into the dump site.

- Household Waste - Sorting out of waste by the Town residents and grouping them into categories (e.g. items that can be recycled are grouped apart from putresible matters good for composting). The Municipal Authority collects these grouped waste separately.
- Collection of bottles and bins for recycling can be done at home or at the dump site by scavengers. Composting can be done at the waste dump site.
- Industrial Waste - Designation of an area within dump site for industrial waste only. There should be screening at the dump site to exclude toxic waste from being dumped at the site.

### *Limiting Outgoing Waste: Both Sites*

The mitigation measures that can be taken against the outgoing waste causing very much biological and social impacts at both sites is as follows:

- Smoke - Smoke can be eliminated by banning of burning of waste. Regular covering of waste at the disposal site can eliminate fire outbreaks.
- Dust and Flown off papers - At existing site, restricting of disposal area to a small confined area (say 20m x 20m) at any one time should reduce dust.
- Fencing will be used to curb the problem of flying or blown off plastics and papers. Dust can be reduced by tar sealing of road surface. The recycled leachate can be used to damp the disposal area thus reducing dust.
- Smell - Can be reduced by regular covering of waste.

### *Mitigation Measures specifically for Existing Site*

- A sign should be erected to prohibit the collection of food material around the creek and foreshore area
- A media campaign can be used to effect the above.
- Construct embankment around dump to prevent flooding
- After closure restrict use of site for a period of time. Rehabilitate with top soil rich in nutrients and plant grass.
- Prohibit erection of building. Can be used as recreational park.
- Leachate - an embankment of clay constructed along the creek edge and access way. This is to reduce further pollution of the creek.

### *Mitigation Measures specifically for Proposed Site*

- Prohibit gardening in the surrounding area and the buffer zone.
- At the proposed site, leachate will be collected at the bottom of the dump site and pumped back on to the waste (form of treatment). This way the leachate should end up less toxic and can then be discharged into the surrounding ground.

## 10. Monitoring

- Leachate and its travel in the ground from the decomposing site.
- Monitor construction - during construction phase, such that the design is complied with.
- Access by scavengers should be monitored.
- Availability of landfill.
- Establish permanent unit within HMA that manages the dump site to do monitoring of management of site.
- Pest population.
- Earth cover should be up to requirement.

## 11. Enforcement

- Use of the Environment Act
- Penalty through Landfill contract
- Physical Planning Board (Land use as intended)
- MHMS to act as enforcer who may have the right to close the dump site if it is not up to standard. Should have backup of the public



## Annex 3: Case Study #3

### Alaskan Chainsaw Logging vs Commercial Logging in the Solomon Islands

#### 1. Introduction

The purpose of this EIA was to compare two options for logging which are being proposed to the landowners on Guadalcanal. On the one hand, a fictional logging company called Kitano logging is proposing to the landowners to log their land, and on the other hand, an NGO called Conserve is trying to convince the landowners that the best option is their Alaskan saw mill method, which is community based. However, Conserve insist that not more than 50% of the forest be logged.

This table compares the two options in the format of an EIA.

Commercial Logging	Alaskan Logging
<p><b>Engineering</b></p> <p>Lots of experience - Korean company            Know all aspects of forestry including environment            Management experience            Selective felling - wanted species, good quality            Felled, skidded to temporary location, trucked to foreshore, floated to ship            Bulldozers, log trucks, skidders, log loader            Existing main road to get logs from temporary site to shore            Housing for workers            150 people, (25 local landowner tribe, 10 Korean, rest from Solomons)            Ramp at foreshore, clearing for logs            Upgrade existing road            School and clinic for duration of operation - 5 years</p>	<p>Community owned</p> <p>6x090 Skihl chainsaw - two, one Alaskan frum            Storage shed, tools            Trucks hired            6x1 manager, two operators, two helpers, one mechanic = 6            Rest assist as needed, to carry timber            Timber on bush tracks</p>
<p><b>Existing environment</b></p> <p>Virgin forest            6 families (600 people)            6,000 hectares            Some rare plants, medical significance            Some rare birds, fly foxes (3 species), giant rats            Subsistence living            Solomon Island climate - rain forest</p>	
<p><b>Resources required</b></p> <p>Gravel            10,000 m3/year wood            Water            Houses            Food purchased from landowners            Not sustainable</p>	<p>12 chainsaw, 6 frames, etc.            200 m3/year            No effects on other users            Sustainable - selective            Market-driven</p>
<p><b>Waste</b></p> <p>Waste oil            Siltation            Solid waste            Sewage</p>	<p>No water pollution            No air air pollution            Solid - sawdust and offcuts spread            Noise for operators</p>
<p><b>Changes in land use</b></p> <p>Acquiring timber permit            Foreshore area            Housing site            Temporary log place            Workshop            Roads</p>	<p>None</p>

Commercial Logging	Alaskan Logging
<p align="center"><b>Biological effects</b></p> <p>Plants - rate of growth changed Some plant species lost Some species migrate - some migrate in Imbalance ecosystem</p>	<p>Minimal</p>
<p align="center"><b>Social effects</b></p> <p>Korean social impacts, diseases Influx of outsiders - ratio imbalance Cultural and behavioural differences Time requirement upsets Land disputes over who owns what Distribution of royalties/money Money generated Stealing food Temporary worker syndrome Problems with 'crowding' More competition for fish Safety - Loss of building materials Scholarships for students</p>	<p>No outsiders No great changes Family earnings Independence Minimize urban drift Training, self-help Community trust account Extension unit of forestry involved Careful managing of manager Safety? - (no rules and no equipment) Conserve will have equipment Change of working habits Sense of belonging 25% to Community</p>
<p align="center"><b>Cost - benefit</b></p> <p>\$30,000 cash (\$8-10/m<sup>3</sup>) Paid as taken out or maybe when sold + employment 25 people + selling food + road + promises</p>	<p><b>Costs:</b> ½ costs Fuel, oil, spare parts, tools Truck hire \$300/m<sup>3</sup></p> <p><b>Benefits:</b> \$500/m<sup>3</sup></p>
<p align="center"><b>Global environment problems</b></p> <p>Loss of Biodiversity Global Warming (maybe)</p>	<p>Minimal</p>
<p align="center"><b>Mitigation</b></p> <p>Reforestation levy 7% to government Care with roads Follow guidelines - strip along river 15m Picnic area on foreshore Machines removed (maybe) Oil drums left Waste oil - on road Pay for survey of tabu sites Provide condoms through clinic Health awareness programme Qualified nurse for duration of logging Video for village Hire a few women - housekeeping and secretary</p>	<p>Sawdust for cooking Offcuts for firewood, fencing Seconds for furniture Reforestation (plant as falling takes place)</p>
<p align="center"><b>Monitoring &amp; Enforcement</b></p> <p>Government inspector twice \$50,000 Solomon in bond No workers stealing</p>	<p>Monitor 50% of cutting Social pressure to enforce</p>

## **Annex D:**

### **Environment assessments already conducted in Solomon Islands**

Gold Ridge Mines Ltd, Environmental Impact Assessment and Rehabilitation Programme, Douglas Martin and Associates Pty Ltd., Environmental Planning Consultants, Sydney, Australia. 1990.

Brauhaase International Management GmbH, Solomon Breweries Ltd.

Komarindi Hydropower Project, Final Report of the Feasibility Study, Tonkin and Taylor International Ltd., 1989.

