

PREPARATORY SURVEY REPORT
ON
THE PROJECT FOR
THE IMPROVEMENT OF RADIO
BROADCASTING NETWORK
FOR ADMINISTRATION OF DISASTER PREVENTION
IN
SOLOMON ISLANDS

MARCH 2011

JAPAN INTERNATIONAL COOPERATION AGENCY

YACHIYO ENGINEERING CO., LTD

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Preface

Japan International Cooperation Agency decided to implement a Provisional Study for the Broadcast Radio Network Improvement Plan in the Solomon Islands, and organized a provisional study team headed by Mr. Kiyofusa Tanaka, Yachiyo Engineering Co., Ltd., to carry out the study from September 2009 to March 2011.

The study team held discussions with parties concerned of the Government of the Solomon Islands and conducted field surveys at the sites included in the project. After making further work in Japan, the team compiled and completed this report.

I hope that this document will contribute to the promotion of the project as well as a further evolution of the friendly relationship between the two countries.

Last but not least, I would like to extend my sincere gratitude to all the parties involved in carrying out the study for their kind cooperation and support.

March 2011

Japan International Cooperation Agency
Economic Infrastructure Department
Director General
Atsufumi Konishi

Summary

Outline of the recipient country

The Solomon Islands consists of six major islands and about 100 small islands in the South Pacific Ocean with a total land area of 28,900 km². It has a population of about 534,000. Its capital is Honiara whose population is approximately 78,000 on the Guadalcanal Island (total land area of 5,400 km²). The country is considered as one of the least developed countries (LDC) with a per-capita gross national income (GNI) of US\$ 750 (World Bank, 2007). The key industries include forestry, fisheries, and farming (copra and cacao) and the economy heavily depends on exports of these products. The ratios of the primary, secondary and tertiary industries are 35.7%, 6.8% and 57.5%, respectively (Solomon Islands National Statistics Office, 2006.) Major islands of the Solomon Islands are of volcanic origin. The country is undulating with the highest point being the peak of Mt. Makarakomburu (2,440 meters) on the Guadalcanal Island and some lowlands covered with saltwater at high tides. It has a tropical maritime climate with an annual precipitation of 2,500 to 4,000 mm. Thus, it is always exposed to high temperatures and substantial rainfall and consequently to risks of such natural disasters as volcanic eruptions, volcanic earthquakes, tsunamis, tidal waves, cyclones and floods.

Background and outline of the project

The Government of the Solomon Islands focused its efforts on the “revitalization of production sectors and development of infrastructure” and the “recovery of basic social services and promotion of social development” based on the National Economic Recovery, Reform and Development Plan (NERRDP) for 2003-2006, which was formulated to rebuild its severely-battered economy after the intensification of the tribal conflict in 2000. The Medium Term Development Strategy 2008 to 2010 succeeded the NERRDP after its termination. The strategy identifies priority areas. The broadcasting sector has a mission to send information promptly and correctly throughout the nation in such emergencies as natural disasters in the context of the “provision of effective social services” that is one of the priority areas. The Coalition for National Unity and Rural Advancement (CNURA), an economic revival and financial support measure announced by the Government in 2007, requires Solomon Islands Broadcasting Corporation (SIBC) to broadcast necessary information throughout the nation. Accordingly, the top-level business plan, a development plan of SIBC, called the SIBC Corporate Plan, was formulated so that it assists the government’s economic policy. Although SIBC was providing simultaneous broadcasting service nationwide via shortwaves (SW) and nationwide broadcasting through local stations via medium waves (MW), repeated failures to the existing SW transmitters have forced SIBC to suspend its SW service. Meanwhile, MW broadcasting is provided only from Honiara and that from Gizo and Lata branch stations has been suspended due to disasters and electric power conditions. As a result, the coverage is much smaller than it is expected, hindering information provision to islanders. There is no effective alternative in providing information in case of a disaster or informing a predicted one. Therefore, it is a pressing need to improve the SW broadcasting network, which makes it possible to provide emergency broadcasting service throughout the country in time of disasters, in order to assure a safe and stable living environment for

islanders. On the other hand, SIBC's budget is so limited that, although they can afford partial replacement of equipment and repair work, they cannot afford a large-scale project to upgrade the whole SW broadcasting system. Also, while they are capable of carrying out the operation and maintenance for ordinary broadcasting services, their technical level is not sufficient to plan and implement a construction of new antennae to an installation of transmitters. That being the case, the Government of the Solomon Islands requested the Government of Japan to provide grant aid assistance for strengthening its capacity to communicate information, particularly emergency and disaster prevention information. In response, the Government of Japan entrusted Japan International Cooperation Agency (JICA) to carry out a project formulation study (preliminary study) for the requested project in March 2009. The mission surveyed the status quo of decrepit and broken broadcasting equipment and carried out a preliminary examination on the scope of requested assistance. As a result, it was deemed appropriate to upgrade the SW broadcasting system to ensure nationwide broadcasting.

Summary of study results and the contents of the project

Based on the results from the preliminary study, the Government of Japan decided to implement a provisional study for the requested project; consequently, JICA dispatched a provisional study team to the Solomon Islands from September 21 to October 16, 2009. The study team held discussions with the officials of Solomon Islands in order to confirm the contents of requested assistance and consult on the details of the project, conducted field surveys at the sites to be included in the project, and gathered relevant information and data. Subsequently, the team evaluated the necessity, social and economic effects and appropriateness of the project in Japan, based on all the documents and materials obtained during the field study, and compiled the evaluation results into a basic design outline. JICA again sent a draft basic design study team to the Solomon Islands from December 13 to 20, 2010, in order to explain and discuss the basic design outline, and reached a basic consensus with the Government of Solomon Islands.

As the existing SW transmitter for daytime broadcasting is out of order, SW broadcasts cannot be heard during the day in most parts of the country. This means that remote islanders widely spread across the country have access to SW broadcasts during the nighttime only. There is no nationwide broadcast that assures the provision of emergency broadcasts that require immediate attention. In view of this situation, the basic policy for this project is set as to restore stable SW broadcasting that can be heard both day and night as the country's only nationwide broadcasting service. More concretely, the project will procure and install new SW radio broadcasting equipment composed of antennae and transmitters, thereby restoring the SW radio broadcasts in all parts of the nation, including remote islands. In consequence, the SW broadcast service to be enabled by the project will distribute information relevant to the livelihood, particularly emergency and disaster prevention information, throughout the country in a stable and prompt manner. This will allow at least 99% of the people to have access to SW broadcasts day and night. To this end, the project will procure and install the equipment listed below.

Table Details of the requested assistance

Item	Q'ty
1. Short Wave Transmitter System	1 set
2. Short Wave Antenna System	1 set
3. Power Supply Equipment for Transmitter	1 set
4. Disaster Prevention Broadcasting Communications Radio System	1 set
5. Program Transmission Link Equipment	1 set
6. Maintenance Equipment and Tools	1 set
7. Spare Parts	1 set
8. Consumable Parts	1 set

Implementation schedule and cost estimate

The responsible organization for this project is the Prime Minister's Office of the Solomon Islands government and the executing agency is SIBC. The total implementation schedule necessary for procuring and installing the equipment is estimated at approximately 19 months. The project will require an estimated cost of (*confidential*), consisting of about 1.96 million yen by the Solomon Islands.

Appropriateness of the project

A majority of the Solomon Islands people reside in islands spread across a wide range of the South Atlantic Ocean. Since the communications and other social infrastructures are underdeveloped in those islands, it is difficult for the islanders to obtain livelihood-related information, including emergency information in case of a disaster, in a prompt manner. Furthermore, the existing broadcast equipment that is supposed to play the role of delivering such information to the people on an immediate basis is not in satisfactory condition for providing a stable, continuous broadcasting service, due to issues like disasters and aging. In the meantime, SIBC, the organization responsible for national information distribution, is not technically and financially capable enough to plan and implement a large-scale project for upgrading equipment, including antennae, although it has no problem in operating and maintaining the SW broadcasting system for the nighttime service currently in operation. Under such circumstances, the Solomon Islands is faced by an urgency to upgrade the systems associated with radio broadcasts to sustain its public broadcasts. Hence, the appropriateness of implementing this project is deemed extremely high. The antennae, SW transmitters and other equipment to be provided under the project will make it possible to sustain radio broadcasts. Additionally, because the country has an experience of 30 years or more in operating and maintaining broadcasting equipment, no technical issue is expected to occur in terms of operation and maintenance of the new equipment, provided that appropriate on-the-job training will be provided at the time of installation.

The project, when completed, is expected to bring about the following effects.

(1) Quantities effects

1) Radio Broadcasting Period to all over the Solomon Islands

Recently, the SW radio broadcasting has been unstable during the daytime due to the breakdown of the SW transmitter. It will be possible to broadcast programs to all over the Solomon Islands for 24 hours by conducting the Grant Project.

2) Speeding up the broadcasting of emergency and disaster prevention information

The project will develop a communication system among organizations concerned with disaster prevention broadcasts, thereby allowing prompt coordination among them in case of emergency.

(2) Qualitative effects

1) Reducing damage from natural disasters

With the improvement of SW radio service, information can be relayed to many more islanders, giving them advance information on disaster prevention. With this, reduced damage from natural disasters can be expected.

2) Increased awareness with public broadcasting

The provision of diverse awareness programs as a public broadcaster will be made available to the islanders. Awareness regarding disaster prevention and health and sanitation will be raised, expectedly improving the lives of the people.

Significant outcomes can be expected from the project, including making stable and continuous radio broadcasts possible. At the same time, since the project will not only advance the national plan but also contribute to improving the living environment of all the islanders in the areas of disaster prevention, education and health, it is appropriate to implement it as a Japanese grant aid project. For the operation and maintenance associated with the project, technical transfer will be provided in the form of on-the-job training by Japanese engineers. There will be no problems in its implementation since personnel and an appropriate technical level can be secured under the current Solomon Islands structure.

In addition, the Solomon Islands is advised to tackle the following issues in order to make sure that the effects of the project will uninterruptedly come into being and well-sustained.

1) SIBC is not manned at night. In order to create an around-the-clock disaster warning system, it is mandatory to secure necessary personnel. In addition, necessary training will be implemented to enhance the employees' capabilities in the field of disaster broadcasting.

2) When Japanese contractors carry out the works, they will also implement training on specialized

knowledge and the handling of broadcasting equipment for Solomon Islands engineers, so as to help prepare for operation and maintenance of the equipment as well as for future broadcasting plans. For this, arrangements should be so made that necessary employees will be able to participate in the training and operation and maintenance expertise will be successfully transferred to the SIBC staff.

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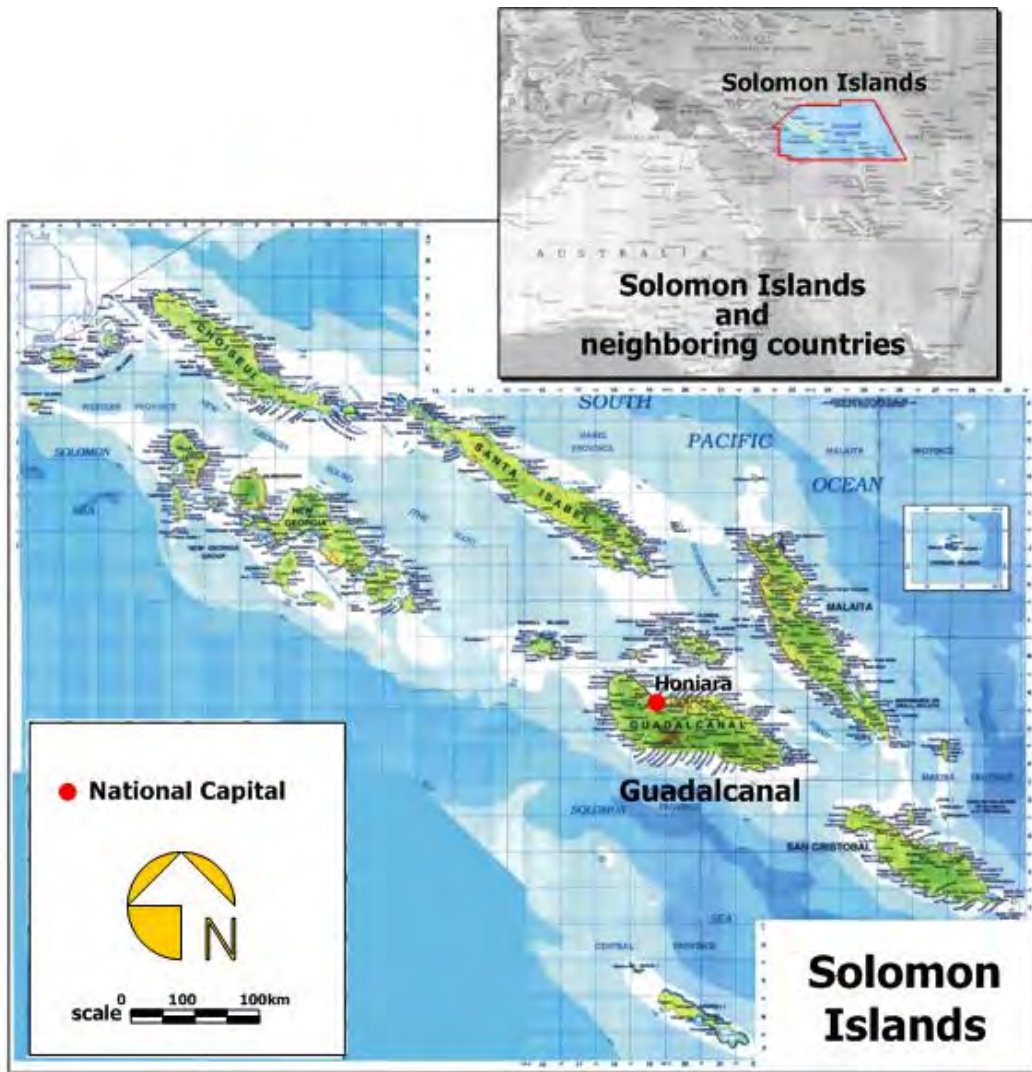
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Abbreviations

ADB	Asian Development Bank
AM	Amplitude Modulation
AusAID	Australian Agency for International Development
AVR	Automatic Voltage Regulator
BBC	British Broadcasting Corporation
CNURA	Coalition for National Unity and Rural Advancement
COP	Conference of Parties
DJ	Disk Jockey
DME	Distance Measuring Equipment
DRM	Digital Radio Mondiale
DRM Plan	Disaster Risk Management Plan
E/N	Exchange of Notes
EMSEP	Emergency Management Special Event Planning
EU	European Union
FM	Frequency Modulation
G/A	Grant Agreement
GDP	Gross Domestic Product
GM	General Manager
HF	High Frequency
IC	Integrated Circuit
IMF	International Monetary Fund
ISO	International Organization for Standardization
ITU	International Telecommunication Union
JICA	Japan International Cooperation Agency
JIS	Japanese Industrial Standards
JMA	Japan Meteorological Agency
MAL	Ministry of Agriculture and Livestock
MCA	Ministry of Communications and Aviation
M/D	Minutes of Discussion
MECM	Ministry of Environment, Conservation and Meteorology
MHMS	Ministry of Health and Medical Services
MMERE	Ministry of Mines Energy and Rural Electrification
NAPA	National Adaptation Programme of Action
NDMO	National Disaster Management Office
NEOC	National Emergency Operations Centre
NERRDP	National Economic Recovery, Reform and Development Plan
OJT	On the Job Training
PIF	Pacific Islands Forum
PTWC	Pacific Tsunami Warning Center

RAMSI	Regional Assistance Mission to the Solomon Islands
SBD	Solomon Island Dollar
SIBC	Solomon Islands Broadcasting Corporation
SIEA	Solomon Islands Electricity Authority
SIMA	Solomon Islands Maritime Authority
SIPA	Solomon Islands Port Authority
SOLMAS	Solomon Islands Media Assistance Scheme
SOP	Standard Operation Procedure
SW	Short Wave
UNDP	United Nations Development Programme
UPS	Uninterrupted Power Supply
VHF	Very High Frequency
WHO	World Health Organization

CHAPTER 1

BACKGROUND OF THE PROJECT

Chapter 1 Background of the Project

1-1 Background and Overview of the Grant Aid Project

The Solomon Islands consists of six major islands and about 100 small islands in the South Pacific. It is always exposed to high temperatures and substantial rainfall and consequently to risks of such natural disasters as eruptions, volcanic earthquakes, tsunamis, tidal waves, cyclones and floods. Information communications infrastructure is yet to be developed except for some urban areas. Today's sole quick means of communication is radio broadcasting. The sector has the mission to send information promptly and correctly throughout the country in such contingencies as natural disasters in the context of the "provision of effective social services" that is one of the six focal areas of the Medium Term Development Strategy described precedently. Without sufficient quick means of communication throughout the country, public broadcasting has a significant role to play.

However, current radio broadcasting service is not sufficiently provided due to partial suspension caused by failures of transmitters and temporary suspension because of bad electric power conditions. As a result, the coverage is much smaller than it is expected, hindering information provision to islanders. There is no effective alternative in case of a disasters or predicted one. That being the case, it is a pressing need to improve the SW broadcasting network, which makes it possible to provide emergency broadcasting service throughout the country in time of disasters, in order to ensure a safe and stable living environment for islanders.

The Government of the Solomon Islands requested the Government of Japan to provide grant aid assistance for communicating emergency and disaster prevention information in case of earthquakes, tsunamis, cyclones and other natural disasters and strengthening its disaster management and communication capacities. In response, the Government of Japan carried out a project formulation study for the requested project from March to April 2009 in order to ascertain the details of requested assistance, areas to be covered by the project and the status of the concerned equipment. The findings in the study confirmed its appropriateness and thus a preparatory study (basic design study) was conducted.

The project is to improve the radio broadcasting network to enable nationwide coverage in the Solomon Islands, a country prone to such natural disasters as earthquakes, tsunamis and cyclones. The improvement is expected to strengthen its disaster response and communication capacities in disaster situations. The study is to formulate a basic design of the project after understanding the background, purpose and contents of the project, evaluating the positioning, effects and technical and economic appropriateness of the project to be carried out under Japan's grant aid scheme, and examining contents and scale necessary and most suitable for achieving effective outcomes from the project. It also includes an estimation of the project cost and a proposal of obligations to be undertaken by the recipient country, implementation schedule and points to consider in order to accomplish the purpose of the project and achieve the expected results. The request in the

following is based on the examination described above.

(1) Requested Assistance

The necessity and appropriateness of the requested assistance were examined in the project formulation study (preliminary study) that was conducted in April 2009. Specifically, the mission examined the establishment of nationwide coverage basically with a SW transmitter and FM relay stations in consideration of islanders with old receivers.

Based on the results from the preliminary study, this study included field surveys on an assessment associated with the installation and maintenance of necessary equipment, a close examination of the whole SW transmitting system, and a study on equipment and antenna types that allow nationwide coverage.

In the process of the study, as part of in-depth discussions with the Government of the Solomon Islands, the counterpart made a proposal regarding the scope of effective and efficient assistance. Table 1-1-1 shows their request confirmed in this basic design study.

Table 1-1-1 Requested assistance

Item	Q'ty
1. Short Wave Transmitter System	1 set
2. Short Wave Antenna System	1 set
3. Power Supply Equipment for Transmitter	1 set
4. Disaster Prevention Broadcasting Communications Radio System	1 set
5. Program Transmission Link Equipment	1 set
6. Maintenance Equipment and Tools	1 set
7. Spare Parts	1 set
8. Consumable Parts	1 set

(2) Recipient Organization

It was confirmed that the responsible organization for the project is the Prime Minister's Office of the Solomon Islands and the implementing agency is the Solomon Islands Broadcasting Corporation (SIBC).

1-2 Natural Conditions

(1) Geography

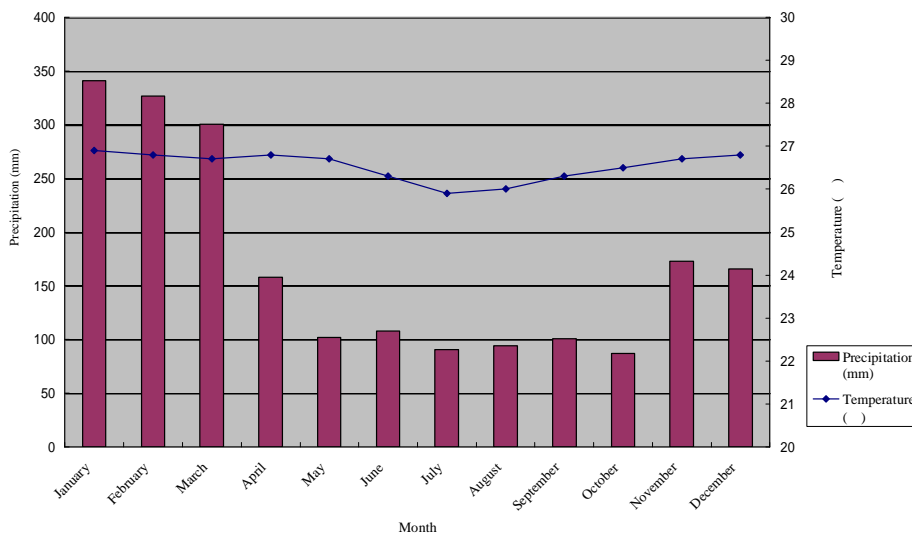
The Solomon Islands consist of six main islands and about 1,000 small islands. The islands scatter on a stretch of 1,500 kilometers from west northwest to east southeast. The land area is approximately 29,000 km², and the exclusive economic zone is 1.35 million km², the third biggest among countries in the South Pacific. Among South Pacific countries, it has the second biggest land area and the third biggest population. Most of the islands are on lowland covered with tropical rainforest. Situated in a volcanic zone, the country is prone to earthquakes. The

administrative center is the Guadalcanal Island and the capital is Honiara is situated in central northeast of the island.

(2) Climate

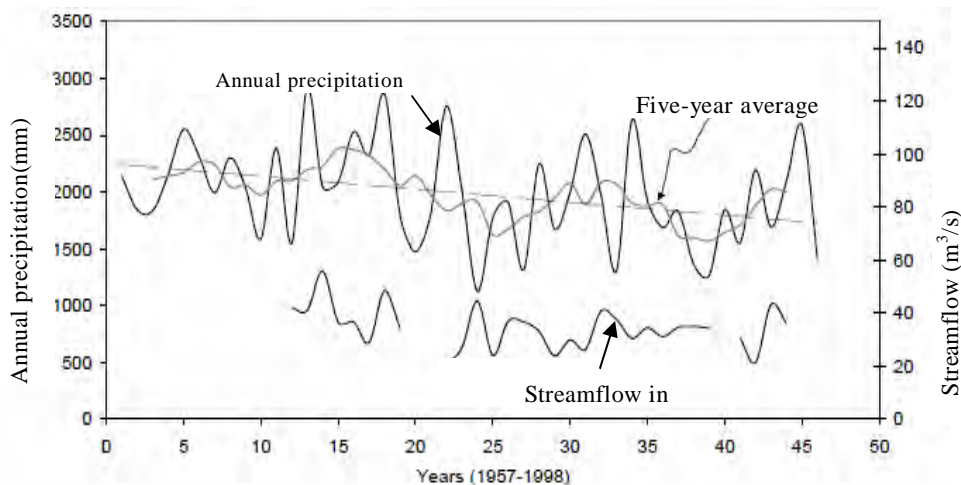
It is hot and humid throughout the year. The hottest month is January at the normal value of 26.9 and the coolest month is July at the normal value of 25.9 in Honiara. It has the highest rainfall of 340 mm in March and the lowest of 90 mm in October. The rainfall is low from May to December with the monthly amount of 100mm. The rainy season is from January to early April, with the monthly rainfall of 300mm especially from January to March. Heavy rain falls in a short period of time. Figure 1-2-1 shows temperature and precipitation in Honiara.

Figure 1-2-2 plots the precipitation and streamflow fluctuation in Honiara. As shown in the precipitation graph, it has decreased since 1957 and the streamflow is also on a decline trend. Although the impact of El Nino in the long-term weather phenomena is small when the mean value is observed, extreme weather phenomena occur more frequently due to El Nino, according to the report of Solomon Islands NAPA.



Source: Meteorological Agency

Figure 1-2-1 Normal Values of Temperature and Precipitation in Honiara (1971 to 2000)



Source: National Adaptation Programme of Action (NAPA)

Figure 1-2-2 Precipitation and Streamflow Fluctuation in Honiara

(3) Major Natural Disasters in the Past

Natural disasters the Solomon Islands are more prone to are earthquakes, tsunamis, cyclones and high tides. Table 1-2-1 below shows major natural disasters that have hit the country. Partly because of the climate change, it is hit by torrential rains in a short period of time more frequently than before. This may increase the risk of landslide disasters. Inhabited areas concentrate in low flatland areas and along the coast with the rest of the national land being mountainous. Thus, as shown in the case of Honiara, the population concentrates in limited areas. The nation will be strongly affected by climate change and its vulnerability to disasters and water shortage is likely to increase.

Table 1-2-1 Major Natural Disasters in the Solomon Islands

Year	Disaster	Death Toll	No. of Victims
1977	Earthquake	-	More than 1,000
1986	Cyclone	103	More than 90,000
1993	Cyclone	5	More than 30,000
1996	Cyclone	3	More than 30,000
2002	Cyclone	-	More than 2,000
2007	Earthquake/tsunamis	52	More than 36,588
2009	Flood/landslide	4	525

Source: NDMO

(4) Natural Conditions

The following weather data that includes temperature, precipitation and wind velocity was obtained at SIBC Henderson transmitting station, the site for installing the SW transmitter,

antenna, and other equipment:

Temperature

Minimum: The monthly average was between 21.6 and 23.5 in 2008. The monthly average from 1875 to 2008 varies from 19.9 to 21.8 .

Maximum: The monthly average was between 30.5 and 32.8 in 2008. The monthly average from 1875 to 2008 varies from 31.7 to 32.8 .

There is no significant change in monthly average minimum or maximum temperature from 1875 to 2008.

Humidity: 90% at maximum (2008)

Annual precipitation: The precipitation in 2008 was 2,726 mm. The period from January to April marks high monthly averages and the period from May to December has lower levels of precipitation.

Maximum wind velocity: There is no wind about 60 percent of the time throughout the year. Wind velocities of 6 to 12 meters per second are recorded approximately 20 percent of the time. The velocity exceeds 29 meters per second six percent of the time in a year. Wind velocities of over 39 meters per second have also been recorded in the past (0.1%).

Season

- Rainy season: January to April
- Dry season: May to December

Earthquake: The country is in an earthquake-prone region.

Site condition: Geological survey

Geological surveys were conducted at two locations on the antenna site. The survey result is provided in Table 1-2-2 below.

Table 1-2-2 Geological Survey Result (excerpt)

No.1 Survey Point			No.1 Survey Point		
Depth	Soil bearing capacity	Soil quality	Depth	Soil bearing capacity	Soil quality
0.00mm		Clay layer	0.00mm		Clay layer
-400mm	136kPa	Hard clay layer	-500mm	144kPa	Hard clay layer
-1,000mm	136kPa		-1,000mm	52kPa	
-1.500mm	144kPa	Very hard clay layer containing volcanic rock	-1.500mm	176kPa	Very hard clay layer containing volcanic rock
-2,000mm	192kPa		-2,000mm	224kPa	

1-3 Environmental and Social Considerations

(1) Social and Environmental Considerations in Construction

Construction waste soil shall be laid down on the antenna site because it is a large site and the amount of waste soil is expected to be small.

Construction debris shall be disposed of properly based on environmental laws of the Solomon Islands.

(2) Social Considerations related to Changing Broadcasting Frequency

Because the frequency of SW broadcasting is to be changed partially, information on the change needs to be provided for a long period of time to have the understanding of the islanders.

CHAPTER 2

CONTENTS OF THE PROJECT

Chapter 2 Contents of the Project

2-1 Basic Concept of the Project

(1) Overall Goal and Project Objectives

The Government of the Solomon Islands focused its efforts on the “revitalization of production sectors and development of infrastructure” and the “recovery of basic social services and promotion of social development” based on the National Economic Recovery, Reform and Development Plan (NERRDP) for 2003-2006, which was formulated to rebuild its severely-battered economy after the intensification of the tribal conflict in 2000. The Medium Term Development Strategy 2008 to 2010 succeeded the NERRDP after its termination. The strategy identifies six priority areas.

The broadcasting sector has the mission to send information promptly and correctly throughout the nation in such emergencies as natural disasters in the context of the “provision of effective social services” that is one of the six areas. Without sufficient quick means of nationwide communication, public broadcasting has a significant role to play.

The Coalition for National Unity and Rural Advancement (CNURA) that the Government of the Solomon Islands announced in 2007 for economic recovery and financial support measures approved bills regarding various public corporations that receive financial assistance from the state government and, in relation to Solomon Islands Broadcasting Corporation (SIBC), the SIBC Corporation Bill was established. Based on the CNURA, SIBC and the government’s communications agency signed an instrument to establish an important partnership in the economic recovery process. This requires SIBC to broadcast necessary information throughout the nation as a fair communication channel of autonomy and democracy.

The top-level business plan, a development plan of SIBC, is called the SIBC Corporate Plan. This is updated every three years and the plan for 2009-2011 is now being carried out. Consideration is given to the CNURA when the business plan is formulated so that it assists the government’s economic policy, as described earlier. Although SIBC was providing simultaneous broadcasting service nationwide via shortwave (SW) and nationwide broadcasting through local stations via medium wave (MW), the existing SW transmitters have repeatedly broken down and MW broadcasting is provided only from Honiara. This has prevented stable nationwide broadcasting. The proposed project is to improve the SW broadcasting network to enable more stable nationwide broadcasting; thus it is deemed extremely vital in relation to the national development plan.

The importance and necessity of the project are as noted below.

Coinciding with the government development plan and the medium term plan of the sector, the importance and necessity of the project are extremely high.

With the equipment used for nationwide broadcasting suffering from malfunctions, and with poor

power supply conditions, stable and continuous operations are impossible. Also, as there is no other effective, nationwide communications infrastructure in place, restoration of nationwide broadcasting is a fast and efficient solution.

The goal of the project is to reduce damage from disasters and allow advance measures. These measures are critical for the Solomon Islands, which are strongly affected by climate change and vulnerable to natural disasters expected to become more frequent and diverse in the future.

Under these circumstances, the overall goal of this grant aid assistance project is to “develop the public broadcasting system conducive to disaster prevention and emergency disaster management in the Solomon Islands, thus improving and stabilizing islanders’ lives on a social and economic level. Therefore, the objective of the project is the swift and accurate transmission of disaster prevention and emergency disaster information via radio to people in all areas of the Solomon Islands”.

(2) Overview of the Project

The project goal is the provision of a stable radio broadcasting service for disaster prevention and mitigation throughout Solomon Islands to replace the current unstable service. For this purpose, the introduction of a SW radio broadcasting service with the necessary systems and equipment as listed in Table 2-1-1 is planned.

Table 2-1-1 Details of the requested assistance

Item	Q'ty
1. Short Wave Transmitter System	1 set
2. Short Wave Antenna System	1 set
3. Power Supply Equipment for Transmitter	1 set
4. Disaster Prevention Broadcasting Communications Radio System	1 set
5. Program Transmission Link Equipment	1 set
6. Maintenance Equipment and Tools	1 set
7. Spare Parts	1 set
8. Consumable Parts	1 set

2-2 Basic Design of the Requested Japanese Assistance

2-2-1 Design Policy

(1) Basic Policy

As the existing SW transmitter for daytime broadcasting is out of order¹, SW broadcasts cannot be heard during the day in most parts of the Solomon Islands. The basic policy for this project is to restore stable SW broadcasting that can be heard both day and night as the country’s only nationwide broadcasting service. This will be done by procuring and installing new SW radio broadcasting

¹ The nighttime transmitter was also suspended due to failure from June 2009, but was restored on October 8 of the same year after being repaired by a SOLMAS engineer.

equipment and improving the SW radio broadcasting coverage area all over the country, including remote islands.

Currently, radio broadcasts done by SIBC include nationwide SW broadcasts from the capital of Honiara, FM broadcasts for the Honiara area, and MW broadcasts from Honiara for Guadalcanal and other nearby islands. MW broadcasts used to be provided from the regional branch stations in Gizo and Lata, but broadcasts from Gizo Station are currently suspended as its equipment was damaged by earthquakes and tsunamis. Lata Station's broadcasts are also suspended due to power shortage on the island. Because of this, the only broadcast that can be received by remotes islands of the Solomon Islands is the nighttime SW broadcast. The broadcast waves currently in use including MW and FM broadcasting from Honiara, and the FM broadcasting from Gizo Station that was set up provisionally after an earthquake do not provide for stable nationwide broadcasting.

With the SW broadcasting to be provided in the project, only the Tikopia area in Temotu Province will have listening difficulty during certain time slots. All the other areas of the Solomon Islands will be able to receive SW broadcasting both day and night. The population of Tikopia is approximately 1,500 (according to an interview with the NDMO), and the broadcast will cover an estimated 99.7%² of the population.

(2) Policy regarding natural conditions

1) Temperature and humidity conditions

The target region has a tropical oceanic climate with high temperatures year round averaging between 26°C and 27°C. The normal value of humidity is also high at 80-90%. The major pieces of equipment to be procured in this project for SW radio broadcasting will generally be used indoors in an air-conditioned environment. Therefore, no special measures are needed to combat the country's outdoor temperature and humidity. For the design of air conditioning equipment, the outside temperature will be assumed at 35°C (highest temperature).

2) Wind velocity

Cyclones occur frequently in the Solomon Islands. In 2002, a category 5 cyclone passed over the Tikopia Island with a top one-minute wind velocity of 80 meters per second. The project ensures the safety of equipment considering top wind speeds during cyclones, but according to past meteorological records for Honiara, top wind speeds of 39 meters per second have been recorded in only 0.1 percent of cyclones. Therefore, as a design condition for the antenna, the EIA Standard RS-222-C (62.5 m/sec.) will be used as the wind resistance design criterion.

Furthermore, according to a SOLMAS technical report, the probability of a cyclone with a top wind velocity of 80 meters per second occurring in the Oceania and Pacific Island countries is one time in 500 years. The wind resistance construction of 55 meters per second used in Australia is lower than

² =100 % - (Estimated Tikopia population of 1,500 ÷ Solomon Islands census figure of 534,000 × 100)%

that for the standard above.

3) Geological survey

For the antenna foundation, the bottom of the foundation is approximately 1,500 mm below the ground. For the bearing capacity in the foundation design, GL-1500 mm will be used as the criterion since, according to geological survey results, 200 kN/m² can be achieved at that level.

4) High tides

The Henderson transmitting station where the transmitter room is to be renovated and the proposed antenna construction site, both included in the project, are at an elevation of 25 m above sea level. The sites are also located further inland than Henderson International Airport, the only airport in the Solomon Islands. This transmitting station has operated for more than 31 years without experiencing any damage from tide surges. For this project, the existing facility will be partially repaired and used, with no special measures for high tides.

5) Seismic conditions

The Solomon Islands lie in an earthquake zone and in April 2007, the 2007 Solomon Islands earthquake occurred with the magnitude of 8.1 and the epicenter approximately 350 km northwest of the capital of Honiara. For this project, similar seismic force is considered to ensure the safety and earthquake resistance for rack equipment including the transmitter and program input equipment (PIE). A horizontal seismic coefficient of 0.25 G will be used as a design condition.

6) Salt air damage

The proposed construction site for the SW antenna is approximately 2 km from the shore and will be subject to salt air damage. Finishing resistant to salt damage will be considered for the exterior walls, antenna tower, outdoor air conditioning equipment and other equipment that is exposed to outdoor air.

(3) Policy regarding social conditions

Most of the population of the Solomon Islands is Christian. Therefore, there are no customs (for example, Ramadan for Muslims) that will greatly impact the construction period and other factors. However, although there are few residents in the area surrounding the proposed site for SW antenna installation, the objectives, period and method of construction will be made known to the residents in advance. A meeting with the residents will also be held before construction begins as it is necessary to raise awareness regarding the implementation of the project.

Additionally, since the frequency for nighttime shortwave broadcasting will be changed, it will be necessary to notify listeners in advance and over a long period of time regarding the broadcasting switchover.

(4) Policy regarding construction conditions

In Honiara, there are various visible construction areas. Therefore, execution of antenna construction using a local construction company is possible. However, for installation work, as overseas products are used for the broadcasting equipment and the antenna itself, an overseas company will be responsible for overall coordination while actual labor will be provided by a local construction company. This simplifies procurement of laborers, transport vehicles and small-scale construction machinery. Additionally, in the case of small-scale civil engineering and building construction work, it is possible to contract directly with local companies, which is what will be implemented in the project.

(5) Policy regarding use of local contractors and local materials/equipment

1) Using local contractors

For the antenna installation work to be carried out in the project, local construction companies will be used primarily for provision of construction materials and labor. For quality control, process management, safety management and testing and adjustments, it will be necessary to dispatch engineers from Japan.

2) Using local materials/equipment

Local materials will be used: Materials such as aggregate, concrete and rebar to be used in the antenna foundation, etc. are locally procurable.

(6) Policy regarding procurement, including a third country

The broadcasting equipment to be procured and installed in the project is not manufactured in the Solomon Islands. This equipment can be procured from Japan or a third country, but there are few Japanese or European and American manufacturers with the necessary after-sales service systems to handle repairs or procuring spare parts. However, since the Japanese grant aid scheme requires low prices and a guarantee of competitiveness, Europe and North America will also be examined as suppliers.

Furthermore, as a public broadcaster with social responsibilities, a system with a high level of reliability is demanded. To do this, products from a third country can be combined by a Japanese manufacturer with its products, after which the manufacturer conducts system integration tests and thereby establish a performance guarantee mechanism for the entire system.

(7) Policy regarding operation and maintenance capabilities of the implementing agency

The operation and maintenance of the equipment and facilities to be provided in the project after the start of their operations will be performed in the same manner as the existing facility by the Technical Manager of SIBC and seven staff members. The technical department has already been performing the operation and maintenance for the existing solid-type transmitters, which are the same as the

transmitter to be provided in the project. Although the staff has the basic skills for routine and other maintenance work, the equipment to be provided in the project should not deviate from SIBC's existing operation and maintenance capabilities.

(8) Policy for setting the grade and scope of facilities and equipment

Considering the various conditions above, the procurement of material and equipment, scope of installation and technical level for the project will be decided with the following basic policies.

1) Policy regarding the scope of facilities and equipment

The basis for the procurement of the SW broadcasting transmitter and other necessary equipment in the project is to create a SW broadcasting network that can reliably cover the entire area of the Solomon Islands. This must be realized within the authorized frequency range. To do this, the broadcasting configuration will include a transmission output of 10kW, with frequencies at the existing 9545 kHz and newly added 6080 kHz for day/night time switching. Additionally, the transmission antenna will not be a fixed frequency type, but will be able to accommodate frequencies within a certain range, which will consequently lower procurement costs.

2) Policy regarding setting of the grade

Broadcasting equipment can be broadly divided into "consumer use", "professional use" and "broadcaster use." Equipment for broadcaster use is designed for continuous operation and decreased malfunctions, considering redundancy and circuitry with a high level of reliability. Therefore, it is expensive compared to consumer use and professional use equipment. For the project, the key parts for use in the broadcast station are the SW antenna system, transmitter, and studio transmitter link (STL), for which broadcaster use equipment will be selected.

(9) Policy for procurement methods and construction period

Since the project is to be implemented under Japan's grant aid scheme, the following implementation schedule, G/A and E/N deadlines must be considered. However, since installation work for the SW antenna includes high-reach work, its execution must avoid the rainy season. For making installation work more cost-efficient, the installation for the transmitter and the antenna can be performed at the same time.

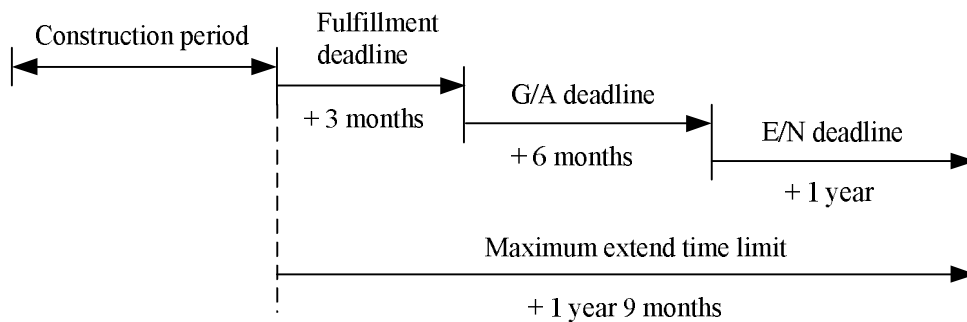


Figure 2-2-1 Construction period, E/N time limits for the grant aid cooperation project

The shipping of procured equipment from Japan or a third country to the Solomon Islands will be done mainly by sea transport. From Honiara Port to the target areas of the project, SIBC's head station and the transmitting station takes about 10 to 30 minutes by car. There are no particular problems with inland transport. The required transport time from Japan to the target areas is approximately 45 days.

In addition, before the Japanese side begins installation work on the SW antenna, the installation site must be cleared of weeds and other obstacles. To ensure that this and other items for which the Solomon Islands side is responsible are executed without delay, an efficient personnel plan must be considered. In this plan, a construction supervision consultant would be placed on site to give appropriate advice and guidance to the local counterparts.

No special construction method for the antenna foundation is required, and materials can be procured locally. The scale is small and there are not many different types of construction, so the period for this construction will be set for three months, avoiding the rainy season. The construction period for the antenna foundation will be set so that it is finished before the start of equipment installation.

(10) Policy regarding power supply equipment

At both SIBC's transmitting station and head station, a system power supply has been established. Within this, the commercial system is supplied by the SIEA. An emergency backup system is drawn from SIBC's own standby power generator. At the transmitting station, if there is a power failure from the commercial power source, an engineer at the transmitting station building will manually start the backup system. It takes about 20 minutes for the staff member to start the emergency power generator after confirming the power outage. It is similar at the head station as an employee starts the standby generator, but here an uninterruptible power supply (UPS) is equipped. Therefore, during the time it takes to start the backup system, electricity is supplied to the bare minimum equipment needed for broadcasting. The study team measured voltage fluctuations from the commercial power supply system, which is used normally, at both the transmitting station and head station.

Measurement location: Henderson transmitting station
 Measurement period: From October 1, 2009 (13:06) for 1 day (to 13:04)
 Result: See Figure 2-2-2.

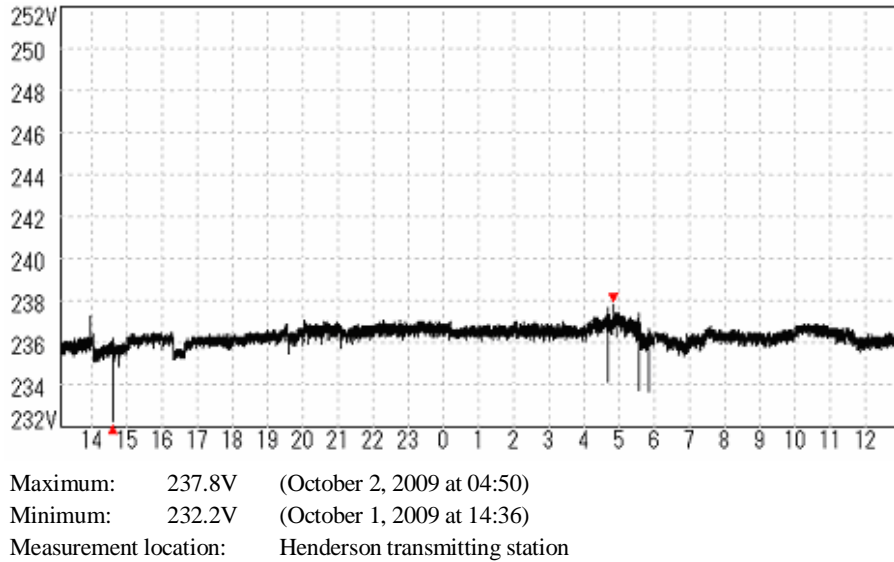


Figure 2-2-2 Results of voltage measurement for the Henderson transmitting station

Measurement location: SIBC Head Station
 Measurement period: From October 11, 2009 (10:56) for 1 day (to 11:53)
 Result: See Figure 2-2-3.

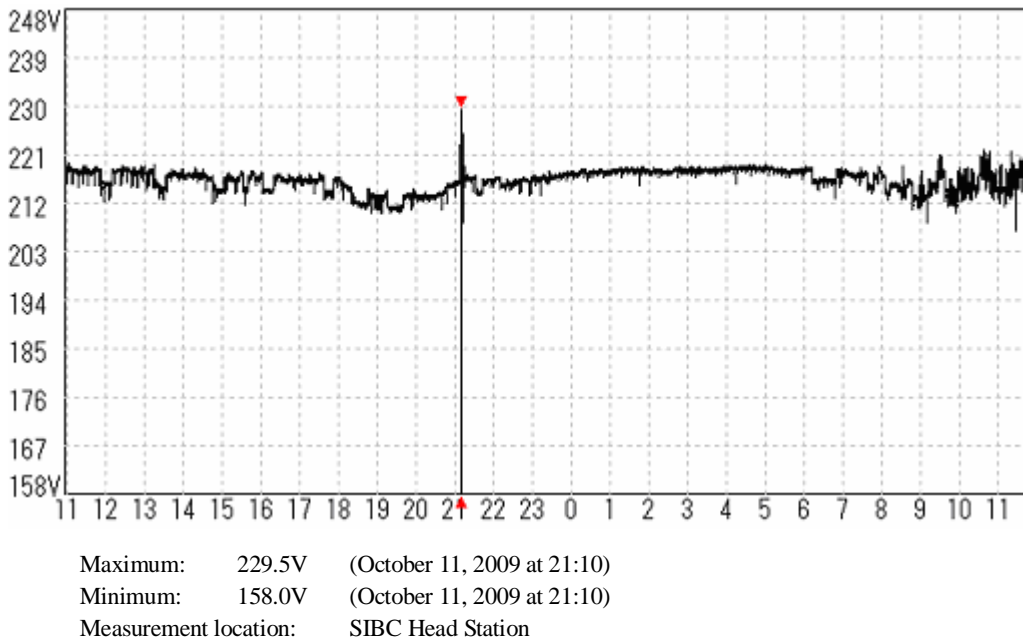


Figure 2-2-3 Results of voltage measurement for the SIBC head station

Observations:

Nominal voltage for the Solomon Islands is 240 V (single phase). SIEA voltage was measured at the SIBC head station and transmitting station in Henderson. At the Henderson transmitting station, there was no problem as the average voltage was 234 V, with fluctuations within a 2% range. On the other hand, the average voltage at the SIBC head station was about 215 V. This shows an average voltage lower than the generally acceptable tolerance of voltage drop (10%). Power failures over long periods of time were not seen at any of the measured locations, but temporary blackouts occurring during tap switching accompanying substation operations were observed. In Honiara, there are currently no voltage problems, but SIEA's power generation equipment in Honiara is dependent on the amount of power generated at the Lunga power station, causing concern about power shortages in the future. In general, if voltage supplied to electrical apparatus is low, it has a negative effect on the power supply circuitry of broadcasting equipment. This may cause the apparatus to overheat, malfunction or break down, and the life span of the equipment is greatly shortened. Because of this, it is proposed to adopt an automatic voltage regulator (AVR) that match the power consumption volume of the equipment on the power supply side of the equipment to be installed in the transmitting station and head station. At the head station in particular, large waveform changes caused by sharp voltage fluctuations were observed. When this power is used for broadcasting equipment, countermeasures against noise and voltage fluctuations are necessary. The installation of an UPS is effective in this case.

2-2-2 Basic Plan

(1) Overview of the project

The Project principally aims at providing a steady broadcasting service, including the broadcasting of urgent disaster-related information, to the entire Solomon Islands. The main components of the Project to achieve this objective are the procurement and installation of equipment for the SW radio broadcasting service as SW transmitter, SW antenna system, and Disaster Prevention Broadcasting Communications Radio System.

The conceptual diagram of the project is shown in Figure 2-2-4.

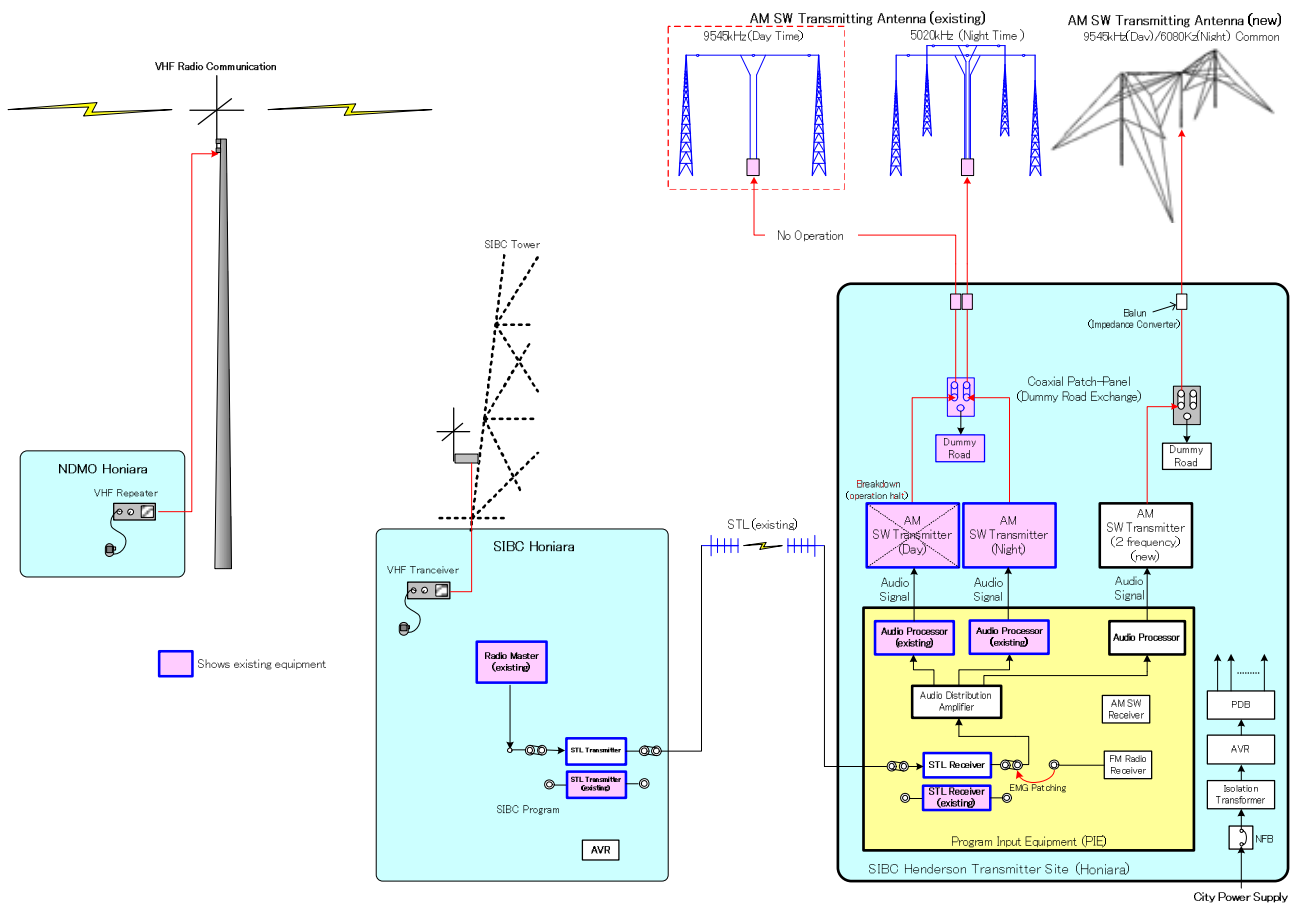


Figure 2-2-4 Conceptual Diagram of the Project

(2) Design conditions

For the formulation of the scale and specifications of the project, the following design conditions are set as a result of examining the various conditions mentioned previously.

1) Proposed site, locations and elevations for installation work

Proposed location for antenna installation: South block of the Henderson International Airport
(The location is shown in DWG. G-01.)

Height above sea level: 25 m

2) Meteorological and site conditions

- | | | | |
|------------------------------|---------------------------------------|----|--------|
| a. Design temperature: | indoor equipment | 35 | (max.) |
| | outdoor equipment | 40 | (max.) |
| b. Design relative humidity: | max. 95% | | |
| c. Design wind velocity: | 62.5 m/sec. (EIA standard) | | |
| d. Precipitation: | annual median 2,736 mm (2008 average) | | |
| e. Salt deposit density: | 0.5 mg/cm ² | | |

- f. Seismic load: horizontal direction 0.25 G, vertical direction 0 G
- g. Soil bearing capacity: Set at 15 kN/m²
- h. Site conditions
 - ◆ Elevation (from mean sea level): Antenna site 25 m
 - ◆ 415 V (3 phase), 240 V (single phase), 50Hz

3) Applied Standards

	Standard name	Application
(a)	International Electrotechnical Commission Standard (IEC)	All electrical products
(b)	International Organization for Standardization (ISO)	All industrial products
(c)	Japan Industrial Standards (JIS)	All industrial products
(d)	Institute of Electrical Engineers in Japan, Japan Electrotechnical Committee Standards (JEC)	All electrical products
(e)	Japan Electric Machine Industry Association Standards (JEM)	All electrical products
(f)	Japan Electric Association Code (JEAC)	All electrical products
(g)	Japanese Cable Makers' Association Standard (JCS)	Electrical cables
(h)	Electronic Industries Association of Japan (EIAJ)	All electrical products
(i)	International Telecommunication Union (ITU)	All electrical products
(j)	American Society of Motion Picture and Television Engineers (SMPTE)	All broadcasting equipment
(k)	Digital Audio Standard (AES/EBU)	All broadcasting equipment
(l)	International Civil Aviation Organization (ICAO)	Antenna masts
(m)	Electronic Industries Alliance (EIA)	Antenna masts
(n)	Architectural Institute of Japan Standard (AIJ)	Building design

4) Units

As a general rule, the international system of units (SI unit) will be used.

(3) Equipment planning

The machinery and equipment plan for this project is as follows.

1) Short Wave Transmitter System

Using one transmitter for two frequencies, a method will be implemented in which broadcasts can be switched from 9,545 kHz for daytime use and 6,080 kHz for nighttime use. A timer will be used to automatically switch between the two frequencies. All components of the circuitry will be of a solid type so that power consumption is low and it can be operated for long periods of time.

2) Short Wave Antenna System (Wide Band Dipole Antenna)

A wide-band dipole antenna will be utilized so that two frequencies (daytime/nighttime) can be

broadcast from one antenna. In addition, the height of the antenna mast is estimated to be 21 m (x 2 antennas), giving consideration to efficient emission of radio waves. Consideration was given to the directionality of the antenna in deciding the site for antenna installation, and an 105 m x 45 m area of land was secured within SIBC's transmitting station in Henderson.

Underneath the antenna masts, two earth mats of copper wire mesh will be buried at a depth of 30 cm underground in an area of 60 m x 30 m between the two masts to sustain propagation efficiency of broadcast waves. Aircraft warning lights will not be installed as the distance from the runway and height of the antenna poles do not violate the ICAO standards.

3) Power supply Equipment for Transmitter

The city power supplied to the SIBC head station and transmitting station building experiences voltage drops lower than the acceptable range. To inhibit the loss of data and extra burden on broadcasting equipment caused by this unstable power supply, an AVR will be installed. In addition, to prevent equipment damage from outside noise or lighting coming through power lines, an isolation transformer will be installed at the input section of the power lines.

4) Disaster Prevention Broadcasting Communications Radio System

When urgent broadcasting of warnings for predicted disasters such as tsunami or cyclones is required, there is a radio communication system for relevant organizations to contact each other. The communications equipment is installed at the SIBC studio (fixed station), NDMO office (fixed station and repeater), Ministry of Environment, Conservation and Meteorology (fixed station), Meteorological Agency Henderson Observatory (fixed station), Ministry of Mines and Energy, and police headquarters (fixed station). There are also other portable VHF transceivers for disaster-related principal contact personnel (14 units). Disaster Prevention Broadcasting Communication Radio System is conditional upon submission of the MOU.

5) SIBC Equipment (Program Transmission Link Equipment)

During emergencies, an emergency interruption signal is received via a radio transmitting device from the NDMO. When this signal is received, the SIBC broadcasting system switches over to the emergency interruption system. This system allows emergency and disaster management announcements to be broadcast directly from the NDMO. The method of transmitting information from the NDMO to SIBC will be a system with redundancy that uses a VHF studio transmission link (STL), and also FM radio broadcasting waves as a backup. In addition, a VHF studio transmission link (STL) will be installed to transmit programs from the SIBC studio to the Henderson transmitting station.

6) Maintenance Equipment and Tools

The minimum required measuring devices and specialized tools for everyday maintenance and inspection of the digital transmitter, antenna system and studio equipment to be provided under the

project will be procured.

7) Spare Parts

The necessary number of spare parts will be procured for one year after implementation or for the first malfunction.

8) Consumable Parts

Consumables will be procured for setting up MW broadcasting after beginning operations, including operational validation testing and OJT that take place during the period of installing studio equipment.

2-2-3 Basic Design Drawings

The broadcasting equipment, etc. to be procured and provided under the Project and the relevant basic design drawings are shown below.

(1) List of Equipment

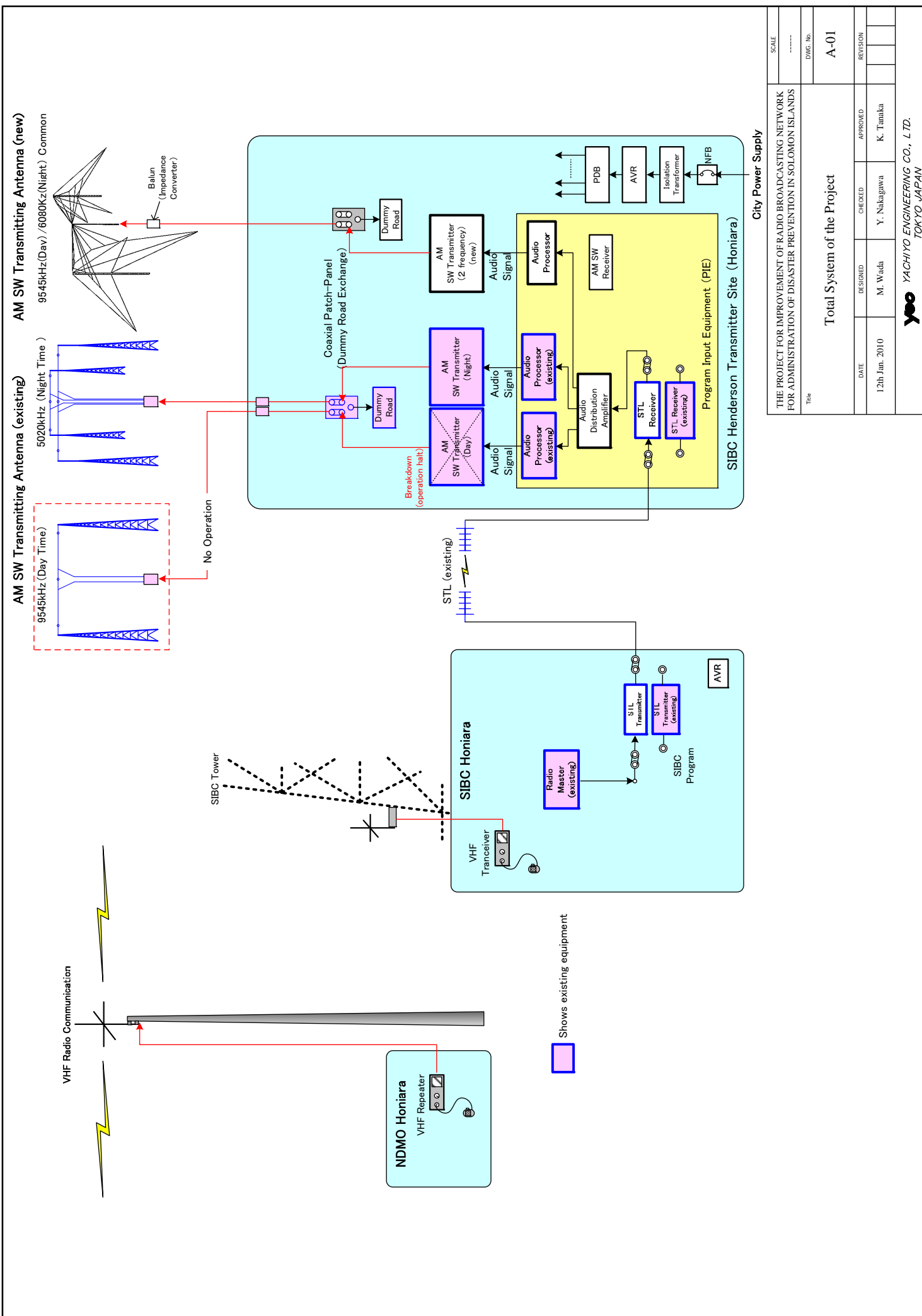
Table 2-2-1 List of the Planned Equipment

No.	Description	Q'ty
1	Short Wave Transmitter System (Henderson Transmitter Site)	1 lot
1.1	10kW AM Short Wave Transmitter (Day/Night 2 Frequency Changeover Type)	1 set
1.2	Coaxial Patch Panel	1 set
1.3	Directional Coupler	1 set
1.4	Dummy Load	1 set
1.5	Program Input Equipment (PIE)	1 lot
(1)	Control Clock	1 set
(2)	Line Input Select Switch and Monitor Panel	1 set
(3)	Audio Processor Amplifier	1 set
(4)	Audio Distribution Amplifier	1 set
(5)	Monitor Speaker and Monitor Amplifier	1 set
(6)	AM Monitor Receiver with Receiving Antenna	1 set
(7)	VHF Audio Program Transmission Link Receiver (for SW Broadcasting)	1 set
(8)	Audio Jack Panel	1 set
(9)	NFB Panel	1 set
(10)	Rack	1 set
2	Short Wave Antenna System (Wide Band Dipole Antenna) (Henderson Transmitter Site)	1 lot
2.1	Antenna Mast	1 set
2.2	Antenna Element	1 set
2.3	Antenna Feeder	1 set

2.4	Balun	1 set
2.5	Earth Ground Mat	1 set
3	Power Supply Equipment for Transmitter (Henderson Transmitter Site)	1 lot
3.1	Isolation and Lightning Protection Transformer	1 set
3.2	Automatic Voltage Regulator	1 set
3.3	Primary Distribution Board (PDB)	1 set
4	Disaster Prevention Broadcasting Communications Radio System	1 lot
4.1	VHF Radio Transceiver	5 sets
4.2	VHF Radio Repeater	1 set
4.3	Power Supply for VHF Radio Transceiver	6 sets
4.4	VHF Radio Antenna	6 sets
4.5	Antenna Pole	1 set
4.6	Mobile VHF Transceiver	14 sets
5	Program Transmission Link Equipment	1 lot
5.1	VHF Audio Program Transmission Link Transmitter (for SW Broadcasting)	1 set
5.2	Automatic Voltage Regulator	1 set
6	Maintenance Equipment and Tools	1 lot
6.1	Oscilloscope	1 set
6.2	Spectrum Analyzer	1 set
6.3	Circuit Tester	1 set
6.4	High Voltage Probe	1 set
6.5	Liner Detector	1 set
6.6	Distortion Meter/Oscillator	1 set
6.7	Audio Attenuator	1 set
6.8	Tool Kit	1 set
6.9	Safety Belt	2 sets
7	Spare Parts	1 lot
7.1	Spare Parts for Short Wave Transmitter	1 set
7.2	Maintenance Kit for Antenna System	1 set
8	Consumable Parts	1 lot
8.1	Fan unit for Transmitter	5 sets
8.2	Air Filter for Transmitter	5 sets
8.3	Fuse for Transmitter	5 sets
8.4	Surge Absorber for Isolation Transformer	5 sets
8.5	Fuse for PIE	5 sets
8.6	Fuse for AVR	5 sets

(2) Basic Design Drawings

Drawing No.	Title
A-01	Total System of the Project
G-01	Antenna Planed Area
G-02	SW Service Area (after rehabilitation)
G-03	Existing & Repair Equipment Location Plan
G-04	Existing SIBC Floor Plan
G-05	NDMO Site Plan
G-06	External view of SW Antenna



City Power Supply

Total System of the Project

THE PROJECT FOR IMPROVEMENT OF RADIO BROADCASTING NETWORK FOR ADMINISTRATION OF DISASTER PREVENTION IN SOLOMON ISLANDS

Title

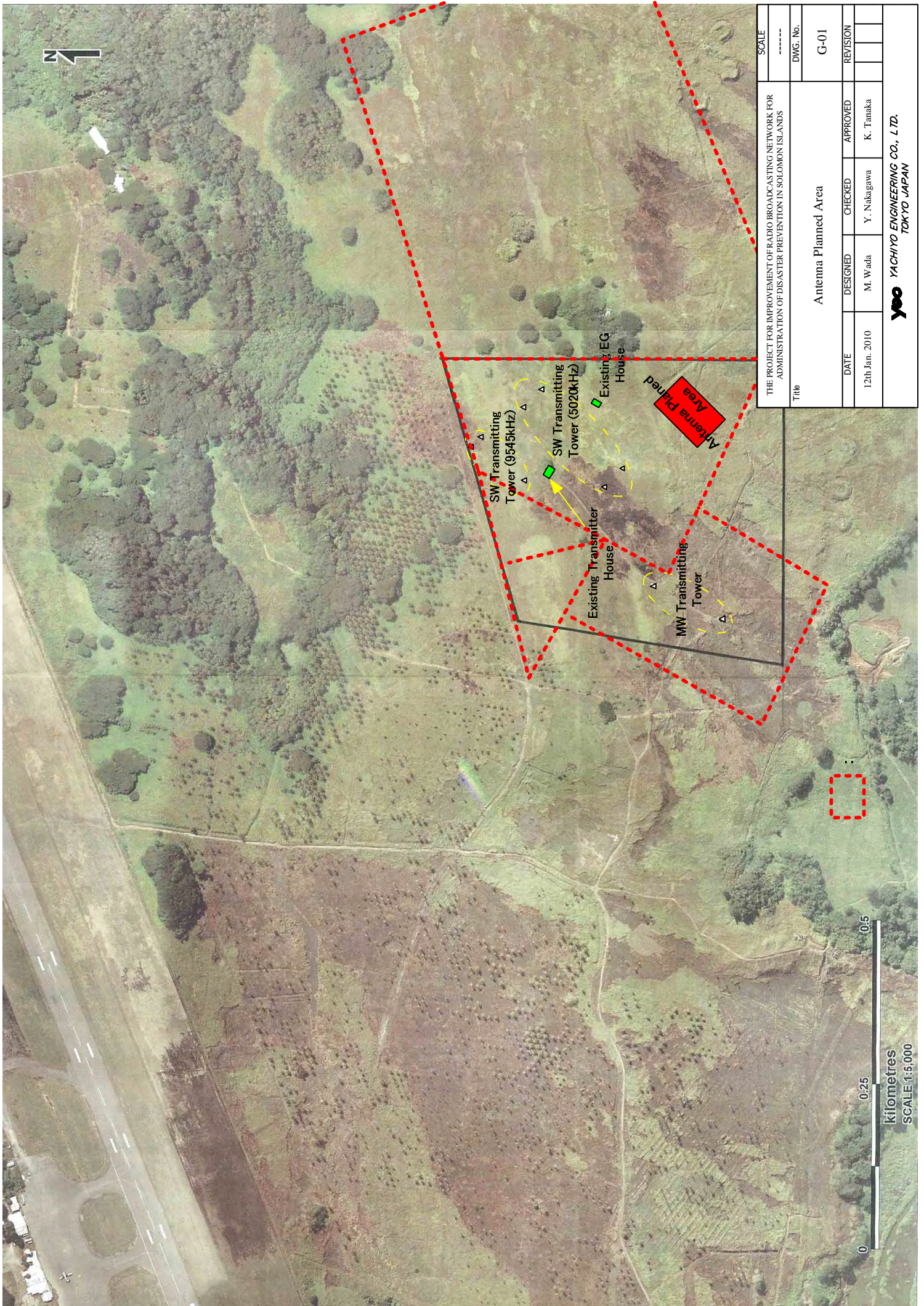
DESIGNED	CHECKED	APPROVED	REVISION
M. Wada	Y. Nakagawa	K. Tamaka	

DATE: 12th Jan. 2010

Scale: -----

DWG. No.: A-01

YEO YACHIYO ENGINEERING CO., LTD. TOKYO JAPAN



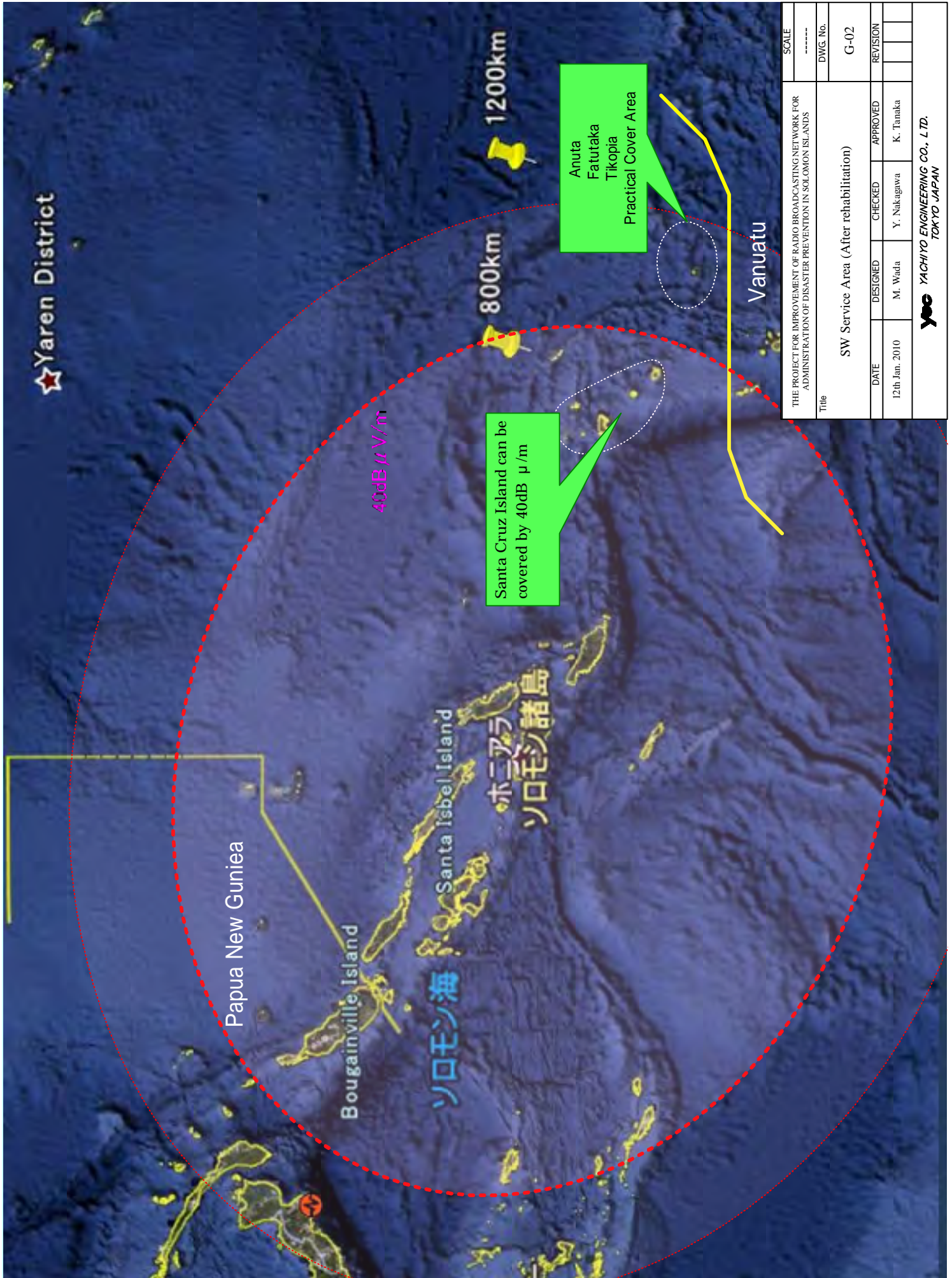
THE PROJECT FOR IMPROVEMENT OF RADIO BROADCASTING NETWORK FOR ADMINISTRATION OF DISASTER PREVENTION IN SOLOMON ISLANDS

Title: Antenna Planned Area

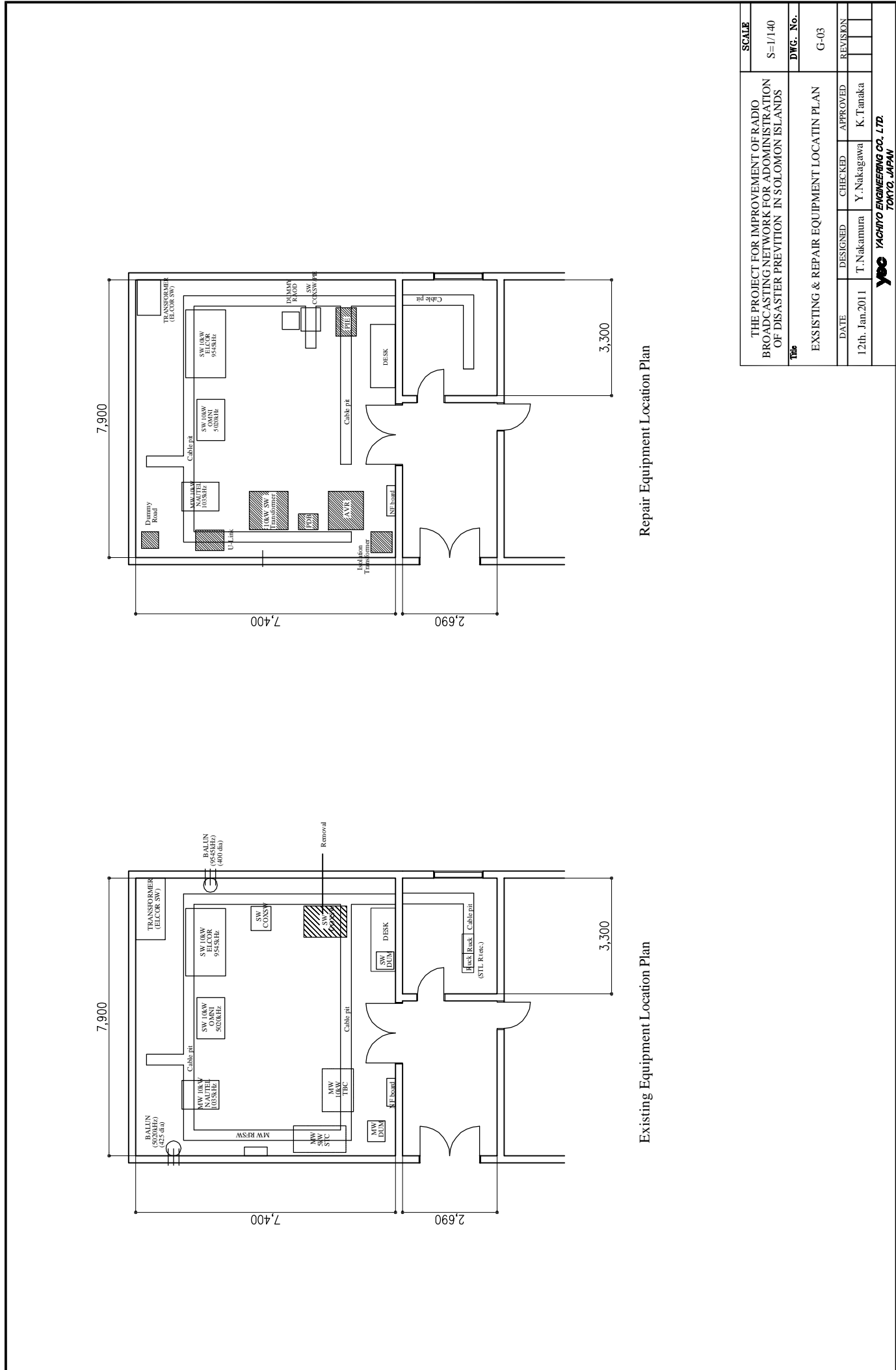
DATE	DESIGNED	CHECKED	APPROVED	REVISION
12th Jan. 2010	M. Wada	Y. Nakagawa	K. Tanaka	

SCALE: -----
DWG. No.: G-01

yec YACHIYO ENGINEERING CO., LTD.
TOKYO JAPAN



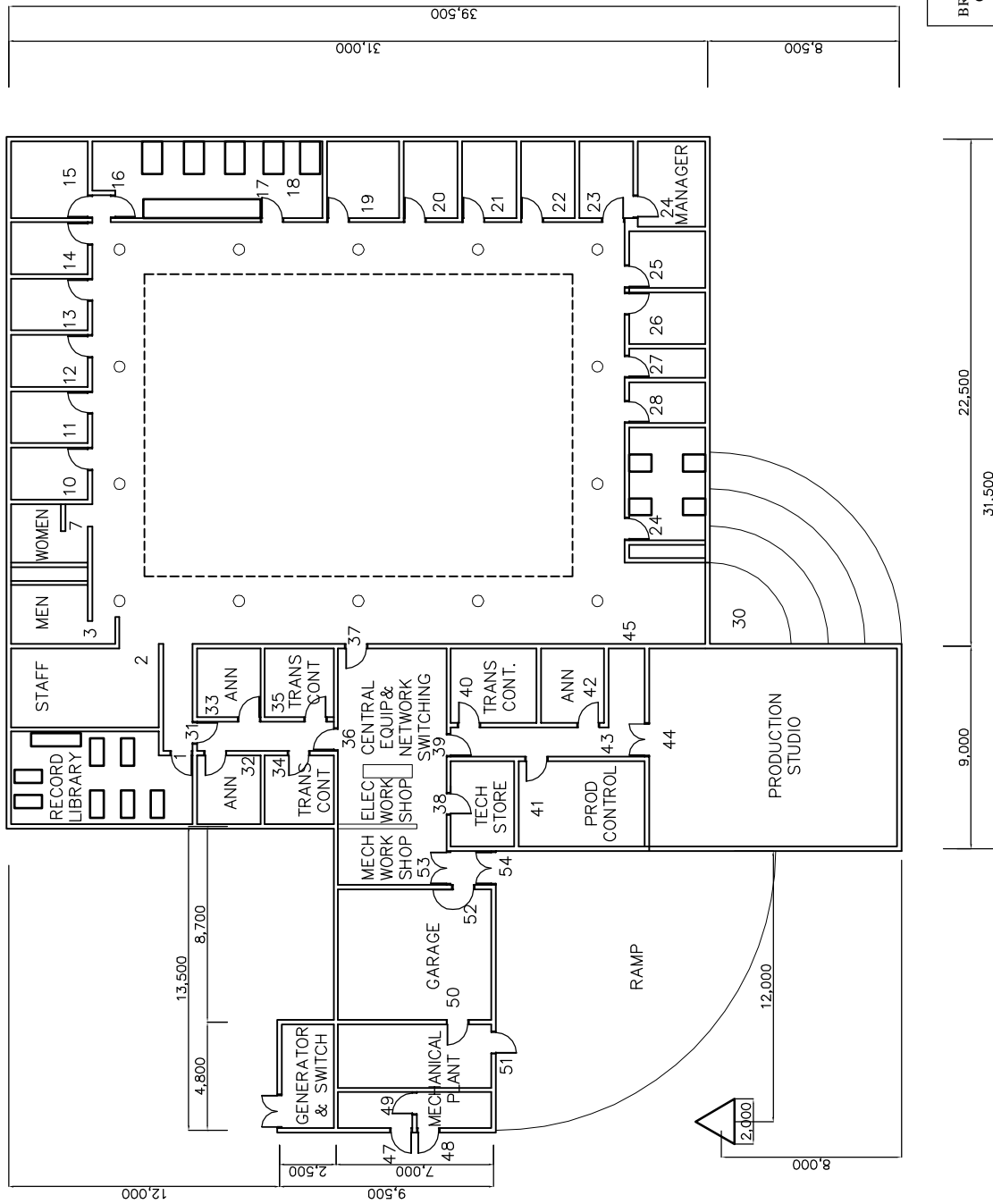
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DWG. No.		G-02	
Title			
THE PROJECT FOR IMPROVEMENT OF RADIO BROADCASTING NETWORK FOR ADMINISTRATION OF DISASTER PREVENTION IN SOLOMON ISLANDS			
DATE	DESIGNED	CHECKED	APPROVED
12th Jan. 2010	M. Wada	Y. Nakagawa	K. Tamaka
Revision			
REVISION			
YPC YACHIYO ENGINEERING CO., LTD. TOKYO JAPAN			



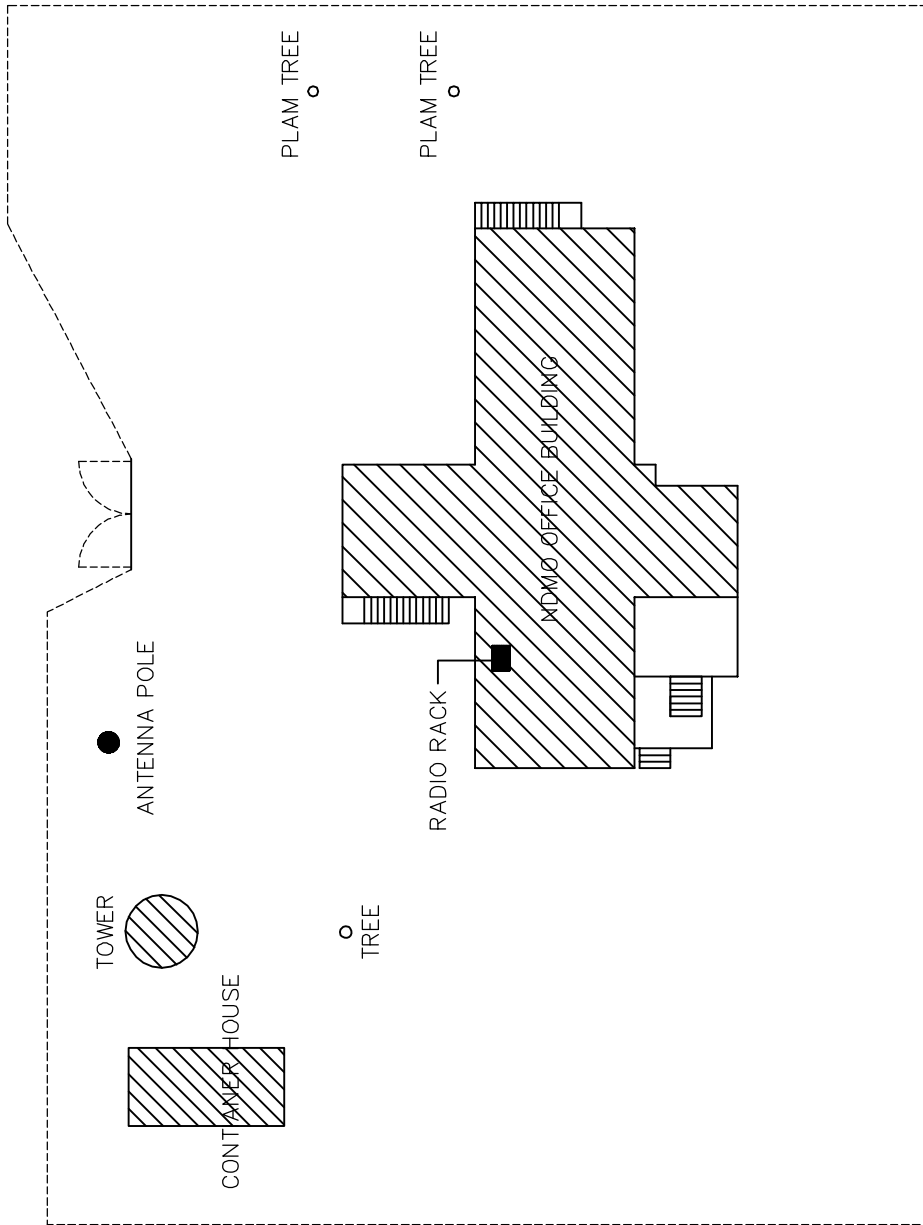
Repair Equipment Location Plan

Existing Equipment Location Plan

SCALE			
THE PROJECT FOR IMPROVEMENT OF RADIO BROADCASTING NETWORK FOR ADMINISTRATION OF DISASTER PREVENTION IN SOLOMON ISLANDS			
S=1/140			
DWG. No.			
G-03			
Title			
EXISTING & REPAIR EQUIPMENT LOCATIN PLAN			
DATE	DESIGNED	CHECKED	APPROVED
12th. Jan.2011	T.Nakamura	Y. Nakagawa	K. Tanaka
yoe YACHTING ENGINEERING CO. LTD. TOKYO, JAPAN			



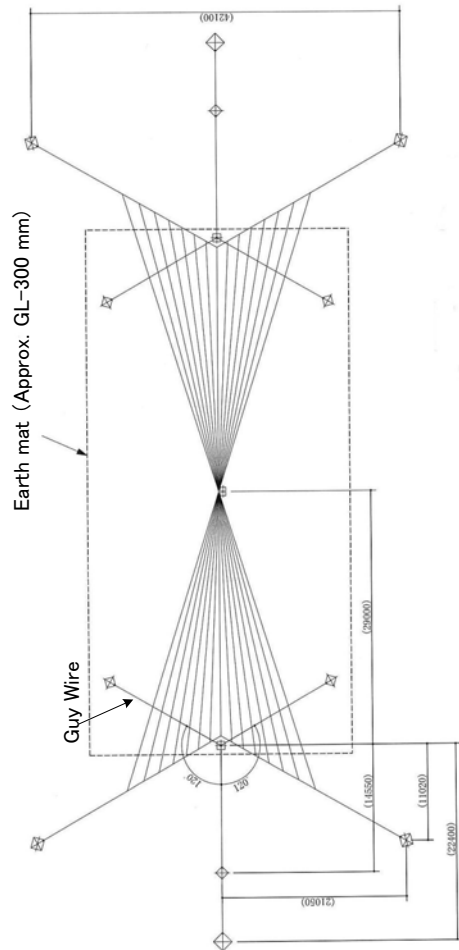
THE PROJECT FOR IMPROVEMENT OF RADIO BROADCASTING NETWORK FOR ADMINISTRATION OF DISASTER PREVENTION IN SOLOMON ISLANDS				SCALE S=1/300
Tib				DWG. No.
EXISTING SIBC FLOOR PLAN				G-04
DATE	DESIGNED	CHECKED	APPROVED	REVISION
12th. Jan.2010	T. Nakamura	Y. Nakagawa	K. Tanaka	
YEO YAGIHO ENGINEERING CO., LTD. TOKYO, JAPAN				



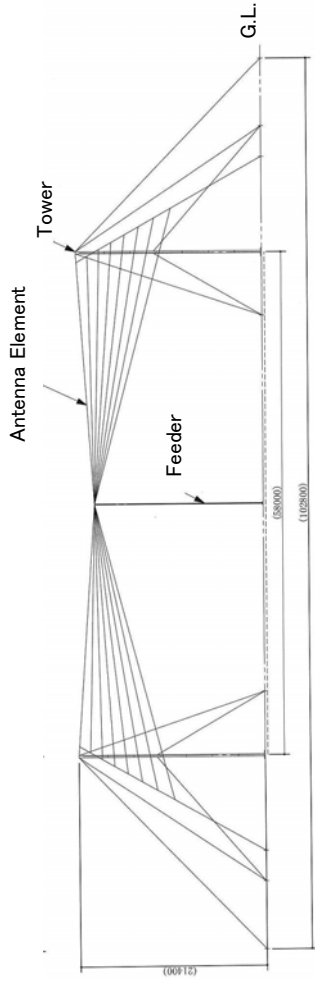
NDMO SITE PLAN

TENDER PURPOSE ONLY

SCALE			
THE PROJECT FOR IMPROVEMENT OF RADIO BROADCASTING NETWORK FOR ADMINISTRATION OF DISASTER PREVENTION IN SOLOMON ISLANDS			
DWG. No.			
NDMO SITE PLAN			
DATE	DESIGNED	CHECKED	APPROVED
12th Jan, 2010	T. Nakamura	Y. Nakagawa	K. Tanaka
YBC YACHIYO ENGINEERING CO., LTD. TOKYO, JAPAN			




Plan



Elevation

THE PROJECT FOR IMPROVEMENT OF RADIO BROADCASTING NETWORK FOR ADMINISTRATION OF DISASTER PREVENTION IN SOLOMON ISLANDS		SCALE		

Title		DWG. No.		
External View of SW Antenna		G-06		
DATE	DESIGNED	CHECKED	APPROVED	REVISION
12th Jan. 2010	M. Wada	Y. Nakagawa	K. Tsumika	
 YAO YACHIYO ENGINEERING CO., LTD. TOKYO JAPAN				

2-2-4 Implementation Plan

2-2-4-1 Implementation Policy

The Project will be implemented under the grant aid scheme of the Government of Japan and will, therefore, be implemented after approval of its implementation by the Government of Japan and the completion of the E/N as well as the G/A between the two countries. The basic issues and important points regarding the implementation of the Project are described here.

(1) Project Implementing Body

The project implementing body on the Solomon Islands side will be the Office of the Prime Minister. The SIBC is a department of this Office and the section responsible for project implementation at the SIBC will be the Technical Bureau which will also be responsible for the operation and maintenance of the equipment. It will be necessary for the Technical Division to maintain close contact with the Japanese consultant and contractor and to select a person to be in charge of the Project to ensure the smooth implementation of the Project.

(2) Consultant

A Japanese consultancy firm will conclude a design and supervision agreement with SIBC to properly proceed with the equipment procurement and installation work for the Project. This consultant will also be responsible for the preparation of the tender documents and will conduct the tender on behalf of SIBC which is the project implementing body.

(3) Contractor

A Japanese contractor selected by the Solomon Islands side through an open tender in accordance with the grant aid scheme of the Government of Japan will conduct the construction of the planned buildings, etc., procurement of equipment and construction materials, installation of equipment and provision of technical guidance. As it will be necessary for the contractor to provide an after-service, including the supply of spare parts and handling of equipment breakdowns, it should establish a communication link with SIBC to function in the period after the handing-over of the equipment and buildings to the Solomon Islands side.

(4) Necessity for the Dispatch of Japanese Engineers

As much of the equipment to be procured under the Project requires a high level of technical competence for its installation and post-installation adjustment and testing, it will be necessary for the contractor to dispatch Japanese engineers to conduct quality management, technical guidance and schedule control. SIBC staff members have gotten training through technical assistance from donors including JICA once a year. They already have the general technical capability to operate and maintain broadcasting equipment using the existing PCs and, therefore, no special technical problems are anticipated in regard to the maintenance of such equipment. However, they are unfamiliar with the

operation and maintenance of the latest equipment and it will be necessary for the contractor to dispatch Japanese engineers of the manufacturers of the equipment provided under the Project to conduct OJT when the newly procured equipment is installed.

2-2-4-2 Implementation Conditions

While the recruitment of workers (labourers) in Solomon Islands for the construction work is possible, there are not many local skilled workers or engineers with the technical expertise required for schedule, quality and safety control/management. It will, therefore, be necessary for the Japanese contractor to dispatch engineers and/or skilled workers from Japan as required.

2-2-4-3 Scope of Works

The Japanese side will be responsible for the procurement and installation of the equipment while the Solomon Islands side will be responsible for the removal of the existing equipment. Table 2-2-2 shows the division of the work between the two sides.

Table 2-2-2 Division of Work

Work Item	Responsibilities		Remarks
	Japanese	Solomon Islands	
(1) Procurement of the Equipment			See Table 2-2-1 for the list of the planned equipment
(2) Transportation of the Equipment to the Project site including insurance			Delivery Point: Store yard near the Project site
(3) Tax exemption and custom clearance of the Equipment at the port of disembarkation			
(4) Securing store yard for unloading containers of the Equipment near the Project site			
(5) Renovation of Transmitting Building in the Project site			SIBC shall renovate Transmitting Building with air conditioner for the new SW transmitter
(6) Installation, Adjustment and Testing of the Equipment			
(7) Initial operation & Total system trainings of the Equipment including equipment for the trainings			
(8) Bush clearing and Removal of Obstacles in the Project site for the new Antenna			Preparatory work including bush clearing and unexploded ordnances disposal will be completed before starting foundation work of the new Antenna by the Japanese side.
(9) Securing of yard for rubbish			
(10) Test Broadcasting (On Air)	(Advice)		
(11) Construction of Fences and Gates around the new Antenna			
(12) To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contracts			

Note: O indicates the side responsible for the work concerned.

2-2-4-4 Consultant Supervision

(1) Basic Principles for Work Supervision and Procurement Supervision

The consultant will be obliged to form a project team to be responsible for the Project and also to smoothly conduct the detailed design work and work supervision work based on Japan's Grant Aid Guidelines as well as the approved contents of the basic design. The consultant will dispatch expert engineers in accordance with the progress of the construction work, equipment installation work, on-site testing and adjustment and other aspects of the Project to supervise the contractor in order to ensure that the schedule, quality, completed amount and safety control/management is conducted as planned. The consultant will also be responsible for the pre-shipment inspection of the equipment to prevent any problems after the delivery of the equipment to the project site.

The important points for work supervision and procurement supervision are explained next.

1) Schedule Control

The consultant will request that the contractor observe the work completion date clearly indicated in the contractor agreement and will conduct weekly and monthly progress checks. When the consultant detects a possibility of a delay of the contractor's work, it will remind the contractor of such possibility and request that the contractor submit and implement a plan (measures) to rectify the situation. Comparison between the planned work schedule and actual progress will primarily be conducted on the basis of the following matters.

- ① Confirmation of the amount of completed work (manufacture of equipment at a plant; amount of equipment shipped from a plant)
- ② Confirmation of the amount of delivered equipment and materials
- ③ Confirmation of the actual number and man-hours of engineers, skilled workers and labourers

2) Quality and Completed Work Amount Management

The consultant will conduct quality and completed work amount management in the following manner to ensure that the quality and completed work amount clearly indicated in the relevant agreement are fully met.

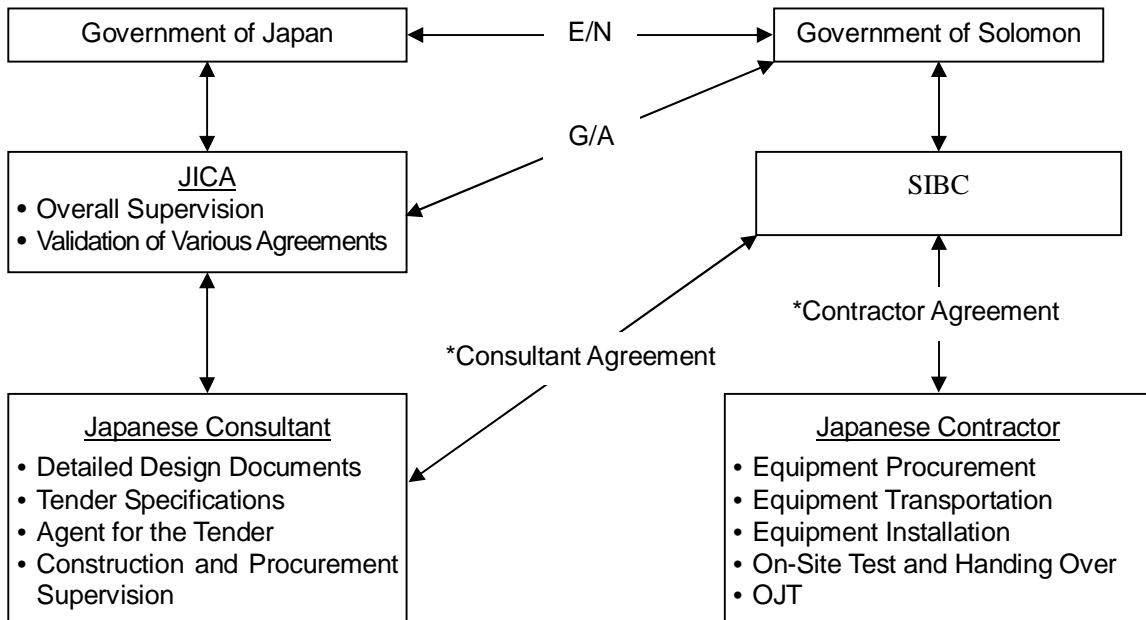
- ① Checking of the equipment specifications
- ② Checking of the shop drawings and working drawings of the equipment
- ③ Witnessing of the plant inspection or checking of the plant inspection results
- ④ Checking of the installation manuals
- ⑤ Checking of the equipment test operation, adjustment, testing and inspection manuals
- ⑥ Supervision of the on-site equipment installation work and witnessing of the test operation, adjustment, testing and inspection of the equipment

3) Labor Management

The consultant will fully consult the safety manager of the contractor to prevent any labour accidents and injury or accidents involving third parties during the construction work period. The most important points relating to on-site safety supervision are listed below.

- ① Preparation of work safety management rules and selection of a safety manager
- ② Establishment of travelling routes for work vehicles and transport machinery and strict enforcement of safe driving
- ③ Implementation of welfare measures and rest days for labourers
- ④ Security measures for all personnel during the project period

Figure 2-2-5 shows the relationship between the parties involved in the Project.



* Note : Both the consultant agreement and the equipment procurement agreement (contractor agreement) must be validated by the JICA.

Figure 2-2-5 Project Implementation System

(2) Work Supervisor

The contractor will procure and deliver the equipment and will also conduct the equipment installation work. As the contractor must ensure that the local subcontractor properly understands the work schedule, quality and completed work amount control and the required safety measures as set forth in the contractor agreement, it will dispatch an engineer(s) with previous experience of similar work abroad to Solomon Islands to provide appropriate guidance for the local subcontractor.

2-2-4-5 Quality Control Plan

The factory inspection before shipment will determine whether or not the equipment meets the technical specifications, dimensions, function and electrical/mechanical characteristics specified in the relevant tender documents. At the installation, the Acceptance Test for handing-over will be conducted for each equipment so that normal operation/functioning can be checked after actual installation.

2-2-4-6 Procurement Plan

The equipment to be procured under the Project is not manufactured in Solomon Islands and will be procured from either Japan or a third country as shown in Table 2-2-3.

Table 2-2-3 Feasible Equipment and Material Procurement Sources

No.	Item	Procurement Source		
		Japan	Solomon Islands	Third Country
1	Short Wave Transmitter System	O	-	O
2	Short Wave Antenna System	O	-	O
3	Power Supply Equipment for Transmitter	O	-	O
4	Disaster Prevention Broadcasting Communications Radio System	O	-	O
5	SIBC Equipment (Program Transmission Link Equipment)	O	-	O
6	Maintenance Equipment and Tools	O	-	O
7	Spare Parts	O	-	O
8	Consumable Parts	O	-	O

Should the Project actually be implemented, it is believed that the guarantee period offered by the equipment manufacturers will be one year. It will be necessary for the Solomon Islands side to continually appropriate the budget for the procurement of consumable and other parts in the post-project period to ensure the proper operation and maintenance of the new equipment.

2-2-4-7 Operational Guidance Plan

The SIBC has been operating and maintaining the existing equipment, including transmitter and broadcasting equipment, and its technical staff members have sufficient technical expertise to operate and maintain the said equipment. However, they are not very familiar with the operation and maintenance of the latest solid state transmitter to be procured under the Project. It will, therefore, be necessary for Japanese engineers to provide technical guidance by means of OJT and others on the operation and maintenance of the new equipment and how to conduct routine checks and to deal with breakdowns after the installation, adjustment and test operation of the equipment by the Japanese side.

2-2-4-8 Implementation Schedule

The planned project implementation schedule based on Japan's Grant Aid Guidelines is shown in Table 2-2-4. As the construction work and equipment installation work will proceed side by side after the detailed design, the required period to complete the Project, including the detailed design, will be 18.5 months.

Table 2-2-4 Project Implementation Schedule

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
Detailed Design and Tender	■																	
		■																
			■															
				■														
					■													
Equipment Procurement and Installation		(Preparation of the production and working drawings of SW Antenna and their approval by the Solomon)																
		(Preparation of the production and working drawings of SW Antenna and their approval)																
		(Transportation)										(Foundation work)						
		(Preparation of the production and working drawings of Broadcasting Equipments and their approval)										(Transportation)						
												(Equipment Installation)			■			
												(Transportation)				■		

2-3 Obligations of the Recipient Country

The scale of the buildings and specifications of the equipment under the Project are planned not to exceed the current manpower, technical capability and maintenance capability of the SIBC. Among the undertakings of the Solomon Islands side listed in Table 2-2-2 – Renovation Work of Transmitting House will be conducted by SOLMAS while weeding and the removal of obstacles at the new antenna site will be conducted by staff of SIBC. It is judged that all of this work can be conducted with little difficulty. In addition, the Government of Solomon Islands will be responsible for the following matters.

- (1) Exemption of the equipment, etc. required for the Project and Japanese nationals dispatched to Solomon Islands in connection with the Project from customs duties and internal taxes and accordance of various facilities to Japanese nationals to assist the execution of their assignment

- (2) Exemption of the equipment and materials to be procured under the Project and Japanese corporations and Japanese nationals from business tax and other internal taxes
- (3) Bearing of the commission for the opening of an account and for the A/Ps at a Japanese bank handling foreign exchange
- (4) Bearing of all expenses other than those to be borne by Japan's grant aid necessary for the implementation of the Project
- (5) Appointment of local engineers to which operation and maintenance skills will be transferred under the Project and witnessing of the progress check of the construction work and inspection of the performance and functions of the equipment
- (6) Ensuring of the appropriate use and maintenance of the facilities and equipment which are constructed or procured by Japan's grant aid

For the implementation of the Project, including those matters listed above, the Solomon Islands side will be required to finance the cost described later in 2-5-1-1. It has already been confirmed that the Office of the Prime Minister will secure the necessary budget to cover such cost. Given the fact that the size of the required funding is not particularly large compared to the normal funding size for the maintenance of public facilities in the annual budget, it is judged that this financial requirement will not be a problem or burdensome for the implementation of the Project.

2-4 Project Operation Plan

(1) Maintenance System

In order for the SIBC to properly perform the functions expected of a public broadcaster, it will be necessary for the SIBC to allocate a sufficient budget for the procurement and renewal of the equipment in a systematic manner. The maintenance plan for the equipment to be procured under the Project will, therefore, incorporate the periodic renewal of equipment. Table 2-4-1 shows such plan.

Consumables, such as air-filters for the SW transmitter and various (printed boards), which require periodic replacement because of constant use will be replaced every year or up to every five years. The fuses and fan units, etc. for the equipment will be replaced as soon as they are worn or damaged. The SW transmitter proper, programme input equipment and other principal equipment will be renewed en-masse 10 years after use in consideration of their depreciation period and technological innovation.

Table 2-4-1 Maintenance Plan

Timing of Renewal	Subject Parts
Every year - every five years	Air filters; various (printed) boards; UPS
Worn or damaged	Fuses; fan units; surge absorber for isolation transformer
After 10 years	SW transmitter; programme input equipment; Disaster Prevention Equipment

(2) Daily Checks

The improved reliability and durability of electronic equipment and the decreased number of components due to technological innovation in recent years have resulted in fewer incidents of the malfunctioning of equipment. Because of such an improved state of operation, the interval for equipment maintenance work is becoming longer in Japan. Nevertheless, daily and periodic checks/inspections are still essential to ensure the effective use of equipment over a long period of time. These inspections are particularly important for organizations like the SIBC which cannot frequently renew equipment because of financial constraints. Accordingly, it is imperative to formulate the minimum maintenance standards for daily and periodic checks to consolidate a system to prevent equipment breakdowns. Table 2-4-2 shows the daily and periodic check items of the equipment to be procured under the Project and the instruments which will be required for checking.

Table 2-4-2 Equipment Check Items and Required Instruments

Type of Check	Check Item	Required Instruments
Daily check; pre-work check	Visual check of various meters and fault displays	Audio monitor
	Visual check of connections	Tool kit
Six month check (characteristic test)	Measuring of the characteristics of audio equipment (frequency characteristic; S/N ratio); distortion; level diagramme	Distortion meter/ oscillator; oscilloscope
	Power source; various voltage levels	Oscilloscope; tester; high voltage probe
Annual check (characteristic test)	Transmission frequency Antenna characteristics Receiving field strength	Spectrum Analyzer Liner Detector Spectrum Analyzer

2-5 Project Cost Estimation

2-5-1 Initial Cost Estimation

The breakdown of the cost to be borne by the Solomon Islands side based on the division of work between the two countries is shown in the table below based on the estimation conditions given.

2-5-1-1 Cost to be Borne by the Solomon Islands Side

The estimated project cost for the Solomon Islands side is approximately SBD 162,500 (approximately ¥1.49 million).

- | | | |
|--|-------------|--------------------------|
| 1. Weeding and removal of obstacles from the new antenna site: | 800 SBD | (approx. ¥ 0.01 million) |
| 2. License fee for HF Radio (per year): | 4,000 SBD | (approx. ¥ 0.04 million) |
| 3. Erection of perimeter fencing and a gate at the new antenna site: | 116,000 SBD | (approx. ¥ 1.06 million) |
| 4. Arrangement fee for the A/P facility | 41,700 SBD | (approx. ¥ 0.38 million) |

2-5-1-2 Estimation Conditions

- 1) Timing of estimation: November, 2010
- 2) Foreign exchange rates: US\$ 1 = ¥86.61
SBD 1 = ¥9.18
- 3) Construction and procurement periods: The detailed design, facility construction and equipment procurement and installation periods are those shown in the Project Implementation Schedule (Table 2-2-4).

2-5-2 Operation and Maintenance Cost

For the management of the SIBC for many years to come, it will be necessary to renew the equipment to be procured under the Project in due course. The maintenance plan for the equipment must, therefore, take the periodic equipment renewal cost into consideration in addition to the routine maintenance cost of the existing and new equipment.

2-5-2-1 Conditions for Maintenance Cost Estimation

The operating expenditure and income of the SIBC are estimated based on the conditions described below.

(1) Expenditure

The equipment to be procured under the Project will commence operation in 2012 and the annual maintenance cost is estimated in the following manner.

1) Personnel Cost (for Additional Staff Members)

The technical section of the SIBC currently consists of one Manager Technical, one Supervisor Technical and five technicians. It is necessary for SIBC to employ supplementary staffs who can support 24 hours broadcasting for Disaster Prevention in the program management section. The technical section can manage existing equipment under the current team.

For that purpose, the contract of night security guard will be modified in 2011 and supplementary night security guards will be employed from 2012 to establish the 24 hours communication network for Disaster Prevention Broadcasting under the supervision of Manager Program. Therefore, the personnel cost of modified night security service is estimated SBD 16,900 (approx. ¥0.16 million) a year in 2011. Due to the new employment of night securities from 2012, the personnel cost is estimated $5 \text{ staffs} \times \text{SBD } 500 \text{ (a week)} \times 53 \text{ weeks} = \text{SBD } 130,000$ (approx. ¥1.20 million).

2) Building Maintenance

Table 2-5-1 shows the estimated maintenance cost of the electrical and air-conditioning systems at the radio station building and the transmitter house and also the maintenance cost of the new antenna mast, all of which will be constructed under the Project. The inspection and maintenance of the air-conditioning units will be of particular importance to ensure the proper functioning of the transmitter which generates much heat while painting of the antenna mast will be essential to prevent salt damage in view of the coastal location of the mast.

Table 2-5-1 Building Maintenance Cost

(Unit: SBD)

Item	Unit Cost	Every Year	
		Q'ty	Amount
Maintenance of Air Conditioning	5,800	1	5,800
Repairing Electrical Facility	8,500	1	8,500
Painting Antenna Mast	66,500	1	66,500
Total			80,800

3) Spare Parts

Table 2-5-2 shows the detailed spare parts to be procured by the SIBC in the five year period after the implementation of the Project. The replacement/renewal of various cables and microphones almost every year will be required because of their frequent use for news gathering, interviews and programme recording. Quantities equivalent to one year's supply or to conduct the repair of the first breakdowns will be procured under the Project. Technology transfer by Japanese engineers to SIBC engineers or those of other related government offices in Solomon Islands is planned as part of the OJT which will be conducted during the on-site construction period on how to replace such spare parts as the air filter for the transmitter. It is highly desirable for the SIBC to secure sufficient funds to procure spare parts every year to continue appropriate maintenance.

Table 2-5-2 Spare Parts

(Unit: SBD)

Item	Unit Cost	Every Year		Every 3 Years		Every 5 Years	
		Q'ty	Amount	Q'ty	Amount	Q'ty	Amount
Cables	830	3	2,490				
Microphone	1,670	1	1,670				
Headphone	1,670	1	1,670				
Switches, Connectors, etc.	4,160	1	4,160				
Fan Unit for TX	4,160	1	4,160				
Air Filter for TX	4,160	2	8,320				
Various Fuses	1,670	5	8,350				
Surge Absorber for Isolation Transformer	8,320	1	8,320				
PA Module for TX	8,320		0	3	24,960		
RF Driver Unit for TX	8,320		0	3	24,960		
Power Supply Module for TX	8,320		0	3	24,960		
Various Printed Board	16,660		0	3	49,980		
FET for PA Module	8,320		0	3	24,960		
AVR	41,630					1	41,630
UPS	16,660		0			3	49,980
Total			39,140		149,820		91,610

4) Power Consumption (for additional)

The payment method for electricity was changed in Solomon Islands from 2009. SIBC was charged SBD 3.91/ kWh by SIEA. According to the transmitting power, the additional power consumption for new equipment is estimated 17.5 kW. Therefore, additional cost of electricity is estimated as follows.

$$17.5 \text{ kW} \times \text{SBD } 3.91 \times 24 \text{ hours} \times 365 \text{ days} = \text{SBD } 599,403$$

5) Reserve Fund for Equipment Renewal

The equipment to be procured under the Project will commence operation in 2012. It is desirable for the Solomon Islands side to set aside some money to create a reserve fund (SBD 8,825,000; see Table 2-5-3) with a view to the renewal of the principal equipment in 2021 after 10 years of operation. Given the present financial situation of the SIBC, such saving may be made in the form of the allocation from the special budget of the Government of Solomon Islands or the broadcasting fee which is paid by operating of Disaster Prevention Broadcasting along the MOU signed between relevant organizations. Table 2-5-3 shows the breakdown of the equipment renewal cost after 10 years of operation.

Table 2-5-3 Equipment Renewal Cost

(Unit: SBD)

Item	Unit Price	Q'ty	Amount
Transmitter	4,163,000	1	4,163,000
Guy wires and Insulators	832,000	1	832,000
Studio Equipment	3,330,000	1	3,330,000
Air Conditioning	250,000	1	250,000
Back up Generator	250,000	1	250,000
Total			8,825,000

6) Training Cost

The SIBC will require a training budget for not only improvement of the maintenance skills of the technicians as mentioned earlier but also for the general development of its human resources, including improved know-how about especially disaster prevention broadcasting and broader social knowledge for reporters (journalists) and announcers. Table 2-5-4 shows the future cost of training in which the SIBC will regularly participate.

Table 2-5-4 Training Cost

(Unit: SBD)

Training Plan (): Number of person	2010	2011	2012	2013	2014	2015	2016	2017
1. Oversea Training for the Radio Broadcasting by own fund (1)		58,000		58,000		58,000		58,000
2. Workshop and Training in country(4)	23,400	23,400	23,400	23,400	23,400	23,400	23,400	23,400
3. Oversea Training for the Radio Broadcasting by ODA (1)	11,700	11,700	11,700	11,700	11,700	11,700	11,700	11,700
Total Cost	35,100	93,100	35,100	93,100	35,100	93,100	35,100	93,100

(2) Income

The current main income sources of the SIBC are radio broadcasting operation, including parliamentary broadcasting paid by the government, the message service, and radio advertisements (CM) as well as a selling of CD and DVD as part of the SIBC's businesses. With the completion of the Project, additional income can be anticipated from the message service by islander who can not hear the radio before completion of the Project. From 10% to 20% of increased income is anticipated after completion of the Project.

(3) Government Subsidy

Government subsidy is basically allocated SBD 500,000 to SIBC, but Solomon Islands side will consider additional subsidy from the development budget in four years from 2011 in order to reserve

fund for equipment renewal. It is estimated that the subsidy to SIBC is SBD 3,000,000 in 2011, the year of new equipment installation. After 2012, the subsidy will be reduced by 50% and the subsidy will be allocated as usual from 2015. Consequently, SIBC can reserve enough fund for equipment renewal while repayment of loan 10 years later.

2-5-2-2 Estimation Results

Table 2-5-5 shows the projected income and expenditure up to 2020, i.e. 10 years after the completion of the Project, when principal equipment is scheduled for renewal.

In Solomon Islands, the soaring inflation rate (according to IMF, average of inflation rate in the past 5 years is 10%) is reflected to major revenue and expenditure. But it is necessary to hold down expenditure in view of the financial situation in the past 5 years. Therefore, increased personnel cost is estimated to be 5% as same as growth rate of GDP. On the other hands, income by FM in Honiara and income by Gizo and Lata was anticipated as same as growth rate of inflation, but the growth rate of income is made same as the growth rate of GPD. The commercial income by SW broadcasting is made 10 % increase as same as the past results. Slight increase of revenue from program broadcasting and message service is anticipated.

In the case of maintenance of the transmitter, it is necessary to secure budget, shown in the Financial Plan, because the transmitter has to be used in the transmitting house where it is managed the air conditioning. Therefore, Government of Solomon Islands has to support Disaster Prevention Broadcasting and secure enough budgets for Disaster Prevention Broadcasting..

Table 2-5-5 Financial Plan (projection until 2021)

				1	2	3	4	5	6	7	8	9	10	
No	Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
					Completion of the Project									
A.	Revenue													
(1)	Commercial Radio(Spot Advertising)	1,406.0	1,546.6	1,701.3	1,871.4	2,058.5	2,264.4	2,490.8	2,739.9	3,013.9	3,315.3	3,646.8	4,011.5	4,412.6
(2)	Program Broadcasting (Parliament Church etc)	320.0	320.0	320.0	320.0	352.0	369.6	369.6	369.6	388.1	388.1	388.1	388.1	388.1
(3)	Messages Broadcasting (Birthday greeting etc)	928.0	1,020.8	1,122.9	1,235.2	1,630.4	1,793.5	1,972.8	2,170.1	2,387.1	2,625.8	2,888.4	3,177.2	3,495.0
(4)	Emergency Broadcasting fee (from the Gov.)			17.0	450.0	495.0	544.5	599.0	658.8	724.7	797.2	876.9	964.6	1,061.1
(5)	PA System & Equipment Hire	134.0	134.0	134.0	134.0	134.0	134.0	134.0	134.0	140.7	140.7	140.7	140.7	140.7
(6)	Sales Merchandise (Production Fee, Daving Fee etc)	396.0	435.6	479.2	527.1	579.8	637.8	701.5	771.7	848.9	933.7	1,027.1	1,129.8	1,242.8
(7)	Advertising Fee of Honiara FM	211.0	221.6	243.7	268.1	294.9	324.4	356.8	392.5	431.7	474.9	522.4	574.6	632.1
(8)	Advertising Fee of Rata SIBC	14.0	14.7	16.2	17.8	19.6	21.5	23.7	26.0	28.6	31.5	34.7	38.1	41.9
(9)	Advertising Fee of Gizo SIBC	63.0	66.2	72.8	80.0	88.0	96.9	106.5	117.2	128.9	141.8	156.0	171.6	188.7
(10)	Others(Project)	142.0	156.2	171.8	189.0	207.9	228.7	251.6	276.7	304.4	334.8	368.3	405.1	445.7
(11)	Carry-over		-0.0	-0.0	91.9	374.1	201.9	-738.1	-1,960.7	-2,710.4	-3,140.5	-3,228.4	-2,539.4	-1,308.1
	TOTAL [A]	3,613.3	3,915.6	4,278.7	5,184.4	6,234.2	6,617.0	6,268.2	5,695.9	5,686.6	6,043.4	6,821.0	8,462.1	10,740.6
B.	Expenditure													
(1)	Salaries and Allowances	2,136.2	2,243.0	2,355.1	2,602.9	2,733.0	2,869.7	3,013.2	3,163.8	3,322.0	3,488.1	3,662.5	3,845.7	4,037.9
(2)	Electrical Fee for SIEA	761.5	1,125.4	1,125.4	1,125.4	1,125.4	1,125.4	1,125.4	1,125.4	1,181.7	1,181.7	1,181.7	1,181.7	1,181.7
(3)	Others(Spair Parts, Renovation,)	1,798.1	1,888.0	1,999.3	2,099.3	2,204.2	2,314.5	2,430.2	2,551.7	2,679.3	2,813.2	2,953.9	3,101.6	3,256.7
(4)	Maintenance Cost for the Project	0.0	0.0	40.0	798.1	776.2	842.9	947.8	842.9	911.0	1,044.5	806.2	872.9	977.8
1)	Building (transmitting Station, Antenna)	0.0	0.0	0.0	92.0	92.0	92.0	92.0	92.0	92.0	92.0	92.0	92.0	92.0
2)	Spare Parts (SW Transmitter Communication Net)	0.0	0.0	0.0	0.0	44.8	44.8	216.4	44.8	149.6	216.4	44.8	44.8	216.4
3)	Electrical Fee for SIEA	0.0	0.0	0.0	599.4	599.4	599.4	599.4	599.4	629.4	629.4	629.4	629.4	629.4
4)	Training Fee	0.0	0.0	40.0	106.7	40.0	106.7	40.0	106.7	40.0	106.7	40.0	106.7	40.0
(5)	debt-repayment			167.0	175.4	184.1	193.3	203.0	213.1	223.8	235.0	246.7	259.1	272.0
	TOTAL [B]	4,695.8	5,256.4	5,686.9	6,801.0	7,023.0	7,345.8	7,719.5	7,897.0	8,317.7	8,762.5	8,851.0	9,260.9	9,726.1
C	A-B=C	-1,082.5	-1,340.8	-1,408.1	-1,616.6	-788.8	-728.8	-1,451.4	-2,201.1	-2,631.1	-2,719.1	-2,030.0	-798.8	1,014.5
D	Governmental Budget for Compensation	5.0	500.0	1,500.0	3,000.0	2,000.0	1,000.0	500.0	500.0	500.0	500.0	500.0	500.0	500.0
E	E=C+D	-1,077.5	-840.8	91.9	1,383.4	1,211.2	271.2	-951.4	-1,701.1	-2,131.1	-2,219.1	-1,530.0	-298.8	1,514.5
F	Shaehold Contributions/equity	1,077.5	840.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G	Reserve Fund (Depreciation)	0.0	0.0	0.0	1,009.3	1,009.3	1,009.3	1,009.3	1,009.3	1,009.3	1,009.3	1,009.3	1,009.3	1,009.3
H	Total Reserve Fund				1,009.3	2,018.7	3,028.0	4,037.3	5,046.7	6,056.0	7,065.3	8,074.7	9,084.0	10,093.3

2-6 Important Points Regarding Project Implementation

The tax exemption procedure for the equipment to be procured under the Project will proceed in the following manner. The Solomon Islands side must ensure the swift implementation of this procedure as any delay may have an adverse impact on the progress of the Project.

<Tax exemption procedure>

Before shipment of the Equipment, the Japanese Contractor shall submit "the Master List of the Equipment" to the Office of the Prime Minister and its copy to SIBC.

The Office of the Prime Minister will submit applications for Tax Exemption of the Equipment to Revenue Office, Ministry of Finance and Treasury with the Master List of the Equipment.

The approval will be notified from Revenue Office to the Japanese Contractor through Office of the Prime Minister / SIBC.

CHAPTER 3

PROJECT EVALUATION AND RECOMMENDATIONS

Chapter 3 Project Evaluation and Recommendations

3-1 Project Effects

Current status and problems	Measures to be taken in the proposed project	Quantities effects	Qualitative effects
<p>1. The Solomon Islands consists of six major islands and about 100 small islands in the South Pacific. It is always exposed to high temperatures and substantial rainfall and consequently to risks of such natural disasters as eruptions, volcanic earthquakes, tsunamis, tidal waves, cyclones and floods.</p> <p>2. Information communications infrastructure is yet to be developed except for some urban areas. Therefore, public broadcasting is essential for islanders who settle in the wide area.</p> <p>3. Current radio broadcasting service is not sufficiently provided due to partial suspension caused by failures of transmitters and temporary suspension because of bad electric power conditions.</p>	<p>The following equipment will be installed.</p> <ol style="list-style-type: none"> 1. Short Wave Transmitter System 2. Short Wave Antenna System 3. Power Supply Equipment for Transmitter 4. Disaster Prevention Broadcasting Communication Radio System 5. Program Transmission Link Equipment 6. Maintenance Equipment and Tools 7. Spare Parts 8. Consumable Parts 	<p>(1) Radio Broadcasting Period to all over the Solomon Islands</p> <p>Recently, the SW radio broadcasting has been unstable during the daytime due to the breakdown of the SW transmitter. It will be possible to broadcast programs to all over the Solomon Islands for 24 hours by conducting the Grant Project.</p> <p>(2) Speeding up the broadcasting of emergency and disaster prevention information</p> <p>The project will develop a communication system among organizations concerned with disaster prevention broadcasts, thereby allowing prompt coordination among them in case of emergency.</p>	<p>(1) Reduction of damage from natural disasters</p> <p>With the servicing of SW radio, information can be relayed to many islanders, giving them advance information on disaster prevention. With this, reduced damage from natural disasters can be expected.</p> <p>(2) Increased awareness with public broadcasting</p> <p>The provision of diverse awareness programs as a public broadcaster will be made available to the islanders.</p> <p>Awareness regarding disaster prevention and health and sanitation will be raised, expectedly improving the lives of the people.</p>

3-2 Recommendations

In order to advance the project as planned, the following items must be implemented by the recipient country.

(1) Securing personnel and training

SIBC is not manned at night. Therefore, in order to create an around-the-clock disaster warning system, it will be necessary to secure required personnel. In addition, necessary training will be implemented and employees' capabilities will be enhanced in the field of disaster broadcasting.

(2) Works to be undertaken by the recipient country

- 1) Provision of temporary storage area near the project sites
- 2) Transmitting station building repairs
- 3) Clearance of weeds and other obstacles on the proposed site for the new antenna
- 4) Securing a waste disposal area for removed materials
- 5) Installation of a fence surrounding the new transmitting antenna

(3) Acquiring skills for handling upgraded equipment

When Japanese construction contractors carries out the work, they will implement training in specialized knowledge and handling broadcasting equipment for the Solomon Island engineers, and will help create a plan for operation and maintenance of the equipment, as well as for future broadcasting. For this, arrangements will be made so that the necessary employees participate in the training.

(4) Implementing operation and maintenance

The repair parts necessary for the equipment, including the broadcasting equipment procured in this project, will be obtained and parts will be replaced in an optimal manner. This will prevent broadcasting accidents and allow the equipment to be continually used over the long term.

(5) Building maintenance

The current operation and maintenance system will be continued to sustain the radio broadcasting building and transmitter building. Also considering program production and transmitting equipment conditions, attention will be paid to power supply and air conditioning quality.

(6) Promoting the production of awareness programs

Putting the training currently being done at SIBC into practice, the independent production of awareness programs on education and health matters will be encouraged in order to enhance the skills of employees.

APPENDICES

APPENDIX 1

MEMBER LIST OF THE STUDY TEAM

1. Member List of the Study Team

Name	Work Assignment	Position
Mr. Taro OKAWA	Leader/ Project Coordinator	Assistant Director for Transportation and ICT Division 1, Economic Infrastructure Department, JICA
Mr. Tokuro WATANABE	Leader/ Project Coordinator (Explanation of Draft Final Report)	Resident Representative, Solomon Islands Office, JICA
Mr. Kiyofusa TANAKA	Chief Consultant/ Operation & Maintenance Planning	Yachiyo Engineering Co., Ltd.
Mr. Naoaki NAMBU	Sub Chief Consultant/ Disaster Prevention Planning	Yachiyo Engineering Co., Ltd.
Mr. Masuo WADA	Equipment Planning	Yachiyo Engineering Co., Ltd.
Mr. Takashi NAKAMURA	Procurement & Construction Planning/ Cost Estimation/ Steel Tower Facility	Yachiyo Engineering Co., Ltd.
Mr. Susumu IMAI	Procurement & Construction Planning/ Cost Estimation/ Steel Tower Facility (Explanation of Draft Final Report)	Yachiyo Engineering Co., Ltd.
Mr. Yoshio NAKAGAWA	Social Condition Research	Yachiyo Engineering Co., Ltd.

APPENDIX 2

STUDY SCHEDULE

(1) Basic Design Study

No	Date		Leader/ Project Coordinator	Consultant Team					Stay at
				Chief Consultant/ Operation & Maintenance Planning	Sub Chief Consultant/ Disaster Prevention Planning	Equipment Planning	Procurement & Construction Planning/ Cost Estimation Steel Tower Facility	Social Condition Research	
				JICA Taro OKAWA	Kiyofusa TANAKA	Naoaki NAMBU	Masuo WADA	Kouji NAKAMURA	
1	20 Sep.	Sun		Trip [Tokyo (21:10) → Brisbane(07:05)+1, JL761]					On Board
2	21 Sep.	Mon		Trip [Brisbane (09:30) → Honiara (13:30), IE701] • Meeting with Sub-Contractor for Topographic survey and Soil investigation					Honiara
3	22 Sep.	Tue		<ul style="list-style-type: none"> Courtesy call to JICA Solomon Islands Office Courtesy call to Solomon Islands Broadcasting Corporation (SIBC), and submission of and discussion on the Survey schedule, Inception Report and Questionnaires Courtesy call to; <ul style="list-style-type: none"> National Disaster Management Office (NDMO) Embassy of Japan in Solomon Islands Ministry of Environment Conservation and Meteorology Solomon Islands Meteorological Service (SIMS) Survey of Transmitting Station of SIBC Meeting with Sub-Contractor for Topographic survey and Soil investigation 					Honiara
4	23 Sep.	Wed		<ul style="list-style-type: none"> Courtesy call to; <ul style="list-style-type: none"> Office of the Prime Minister Ministry of Development Planning and Aid Coordination AusAID Survey of existing facilities of SIBC Meeting with Sub-Contractor for Survey of Social Conditions 					Honiara
5	24 Sep.	Thu		Trip [Honiara (07:00) → Auki (07:30), IE530] • Courtesy call to <ul style="list-style-type: none"> Disaster Management Province Office Telekom Auki Office 	<ul style="list-style-type: none"> Courtesy call to; <ul style="list-style-type: none"> Telekom Radio Spectrum Management Office Electricity Authority 	Ditto	Trip [Honiara (07:00) → Auki (07:30), IE530] • Survey of the signal strength of radio broadcasting	Auki/ Honiara	
6	25 Sep.	Fri		<ul style="list-style-type: none"> Survey at the site 	<ul style="list-style-type: none"> Courtesy call to; <ul style="list-style-type: none"> UNDP RAMSI 	Trip [Honiara (07:00) → Gizo (08:30), IE368] • Courtesy call to; <ul style="list-style-type: none"> SIBC Telekom <ul style="list-style-type: none"> Survey of existing facilities of MW Radio Broadcasting 	<ul style="list-style-type: none"> Survey at the site 	Auki/ Honiara/ Gizo	
7	26 Sep.	Sat		Trip [Auki (07:45) → Honiara (08:15), IE533] • Internal Meeting	<ul style="list-style-type: none"> Internal Meeting Data Sorting 	<ul style="list-style-type: none"> Survey at the site 	Trip [Auki (07:45) → Honiara (08:15), IE533] • Internal Meeting	Honiara/ Gizo	
8	27 Sep.	Sun		Trip [Honiara (07:00) → Tingoa (08:00), IE322] • Survey at the site	<ul style="list-style-type: none"> Data Sorting 	<ul style="list-style-type: none"> Data Sorting 	Trip [Honiara (07:00) → Tingoa (08:00), IE322] • Survey at the site	Tingoa/ Honiara/ Gizo	
9	28 Sep.	Mon		<ul style="list-style-type: none"> Courtesy call to Telekom Survey at the site 	<ul style="list-style-type: none"> Courtesy call to; <ul style="list-style-type: none"> Ministry of Home Affairs Asian Development Bank Discussion with NDMO 	Trip [Gizo (11:10) → Honiara (12:50), IE391]	<ul style="list-style-type: none"> Survey of the signal strength of radio broadcasting 	Tingoa/ Honiara	

No	Date	Leader/ Project Coordinator JICA	Consultant Team					Stay at
			Chief Consultant/ Operation & Maintenance Planning	Sub Chief Consultant/ Disaster Prevention Planning	Equipment Planning	Procurement & Construction Planning/ Cost Estimation Steel Tower Facility	Social Condition Research	
			Taro OKAWA	Kiyofusa TANAKA	Naoaki NAMBU	Masuo WADA	Kouji NAKAMU RA	
10	29 Sep.	Tue	Trip [departure from Tokyo]	• Survey at the site	• Discussion with; - Ministry of Environment Conservation and Meteorology - SIMS	• Confirmation of the progress of Topographic Survey and Soil Investigation • Preparation of Equipment Specifications and Drawings	• Survey at the site	Tingoa/ Honiara
11	30 Sep.	Wed	Trip [arrive at Honiara] • Meeting at JICA Solomon Islands Office • Courtesy call to Embassy of Japan in Solomon Islands	• Survey at the site	• Discussion with SIBC • Meeting with JICA member	• Ditto	• Survey at the site	Honiara/ Lara
12	01 Oct.	Thu	• Courtesy call to; - SIBC - Office of the Prime Minister - NDMO	Trip [Tingoa (08:30) → Honiara (09:30), Charter Flight] • Meeting with JICA member	(Same as JICA)	Trip [Honiara (08:30) → Lata (11:45), IE316] • Courtesy call to; - SIBC - Telekom - Disaster Management Province Office	• Trip [Tingoa (08:15) → Honiara (09:15), IE321] • Meeting with JICA member	Honiara/ Lata
13	02 Oct.	Fri	• Courtesy call to - Ministry of Development Planning and Aid Coordination - Ministry of Environment Conservation and Meteorology - Survey of Transmitting Station and existing facilities of SIBC			• Survey of existing facilities of MW Radio Broadcasting	• Confirmation of the progress of Survey of Social Conditions	Honiara/ Lata
14	03 Oct.	Sat	• Preparation of M/D	Trip [Honiara (06:30) → Buala (07:10), IE372] • Survey at the site	• Preparation of M/D	• Survey at the site	• Data Analysis	Buala/ Honiara/ Lata
15	04 Oct.	Sun	• Preparation of M/D	• Survey of Community FM	• Preparation of M/D • Internal meeting	• Survey at the site	• Data Analysis	Buala/ Honiara/ Lata
16	05 Oct.	Mon	• Courtesy call to; - Telekom - Ministry of Home Affairs	• Courtesy call to; - Disaster Management Province Office - Telekom Trip [Buala (17:00) → Honiara (17:40), IE371]	(Same as JICA)	• Survey at the site	Trip [Honiara (06:30)→Kirakira (07:30), IE326] • Data Analysis of the signal strength of radio broadcasting	Honiara/ Lata/ Kirakira
17	06 Oct.	Tue	• Meeting with SIBC on M/D			Trip [Lata (09:50) → Honiara (12:10), IE317]	• Survey at the site	Honiara/ Kirakira
18	07 Oct.	Wed	• Meeting with SIBC on M/D			• Preparation of Equipment Specifications and Drawings	Trip [Kirakira (08:20)→Honiara (10:10), IE311]	Honiara
19	08 Oct.	Thu	• Meeting with SIBC on M/D • Signing of M/D with SIBC					Honiara
20	09 Oct.	Fri	• Report to Embassy of Japan in Solomon Islands and JICA Solomon Islands Office Trip [departure from Honiara]					Honiara
21	10 Oct.	Sat	Trip [arrive at Tokyo]	• Preparation of Field Report				Honiara
22	11 Oct.	Sun		Trip [Honiara (06:30) → Taro (09:00), IE352] • Survey at the site	• Preparation of Field Report • Internal Meeting			Taro/ Honiara

No	Date		Leader/ Project Coordinator JICA	Consultant Team			Social Condition Research	Stay at
				Chief Consultant/ Operation & Maintenance Planning	Sub Chief Consultant/ Disaster Prevention Planning	Equipment Planning		
			Taro OKAWA	Kiyofusa TANAKA	Naoaki NAMBU	Masuo WADA	Kouji NAKAMURA	Yoshio NAKAGAWA
23	12 Oct.	Mon		<ul style="list-style-type: none"> Courtesy call to Telekom Survey at the site 	<ul style="list-style-type: none"> Meeting with SIBC on Field Report 		Taro/Honiara	
24	13 Oct.	Tue		Trip [Taro (12:15) → Honiara (14:10), IE389]	<ul style="list-style-type: none"> Meeting with SIBC on Field Report 		Honiara	
25	14 Oct.	Wed		<ul style="list-style-type: none"> Meeting with SIBC on Field Report 		Honiara		
26	15 Oct.	Thu		<ul style="list-style-type: none"> Meeting with Ministry of Lands, Housing and Survey Obtaining the approval on Field Report from SIBC Report to Embassy of Japan in Solomon Islands and JICA Solomon Islands Office 		Honiara		
27	16 Oct.	Fri		Trip [Honiara (14:30) → Brisbane (16:45), IE700]		Brisbane		
28	17 Oct.	Sat		Trip [Brisbane (08:45) → Tokyo (17:05), JL762]				

(2) Basic Design Study

No.	Date		JICA	Consultant team			Stay at
				Chief Consultant/ Operation & Maintenance Planning	Equipment Planning	Procurement & Construction Planning/ Cost Estimation	
			Kiyofusa TANAKA	Masuo WADA	Susumu IMAI		
1	11 Dec.	Sat	Trip [Tokyo (20:00) → Sydney(07:40)+1, JL771]			On Board	
2	12 Dec.	Sun	Trip [Sydney (10:35) → Brisbane (11:05), QF518]			Brisbane	
3	13 Dec.	Mon	Trip [Brisbane (09:30) → Honiara (13:45), IE701] <ul style="list-style-type: none"> Meeting at JICA Solomon Islands Office Courtesy call to Office of the Prime Minister and Solomon Islands Broadcasting Corporation (SIBC), and Explanation and Discussion on Draft Basic Design Study Report. Confirmation alternative project site with SIBC and Ministry of Land. 			Honiara	
4	14 Dec.	Tue	<ul style="list-style-type: none"> Meeting with SIBC about Component of the project and the alternative project site. Meeting with SIBC and National Disaster Management Office (NDMO) and Solomon Islands Meteorological Service, and Explanation and Discussion on Draft Basic Design Study Report. 			Honiara	
5	15 Dec.	Wed	<ul style="list-style-type: none"> Survey at the project site for topological survey and transmitting house. Meeting with topological surveyor. 			Honiara	
6	16 Dec.	Thu	<ul style="list-style-type: none"> Meeting with SIBC on M/D 			Honiara	
7	17 Dec.	Fri	<ul style="list-style-type: none"> Signing of M/D with SIBC 			Honiara	
8	18 Dec.	Sat	<ul style="list-style-type: none"> Data sorting 			Honiara	
9	19 Dec.	Sun	<ul style="list-style-type: none"> Internal meeting 			Honiara	
10	20 Dec.	Mon	<ul style="list-style-type: none"> Report to EOJ and JICA Solomon Office Trip [Honiara (14:45) → Brisbane (17:15), IE700] Trip [Brisbane (18:45) → Sydney (21:20), QF555] 			Sydney	
11	21 Dec.	Tue	Trip [Sydney (09:20) → Tokyo (17:10), JL772]				

APPENDIX 3

LIST OF PARTIES CONCERNED IN THE RECIPIENT COUNTRY

3. List of Parties Concerned in the Recipient Country

<u>Name of Organization</u>	<u>Position</u>
Solomon Islands Broadcasting Corporation (SIBC)	
Mr. Cornelius Rathaqmana	General Manager
Mr. Bart Basia	Manager, Programs/Presentation
Mr. Michael Wate	Manager, Finance and Administration
Mr. John Teruka	Administration Officer
Mr. Patrick Tibaua	Manager, Technical
Mr. Andrew Lano	Supervisor, Studio
Mr. Walter Legu	Mechanic
Mr. Noel Galasau	IT Officer
Ms. Nirorier Tabo	Broadcasting Technician
Mr. Min Sun	Australia Youth Ambassador for Development
Mr. Aidriam. S. Ging	Manager (Gizo)
Mr. Selwyno Sunga	Journalist
Ms. Cathy Lezutuni	Announcer
Mr. Terence Ziru	Announcer
Office of Prime Minister and Cabinet	
Mr. Jermiah Manele	Secretary to the Prime Minister
Ministry of Development Planning and Aid Coordination	
Ms. Jane Waetara	Permanent Secretary
Ms. Siona Koti	Principal Planning Officer, PO Bilateral Aid
Ms. Nozomi Hakata	JICA Aid Advisor
Ministry of Home Affairs	
Mr. Fred Fakari	Permanent Secretary
Mr. John Foteliwale	Under Secretary
National Disaster Management Office (NDMO)	
Mr. Loti Yates	Director
Ms. Janet Prakosh	Chief Administration Officer
Mr. John Norton	Advisor (Expert from NZ)
Mr. Pearson Simi	Provincial Disaster Coordinator, Auki
Mr. Silas Arukwai	Provincial Disaster Coordinator, Gizo
Mr. Bahenua Saohonu (McQueen)	Provincial Disaster Coordinator, Rennell
Ministry of Environment Conservation and Meteorology	
Mr. Chanel Iroi	Under Secretary / Technical

Solomon Islands Meteorological Service

Mr. David Hiriasia Acting Director
Mr. Loyd Tahani Climatologist

Ministry of Mines Energy and Rural Electrification

Mr. David Michael Director of Petroleum Division
Mr. Alison K. Papabaty Principal Seismological Observer
Mr. Bobby Kelly Senior Seismological Observer
Mr. Kevin Porahoa Senior Seismologist, Geological Survey
Mr. Clinton Roga Geologist, Geological Survey

Solomon Telekom Company Limited

Mr. Loyley Ngira Chief Executive
Mr. Martin Misi Manager, Lata
Mr. Stanly Maelasia Manager, Auki
Mr. Rex Aega Assistant Engineer, Auki
Mr. Naisu Aaron Province Officer, Rennell
Mr. John Mally Province Officer, Rennell
Mr. Charles Mamata Senior Technician, Makira

Solomon Islands Radio Spectrum Management Office

Mr. Robert Bokelema Director Communications
Mr. Timothy Mausae Officer Communications

Solomon Islands Electricity Authority (SIEA)

Mr. Martin B. Sam Manager Distribution / Chief Engineer
Mr. Floyd Sidni Manager, Buara
Mr. Sam Indu Superintendent, Auki
Mr. Derick Sonitogha Officer, Kirakira

Provincial Government**Choiseul Provincial Office**

Mr. Jackson Kiloe Deputy Prime, Choiseul
Mr. Nelson Araia Provincial Disaster Coordinator, Choiseul

Isabel Provincial Office

Mr. Lonsdale Manase Deputy Prime, Isabel
Ellison Eito Youth Coordinator, Isabel

Rennell Provincial Office

Mr. Greg Taieha Tourism and Development Officer, Rennell

Makira Provincial Office

Mr. Commins Ikioa

Mr. John Ouou

Deputy Province Secretary, Makira

Principle Land Officer and Disaster Coordinator, Makira

Temotu Provincial Office

Mr. Hon Wancis Badenogo

Mr. Sammuel Kafuese

Mr. Simon Barllay

Mr. Buddley Ronne

Mr. Efef Fea

Mr. Vincbn Dawra

Mr. Wank Menoip

Premier (Acting)

Permanent Secretary (Acting)

MPA

Chief Planner

MPA

AS 1 ID

Disaster Officer

Solomon Islands Police Force

Mr. Albert Samani

Mr. Simeon Gazobatu

Mr. George Paikai

Mr. Collin Singamoana

Director of Communications

Deputy Director of Communications

Director of Emergency Management Special Event Planning (EMSEP)

Province Chief Police Officer, Rennell

AusAID

Mr. Pakwasi Nyamekye

Mr. Levi Delos Santos

Second Secretar

UNV, Governance of Rennel Province

Solomon Islands Media Assistance Scheme (SOLMAS)

Ms. Corallie Ferguson

Ms. Wendy Everett

Mr. Steve White

Program Manager

SIBC Partnership Coordinator

Radio Transmission Engineer

United Nations Development Programme (UNDP)

Ms. Gloria Suluia

Mr. Levi Delos Santos

Program Team Leader

UNV: Governance of Rennel Province

Ministry of Culture and Tourism

Mr. Seth Gukuna

Minister of Culture and Tourism, Member of Parliament of Renel and Bellona

Ministry of Lands, Housing and Survey

Mr. Joseph Pinita

Deputy Communication of Lands, House and Survey

Hospital and Clinic

Mr. Rajiv Gupta

Mr. Mark M. Maeliau

Ms. Hemie Jack

Director of KilU'UFi Hospital, Auki

Nursing Director of KilU'UFi Hospital, Auki

Tarakari Clinic Officer, Auki

Isabel Province Communication FM Station in Buara

Mr. Joe Jindsay

Sale Officer

Embassy of Japan

Mr. Akira Iwanade

Charge d' Affaires a.i. of Japan

JICA Solomon Islands Office

Tokuro Watanabe

Resident Representative

Yoko Asano

Project Formulation Advisor

APPENDIX 4

MINUTES OF DISCUSSIONS

**Minutes of Discussions
on the Preparatory Survey
on the Project for the Improvement of Radio Broadcasting Network
for Administration of Disaster Prevention
in Solomon Islands**

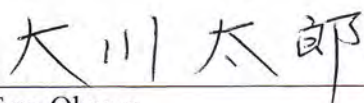
The Government of Japan decided to conduct a Preparatory Survey on the Project for the Improvement of Radio Broadcasting Network for Administration of Disaster Prevention in Solomon Islands (hereinafter referred to as "the Project") and entrusted the survey to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA sent to Solomon Islands a Preparatory Survey Team (hereinafter referred to as "the Team"), headed by Mr. Taro Okawa, Assistant Director for Transportation and ICT Division 1, Economic Infrastructure Department, JICA, and is scheduled to stay in the country from September 21 to October 16, 2009.

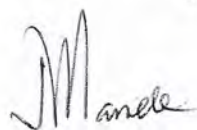
The Team held discussions with the concerned officials of the Government of Solomon Islands and conducted a field survey at the Project area.

In the course of discussions and field survey, both sides confirmed the main items described in the attached sheets.

Honiara, October 8, 2009

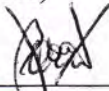


Taro Okawa
Leader
Preparatory Survey Team
Japan International Cooperation Agency
JAPAN



Jeremiah Manele
Secretary to Prime Minister
Office of the Prime Minister and Cabinet
Solomon Islands


(Witnesses)



Fred Fakari
Permanent Secretary
Ministry of Home Affairs
Solomon Islands



Jane Wa'etara
Permanent Secretary /
Ministry of Development Planning & Aid Coordination
Solomon Islands



Cornelius Rathamana
General Manager
Solomon Islands Broadcasting Corporation
Solomon Islands

ATTACHMENT

1. Objective of the Project

The objective of the Project is to improve the radio broadcasting network for the administration of disaster prevention and mitigation for the whole nation of Solomon Islands.

2. Project Site

The site of the Project is shown in Annex-1.

3. Responsible and Implementing Organization

The responsible ministry is the Office of the Prime Minister and Cabinet. The organization chart of the responsible ministry is shown in Annex-2.

The implementing organization is the Solomon Islands Broadcasting Corporation (SIBC). The organization chart of the implementing organization is shown in Annex-3.

4. Items Requested by the Government of Solomon Islands

4-1. After discussions with the Team, the Project components requested by the Government of Solomon Islands are confirmed as below:

(1) Procurement of equipment

SW transmitter system for SIBC Henderson Transmitting Station: 1 system

-10KW SW (AM) transmitter (2 frequencies changeover)

-Peripheral equipments for the above transmitter

-SW antenna system

(2) Installation of the above equipments

(3) Training for operation and maintenance of equipments

4-2. Both sides confirmed that SW (DRM) transmitter system, DRM receiver, FM relay stations and radio OB van are not included in the above requested items, considering the priority of each item, in the light of the objective of the Project as shown in the above article 1.

4-3. The Solomon Islands side explained that there is no duplication between requested contents of the Project and any other plans implemented by the other donors or the Solomon Islands side.

4-4. JICA will assess the appropriateness of the requests and will report the findings to the Government of Japan.

5. Japan's Grant Aid Scheme

The Solomon Islands side understands the Japan's Grant Aid scheme explained by the Team, as described in Annex-4, 5 and 6.

6. Schedule of the Survey

6-1. The Team will proceed to further survey in Solomon Islands until October 16, 2009.

6-2. JICA will prepare the draft report in English and dispatch a mission in order to explain its

contents in February, 2010.

6-3. In case that the contents of the report are accepted in principle by the Government of Solomon Islands, JICA will complete the final report and will send it to the Solomon Islands side by the end of March, 2010.

7. Other Relevant Issues

7-1. The Solomon Islands side explained that they are working on finalizing a memorandum of understanding (MOU) for pursuing a further reinforcement of the administration of disaster prevention among necessary organizations, such as National Disaster Management Office (NDMO), SIBC and the related ministries.

7-2. The Solomon Islands side explained that they are considering to add the below items to the requesting Project components shown in 4-1.

(1) A set of communications radio for enabling prompt sharing of information between SIBC and necessary organizations, such as NDMO and the police headquarter in Honiara

(2) A basic studio in NDMO for the announcement of emergency information

(3) Renovation works of the transmitter house

The Solomon Islands side also explained that the above (1) and (2) are for achieving an efficient operation among the related organizations, which shall be clearly shown in the MOU. The Solomon Islands side confirmed that they shall share the draft of MOU by October 12, 2009, with the Team. The Solomon Islands side also confirmed that they shall submit an official letter to the JICA Solomon Office by October 30, 2009, showing the finalized MOU and clear reasons of each necessity of the newly requesting items. JICA will access the necessity and appropriateness of the requests according to the contents of the official letter, and will notify the result to the Solomon Islands side by November 30, 2009.

7-3. The Solomon Islands side shall organize and confirm the frequency utilization regarding the existing frequencies (9,545 and 5,020 kHz) and the new frequency (6,080 kHz which was secured from Australian Broadcasting Corporation), based on the request by the Team, on the basis that the Project will utilize the frequency of 9,545 and 6,080 kHz. The Solomon Islands side shall submit an official letter to the JICA Solomon Office for informing the result by October 16, 2009, including the confirmation that SOLMAS (Solomon Islands Media Assistance Scheme) will utilize 5,020 kHz.

7-4. The Solomon Islands side shall remove all the existing equipments and obstacles from the Project sites, completely before the start of construction works covered by the Japan's Grant Aid. The equipments and obstacles needed to be removed shall be specified by the Team at the timing of explanation of Draft Basic Design (DBD) planned around February, 2010.

7-5. The Solomon Islands side shall detect, discriminate and clear all the unexploded ordnances (UXO) and land mines from the Project areas. The areas which need the above clearance activities shall be shown by the Team during this preparatory survey period, by October 16, 2009. The Solomon Islands side shall acquire official certificates of completion for all of

them, and shall submit an official letter to the JICA Solomon Office to notify the result by November 30, 2009.

- 7-6. The Solomon Islands side shall secure enough budget and personnel necessary for the operation and maintenance of the radio broadcasting networks constructed by the Project, including periodical maintenance works after the completion of the Project. The necessary amount of budget for the undertakings to be taken by the Solomon Islands side shall be estimated and shown by the Team at the timing of explanation of DBD. To make sure that the above necessary amount is allowable within the limits of SIBC budget, the Solomon Islands side shall provide the SIBC budget figures of fiscal year 2010 with the Team, by November 30, 2009.
- 7-7. The Solomon Islands side shall ensure enough land space for the Project.
- 7-8. The Solomon Islands side shall continue to provide necessary numbers of counterpart personnel to the Team during the period of their surveys in Solomon Islands.
- 7-9. The Solomon Islands side shall ensure the security of all concerned Japanese nationals working for the Project, if deemed necessary.
- 7-10. The Solomon Islands side shall submit answers to the Questionnaire, which the Team handed to the Solomon Islands side, by October 12, 2009.

<List of Annex>

Annex-1 Project Site Map

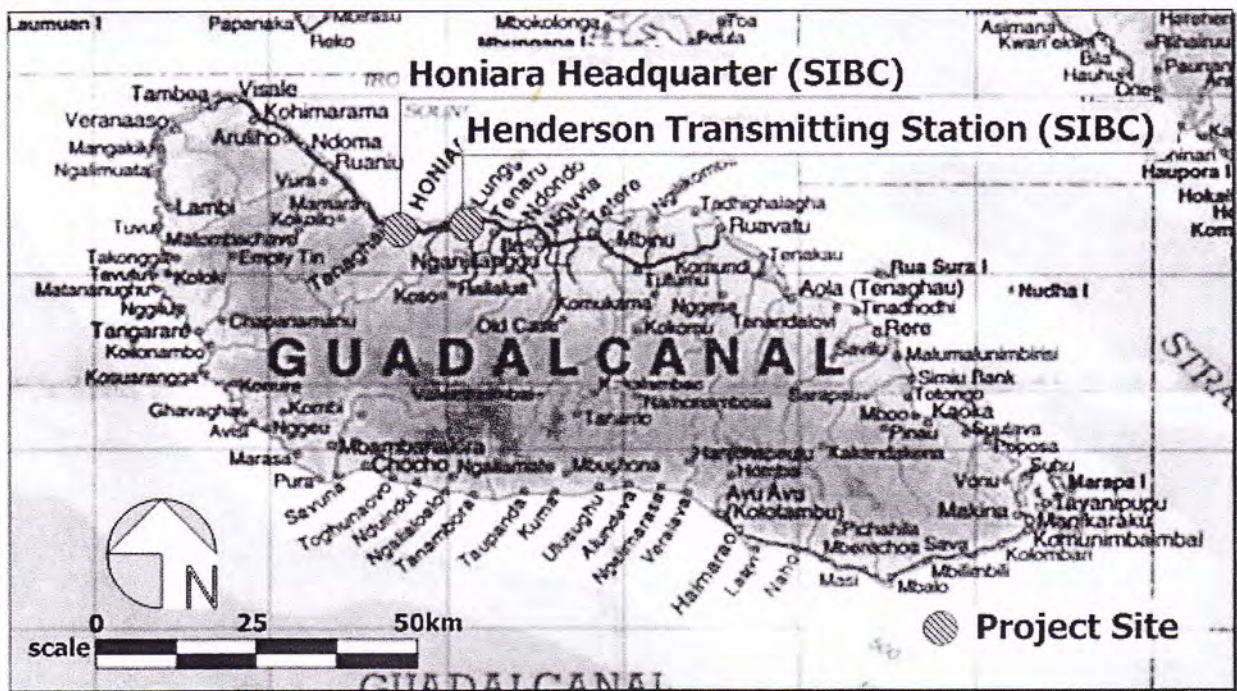
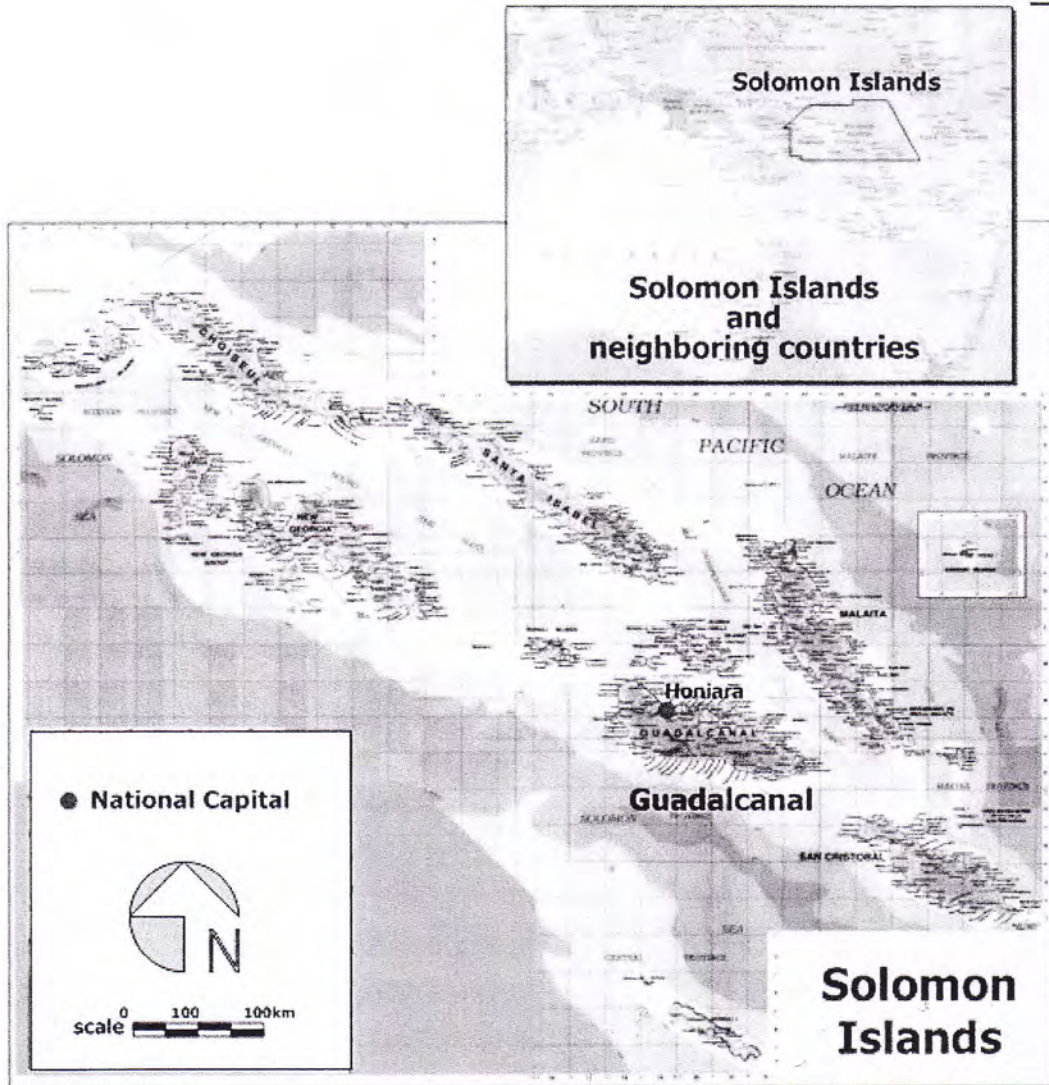
Annex-2 Organization Chart – Office of the Prime Minister

Annex-3 Organization Chart – Solomon Islands Broadcasting Corporation (SIBC)

Annex-4 Japan's Grant Aid Scheme

Annex-5 Flow Chart of Japan's Grant Aid Procedures

Annex-6 Major Undertakings to be taken by Each Government



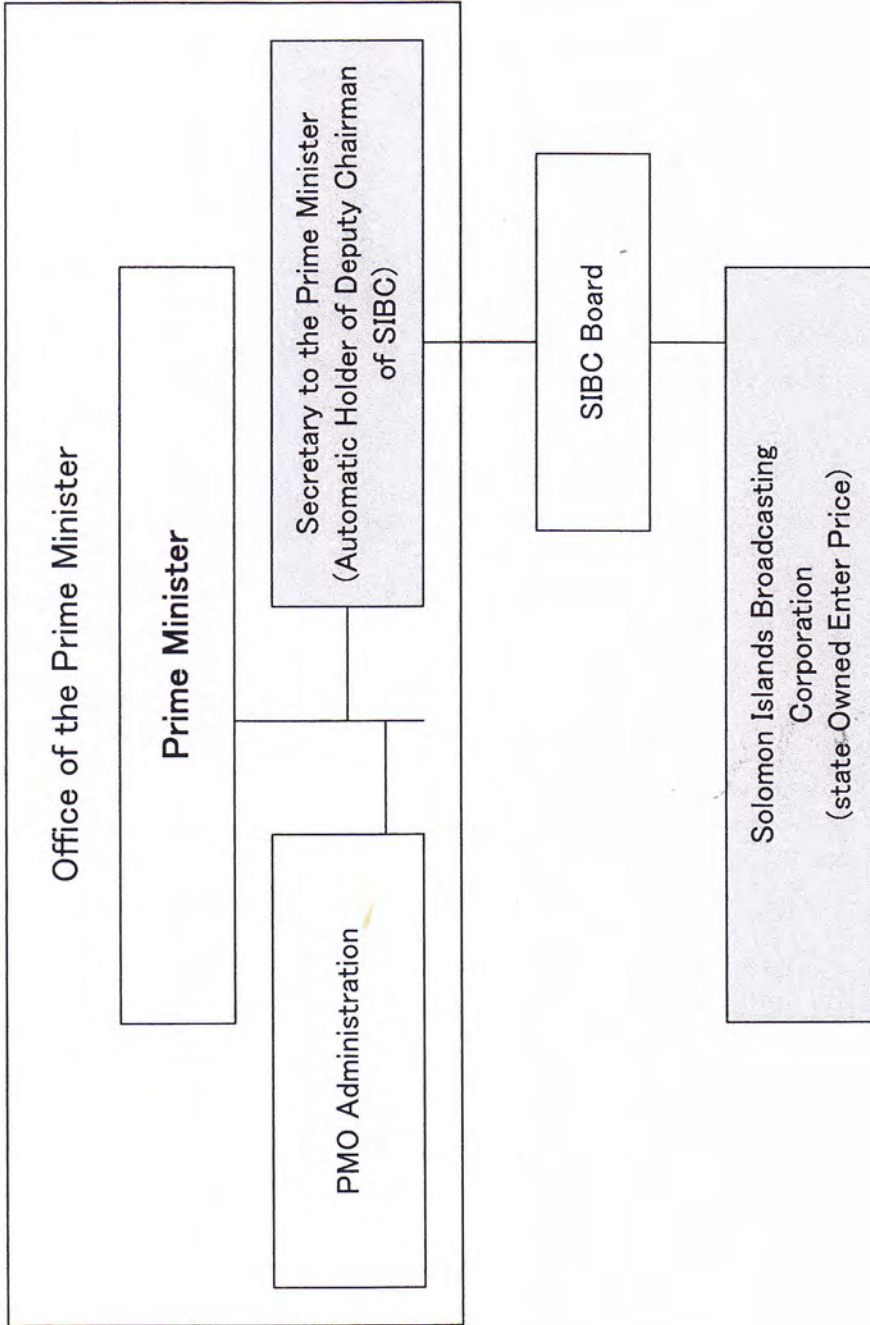
Map of Project Sites

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Organization chart of Office of the Prime Minister with relation to SIBC



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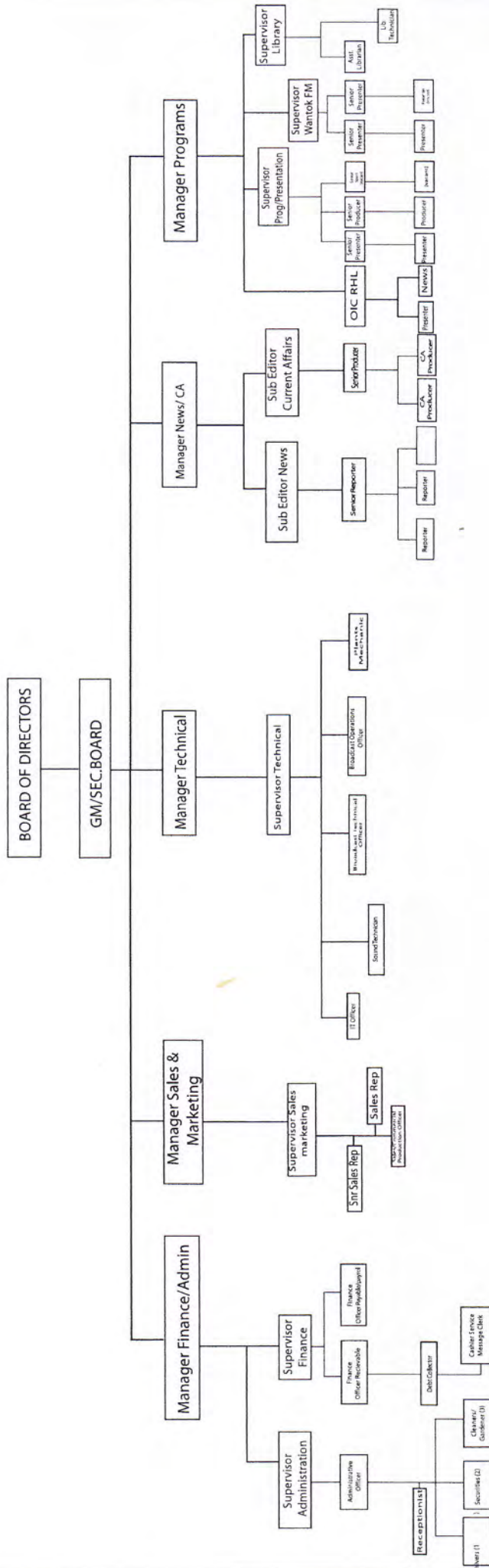
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Solomon Islands Broadcasting Corporation Staff Structure 2006



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JAPAN'S GRANT AID

The Government of Japan (hereinafter referred to as “the GOJ”) is implementing the organizational reforms to improve the quality of ODA operations, and as a part of this realignment, a new JICA law was entered into effect on October 1, 2008. Based on this law and the decision of the GOJ, JICA has become the executing agency of the Grant Aid for General Projects, for Fisheries and for Cultural Cooperation, etc.

The Grant Aid is non-reimbursable fund provided to a recipient country to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for its economic and social development in accordance with the relevant laws and regulations of Japan. The Grant Aid is not supplied through the donation of materials as such.

1. Grant Aid Procedures

The Japan's Grant Aid is supplied through following procedures :

- Preparatory Survey
 - The Survey conducted by JICA
- Appraisal & Approval
 - Appraisal by the GOJ and JICA, and Approval by the Japanese Cabinet
- Authority for Determining Implementation
 - The Notes exchanged between the GOJ and a recipient country
- Grant Agreement (hereinafter referred to as “the G/A”)
 - Agreement concluded between JICA and a recipient country
- Implementation
 - Implementation of the Project on the basis of the G/A

2. Preparatory Survey

(1) Contents of the Survey

The aim of the preparatory Survey is to provide a basic document necessary for the appraisal of the Project made by the GOJ and JICA. The contents of the Survey are as follows:

- Confirmation of the background, objectives, and benefits of the Project and also institutional capacity of relevant agencies of the recipient country necessary for

the implementation of the Project.

- Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from a technical, financial, social and economic point of view.
- Confirmation of items agreed between both parties concerning the basic concept of the Project.
- Preparation of a basic design of the Project.
- Estimation of costs of the Project.

The contents of the original request by the recipient country are not necessarily approved in their initial form as the contents of the Grant Aid project. The Basic Design of the Project is confirmed based on the guidelines of the Japan's Grant Aid scheme.

JICA requests the Government of the recipient country to take whatever measures necessary to achieve its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization of the recipient country which actually implements the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country based on the Minutes of Discussions.

(2) Selection of Consultants

For smooth implementation of the Survey, JICA employs (a) registered consulting firm(s). JICA selects (a) firm(s) based on proposals submitted by interested firms.

(3) Result of the Survey

JICA reviews the Report on the results of the Survey and recommends the GOJ to appraise the implementation of the Project after confirming the appropriateness of the Project.

3. Japan's Grant Aid Scheme

(1) The E/N and the G/A

After the Project is approved by the Cabinet of Japan, the Exchange of Notes (hereinafter referred to as "the E/N") will be signed between the GOJ and the Government of the recipient country to make a pledge for assistance, which is followed by the conclusion of the G/A between JICA and the Government of the recipient country to define the necessary articles to implement the Project, such as payment

conditions, responsibilities of the Government of the recipient country, and procurement conditions.

(2) Selection of Consultants

In order to maintain technical consistency, the consulting firm(s) which conducted the Survey will be recommended by JICA to the recipient country to continue to work on the Project's implementation after the E/N and G/A.

(3) Eligible source country

Under the Japan's Grant Aid, in principle, Japanese products and services including transport or those of the recipient country are to be purchased. When JICA and the Government of the recipient country or its designated authority deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country. However, the prime contractors, namely, constructing and procurement firms, and the prime consulting firm are limited to "Japanese nationals".

(4) Necessity of "Verification"

The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by JICA. This "Verification" is deemed necessary to fulfill accountability to Japanese taxpayers.

(5) Major undertakings to be taken by the Government of the Recipient Country

In the implementation of the Grant Aid Project, the recipient country is required to undertake such necessary measures as Annex.

(6) "Proper Use"

The Government of the recipient country is required to maintain and use properly and effectively the facilities constructed and the equipment purchased under the Grant Aid, to assign staff necessary for this operation and maintenance and to bear all the expenses other than those covered by the Grant Aid.

(7) "Export and Re-export"

The products purchased under the Grant Aid should not be exported or re-exported from the recipient country.

(8) Banking Arrangements (B/A)

- a) The Government of the recipient country or its designated authority should open an account under the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"). JICA will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.
- b) The payments will be made when payment requests are presented by the Bank to JICA under an Authorization to Pay (A/P) issued by the Government of the recipient country or its designated authority.

(9) Authorization to Pay (A/P)

The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment commissions paid to the Bank.

(10) Social and Environmental Considerations

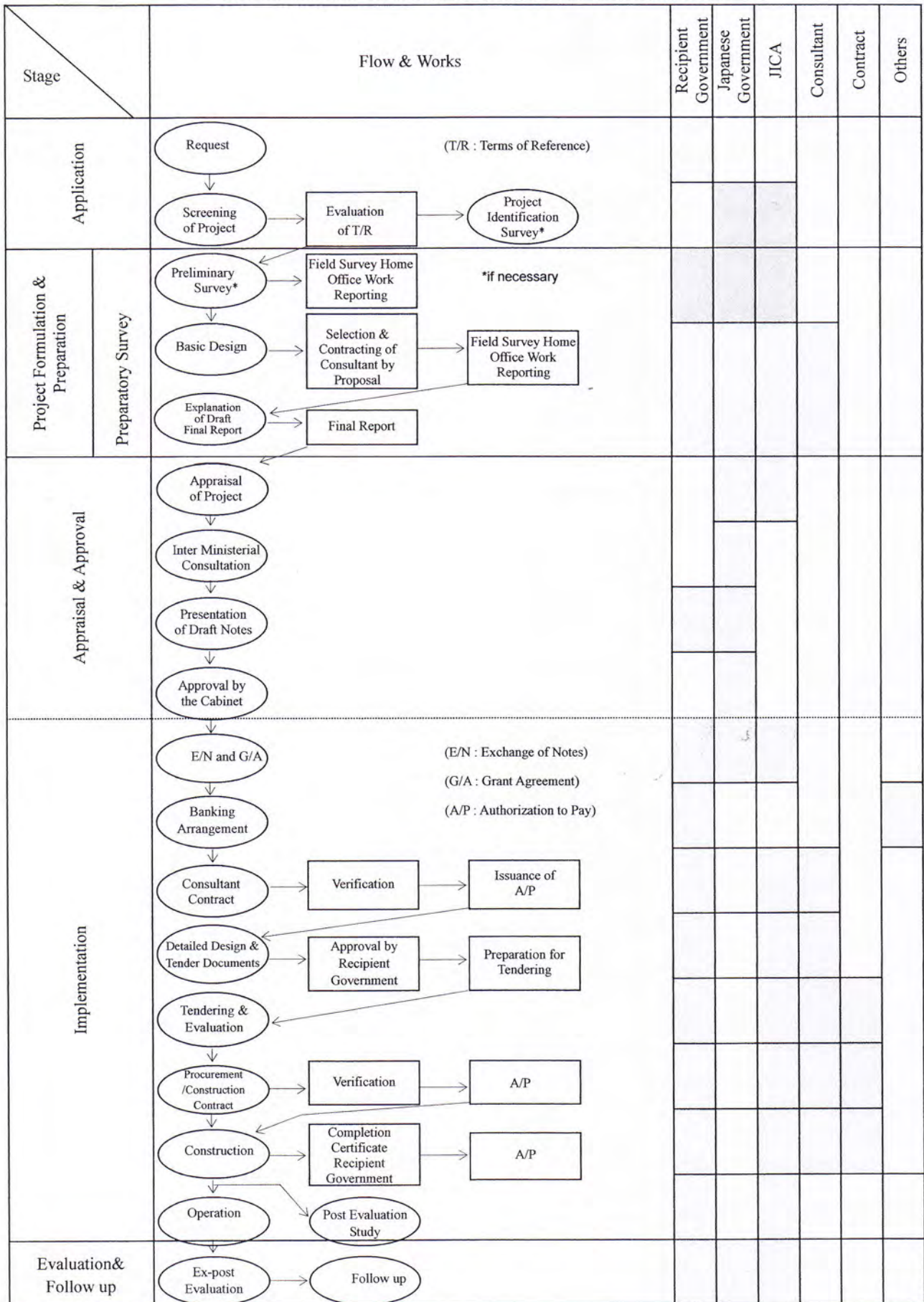
A recipient country must carefully consider social and environmental impacts by the Project and must comply with the environmental regulations of the recipient country and JICA socio-environmental guidelines.

(End)

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FLOW CHART OF JAPAN'S GRANT AID PROCEDURES



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Major Undertakings to be taken by Each Government

No.	Items	To be covered by Grant Aid	To be covered by Recipient Side
1	To secure land		•
2	To clear, level and reclaim the site when needed		•
3	To construct gates and fences in and around the site		•
4	To construct roads		
	1) Within the site	•	
	2) Outside the site		•
5	To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities		
	1) Electricity		
	a. The distributing line to the site		•
	b. The drop wiring and internal wiring within the site	•	
	c. The main circuit breaker and transformer	•	
	2) Water Supply		
	a. The city water distribution main to the site		•
	b. The supply system within the site (receiving and elevated tanks)	•	
	3) Telephone System		
a. The telephone trunk line to the main distribution frame/panel (MDF) of the building		•	
b. The MDF and the extension after the frame/panel	•		
6	To bear the following commissions of the Japanese bank for banking services based upon the B/A		
	1) Advising commission of A/P		•
	2) Payment commission		•
7	To ensure unloading and customs clearance at port of disembarkation in recipient country		
	1) Marine (Air) transportation of the products from Japan to the recipient	•	
	2) Tax exemption and custom clearance of the products at the port of disembarkation		•
	3) Internal transportation from the port of disembarkation to the project site	•	
8	To accord Japanese nationals, whose service may be required in connection with the supply of the products and the services under the verified contract, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work		•
9	To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contracts		•
10	To maintain and use properly and effectively the facilities contracted and equipment provided under the Grant Aid		•
11	To bear all the expenses, other than those to be borne by the Grant Aid, necessary for construction of the facilities as well as for the transportation and installation of the equipment		•

(B/A: Banking Arrangement, A/P: Authorization to pay)

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Minutes of Discussions
on the Preparatory Survey
on the Project for the Improvement of Radio Broadcasting Network
for Administration of Disaster Prevention
in Solomon Islands
(Explanation on Draft Report)

In October 2009, Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Preparatory Survey Team on "The Project for the Improvement of Radio Broadcasting Network for Administration of Disaster Prevention" (hereinafter referred to as "the Project") to the Government of Solomon Islands, and through discussion, field survey as well as after technical examination of the results in Japan, JICA prepared a draft report of the study.

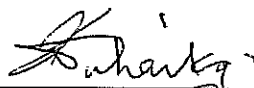
In order to explain and consult with the concerned officials of the Solomon Islands on the components of the draft final report, JICA sent to the Solomon Islands the Draft Final Report Explanation Team (hereinafter referred to as "the Team") which is headed by Mr. Tokuro Watanabe, Resident Representative, JICA Solomon Islands Office from December 13 to 20, 2010.

In the course of discussions and field survey, both sides confirmed the main items described in the attached sheets.

Honiara, January 7, 2011

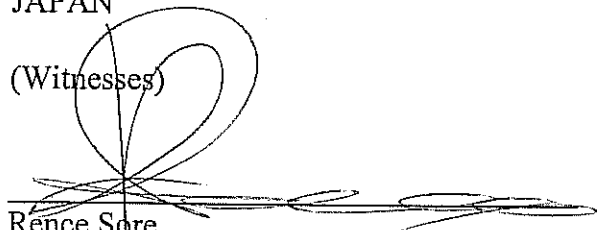


Tokuro Watanabe
Leader
Preparatory Survey Team
Japan International Cooperation Agency
JAPAN



John Tuhafka
Secretary to Cabinet
Office of the Prime Minister and Cabinet
Solomon Islands

(Witnesses)



Rence Sore
Permanent Secretary
Ministry of Environment, Climate Change,
Disaster Management, & Meteorology
Solomon Islands



Cornelius Rathamana
General Manager
Solomon Islands Broadcasting Corporation
Solomon Islands



ATTACHMENT

1. Component of the Draft Final report

The Solomon Islands side has agreed and accepted in principle the component of the draft final report and the draft detailed specifications of the equipment explained by the Team.

2. Japan's Grant Aid Scheme

The Solomon Islands side understands the Japan's Grant Aid scheme and the necessary undertakings to be taken by the Solomon Islands as explained by the Team and described in the Minutes of Discussions signed by both sides on October 8, 2009.

3. Schedule of the Survey

JICA will complete the final report in accordance with the confirmed items and send it to the Solomon Islands by the beginning of May, 2011.

4. Other Relevant Issues

4-1. Both sides confirmed that the antenna construction planned site will be relocated to the place at Lot No.10 of LR83/R Parcel Number 192-004-0005 shall be resumed for the Project assurance on behalf of the Solomon Islands.

4-2. Both sides agreed the components of the Project as shown in Annex-1.

4-3. The Solomon Islands side agreed to apply for budget allocation from national treasury annually to operate and maintain the equipment described on the draft final report as a part of subsidy to Solomon Islands Broadcasting Corporation" (hereinafter referred to as "SIBC").

4-4. Both sides confirmed that the following undertakings shall be taken by the Solomon Islands at its expense.

- A) Weeding and removal of obstacles from the new antenna site.
- B) License fee for HF Radio (per year)
- C) Construction of perimeter fencing and a gate at the new antenna site
- D) Procedure fee for the A/P facility

4-5. Both sides agreed that the draft detailed specifications of the equipment are confidential and should not be duplicated or released to other parties in order to secure the fairness of the tender of the Project.

4-6. Both sides agreed that the Project Cost Estimation, as attached in Annex-2, should never be duplicated or released to other parties before the signing of all the Contract for the Project.

Both sides agreed that the Project Cost Estimation will be amended after review for the location of alternative antenna area.

4-7. The Solomon Islands sides shall organize and confirm the frequency allocation (159.100MHz and 159.700MHz or 158.500MHz) regarding the Disaster Prevention Broadcasting Communication Radio System. The Solomon Islands sides shall submit an official letter to JICA Solomon Office for informing the result by January 31, 2011.



4-8. The Solomon Islands side shall remove all unexploded ordnances (UXO) and land mines from the Project areas, which need the above clearance activities shown by the Japanese side during this preparatory survey period. The Solomon Islands side shall acquire official certificates of completion for all of them, and shall submit an official letter to the JICA Solomon Office to notify the result by January 31, 2011.

4-9. The Solomon Islands side shall secure enough budget and personnel necessary for the operation and maintenance of the radio broadcasting networks constructed by the Project, including periodical maintenance works after the completion of the Project. The necessary budget for the undertakings to be taken by the Solomon Islands side shall be estimated and shown by the Team at the timing of explanation of DBD. The Solomon Islands side shall submit the budget figures for the fiscal year 2011, by January 31, 2011.

<List of Annex>

Annex-1 Component of the Project

Annex-2 Project Cost Estimation

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Component of the Project

Item	Q'ty
1. Short Wave Transmitter System	1 set
2. Short Wave Antenna System	1 set
3. Power Supply Equipment for Transmitter	1 set
4. Disaster Prevention Broadcasting Communications Radio System	1 set
5. SIBC Equipment (Program Transmission Link Equipment)	1 set
6. Maintenance Equipment and Tools	1 set
7. Spare Parts	1 set
8. Consumable Parts	1 set

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This Page is closed due to the confidentiality